GENERATIVE GRAMMATICAL STUDIES

IN

THE JAPANESE LANGUAGE

by

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ABSTRACT

This thesis is an attempt to apply the theory of transformational grammar to the Japanese language. This theory was introduced by Noam Chomsky some ten years ago and since then has been successfully applied to the study of several languages, especially English. It is shown here that the application of this theory to Japanese is also very revealing. Comparison of the structure of Japanese and English is also our concern, whenever possible, and it is seen that the transformational theory is helpful in such contrastive studies.

The thesis may be conveniently divided into two parts; Part One (Chapters I - VI) is devoted to syntax, and Part two (Chapter VII) to phonology. Part one may further be divided into three subparts. The first (Chapter I - III) deals with attachment transformations. The definition and general properties of these transformations are given in Chapter I. In Chapters II and III attachment transformations are used to explain syntactic properties of several particles. The problem of pronominalization is discussed in the second subpart (Chapters IV and V). The first and the second subparts are related through a discussion of indeterminate pronouns. The last subpart (Chapter VI) reveals the formal character of the particles ga and o, which parallels the formal character of case distinction in English.

Part two (Chapter VII) treats one particular problem of phonology, the problem of consonant morae. Attention is focussed on the nasalization rule, and its significance is discussed from various viewpoints, generative, historical, and perceptual.

Thesis Supervisor: Noam Chomsky
Title: Professor of Linguistics

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PREFACE

The aim of this thesis is to investigate certain aspects
of the grammar of Japanese within the framework of the theory
of transformational grammar. The first six chapters are devoted
to syntax and the last one to phonology.

The syntactic part is not designed to present a miniature
grammar of Japanese. Rather, several particular transformational
aspects of the language are chosen and discussed. The choice
of topics is not entirely arbitrary, however. All the trans-
formations discussed presuppose only the most fundamental
phrase-structural machinery and hence are themselves to be
taken as fundamental. They are all rather general in nature,
and topics particular to Japanese, such as honorification and
stylization, are excluded.

The transformational approach to syntax is shown to be
significantly revealing in the study of Japanese syntax, as it
has been in the study of English syntax. Indeed, this approach
has brought to light certain observations which were not previous-
ly obvious.

Comparison with corresponding rules in English is always
a concern in this work. In each case, the nature of the apparent
dissimilarities in the two languages will be clarified.

Needless to say, there are many important problems in
Japanese syntax that are not touched in this work. It is hoped
that the result obtained here will serve as a basis for further

study of Japanese syntax. Of course, the rules formulated here must first be subjected to critical scrutiny. Many of them are not simply reformulations of statements found in grammars based on traditional or structural linguistics. Indeed, the facts meant to be represented by the rules have, in certain cases, never been seriously dealt with. Thus, what is open to criticism is not only whether the rules give the right interpretations of the facts, but also whether all relevant facts are taken into consideration.

The last chapter is devoted to a special problem of Japanese phonology, the problem of the consonant morae, or the so-called syllabic obstruent and nasal. Excluding accent features and unproductive and irregular features such as the rendaku, Japanese morphophonemics is rather straightforw d. and uninteresting. Contrary to syntactic problems, the phonological facts about consonantal morae are fairly simple and have already been observed rather fully. But it will be shown that using the theory of generative phonology, interesting remarks can still be added on this seemingly worn-out subject. This may illustrate how the theory of generative phonology has brought a new insight into phonological studies.

The romanization of Japanese examples is always a problem. Here, space is put between pause-groups in the sense of Bloch (1946), and a hyphen is put between morphemes. But segmentation into morphemes (and even into pause-groups) is sometimes highly arbitrary, and is solely for the convenience of the reader in identifying morphemes. Following Hattori (1951), the

nonGrave, nonContinuant, nonVoiced consonant is represented
by c before i and u. This particular romanization is restric-
ted to the representation of examples, and the Kunrei-siki
romanization is used for bibliography references, since the
former is not widely adopted, although it seems to be the
best among all thus far proposed.

I would like to express my sincere gratitude to Professor
Chomsky and Professor Halle for their stimulating teaching
throughout my graduate studies at MIT. I am indebted to
Professor Chomsky for many improvements and clarifications
of the content of this thesis. My deep thanks are also due to
Florence Warshawsky for improving my English phrasing.

CHAPTER I. Attachment transformations

1.   The theoretical framework of this description of
Japanese is the generative theory of language developed in
the last ten years. For information about this theory the
reader is referred to the standard works in the field by
Chomsky (1957), (1962), (1964), (1965). The description here
will make use of a particular type of transformation, called
attachment transformation, which does not yet have a basis in
the theory. Therefore, we shall begin with general remarks
about attachment transformations. Consider first the pairs of
sentences below. Each pair is regarded as representing a
discourse.

(1.a)	The storm destroyed his house.
(1.b)	The flood even devastated his farm.[1]
(2.a)	The storm destroyed his house.
(2.b)	It (= the storm) even devastated his farm.
(3.a)	The storm destroyed his house.
(3.b)	It (= the storm) destroyed even his farm
(4.a)	The storm destroyed his house.
(4.b)	The flood also devastated his farm.
((4.b-1)	Also the flood devastated his farm)
(5.a)	The storm destroyed his house.
(5.b)	It (= the storm) also devastated his farm.

(6.a)   The storm destroyed his house.

(6.b)   It (= the storm) destroyed also his farm.[2]

In each of the above pairs two sentences, or parts of sentences, are put in contrast. More precisely, whole sentences are put in contrast in (1) and (4), predicates in (2) and (5), and objects in (3) and (6). From this we may assume that the words even and also modify the whole sentence in (1.b) and (4.b), the predicate in (2.b) and (5.b), and the object in (3.b) and (6.b). That is, it may be assumed that the words even and also are directly dominated by the node . Sentence in (1.b) and (4.b), by the node VerbPhrase in (2.b) and (5.b), and by the node NounPhrase in (3.b) and (6.b). Thus, the phrase structure of these sentences may, with some simplification of irrelevant details, be represented as follows:

(7-1)

Even the flood devastated his farm.

(7-2)

The storm even devastated his farm

(7-3)

```
                          S
               _____/    _____
             NP                       VP
           /    \                ____/    \____
          D      N              V              NP
          |      |              |          __/|\__
        The    storm        destroyed    D      N
                                       even his  |
                                              farm.
```

(7-4)

```
                          S
                  ___/ |  _____
                 /    NP            VP
                /    /  \        __/   \__
               /    D    N      V         NP
              /     |    |      |        /  \
            Also   the  flood devastated D    N
                                         |    |
                                        his  farm.
```
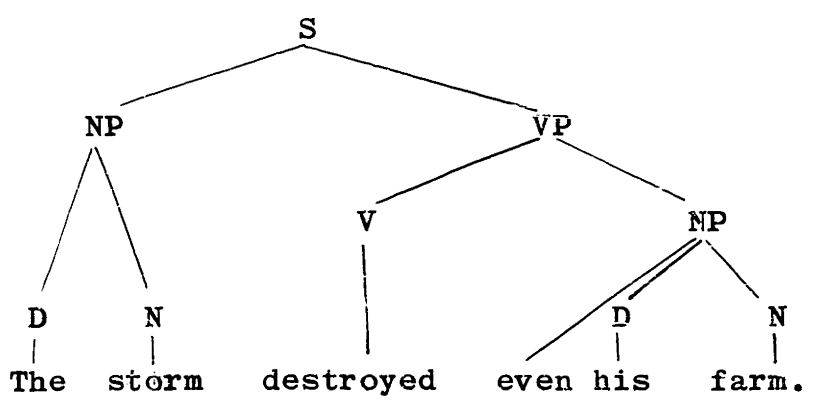
(7-5)

```
                          S
                 ___/          \___
               NP                  VP
              /  \            ___/ | \___
             D    N          /     V     NP
             |    |         /      |    /  \
           The  storm  also devastated D    N
                                       |    |
                                      his  farm.
```

(7-6)

```
                          S
                 ___/          \___
               NP                  VP
              /  \             __/    \__
             D    N           V          NP
             |    |           |       __/ | \__
           The  storm     destroyed  also D    N
                                          |    |
                                         his  farm.
```
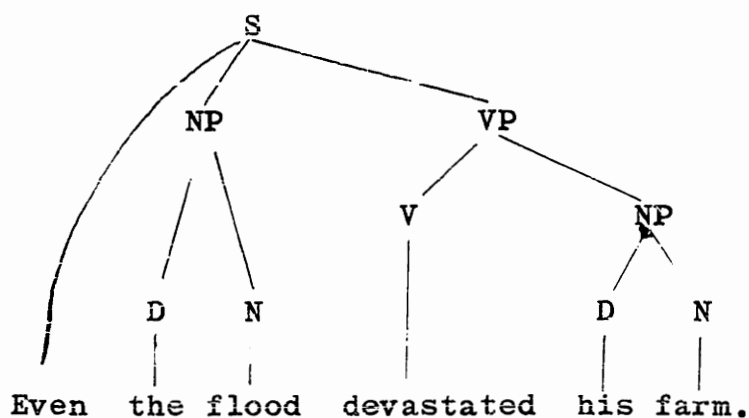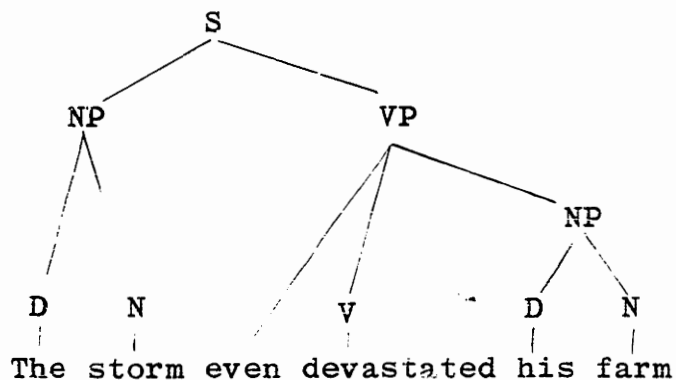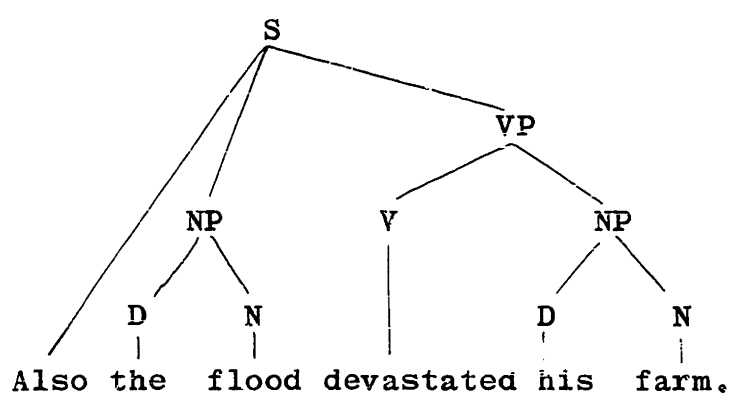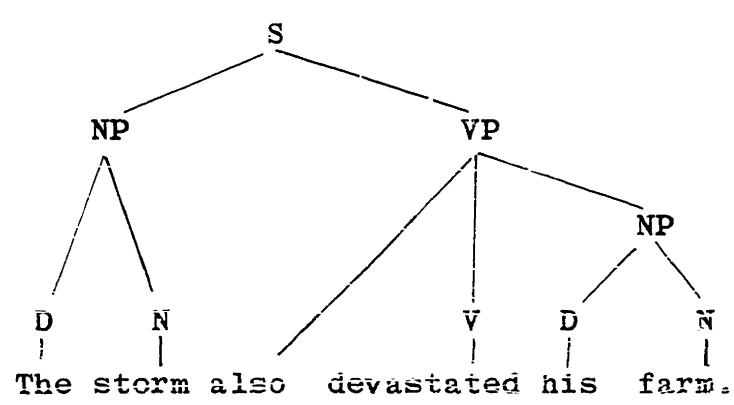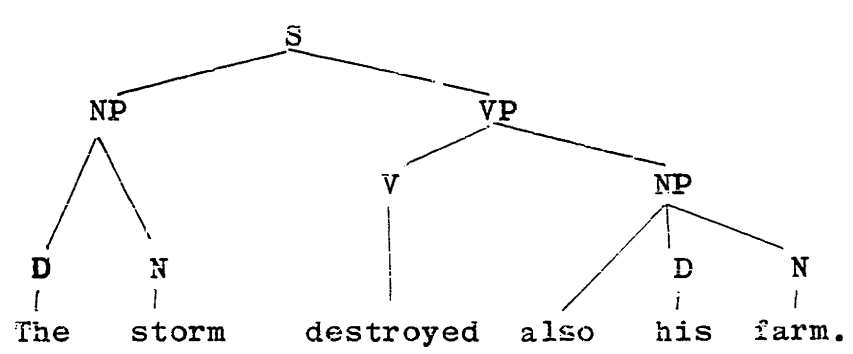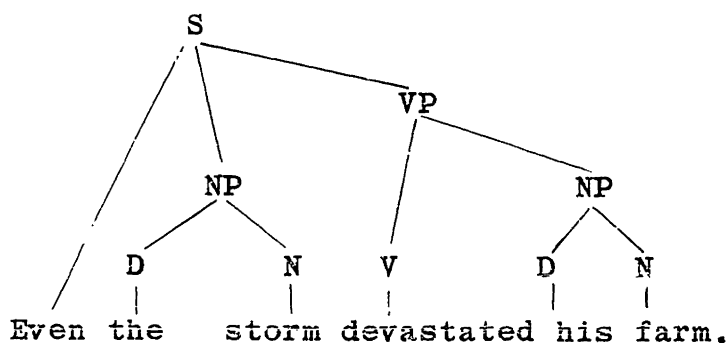
It is important to note that the position of _even_ or _also_
before the verb in the surfa : ... sent tion is ambiguous with
respect to the deep representation, either modifying the whole
sentence as in (1.b) and (4.b) or the predicate as in (2.b) and
(5.b). The position of _even_ and _also_ in the surface representa-
tions (1.b) and (4.b) is the result of a late transformation.
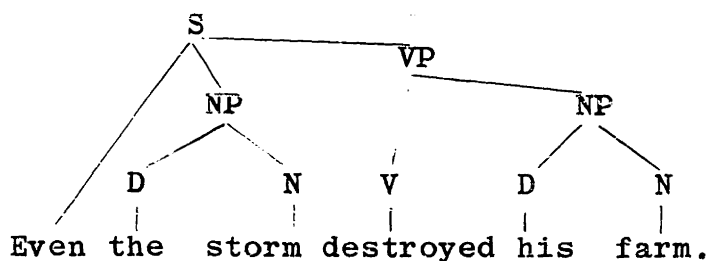
Although these phrase-structural representations of sen-
tences (1.a)-(6.b) appear to be reasonable, there are further
considerations involved in a generative analysis of _even_ and
also. It has been stated that the predicates of (2.b) and (5.b)
are contrasted with those of (2.a) and (5.a), and the objects
of (3.b) and (6.b) with those of (3.a) and (6.a). It might
further be said that this is reflected in the positioning of
even and _also_ in the representations of these sentences; i.e.,
if _even_ or _also_ is directly dominated by VP, the contrast is
made with respect o ... predicate, and if dominated by the
object NP, the contrast is made with respect to the object. It
is maintained here, however, that the fact that the predicates
are contrasted in (2.b) and (5.b) and the objects in (3.b) and
(6.b) is essentially independent from the fact that the second
member of each pair contains the word _even_ or _also_, and,
a fortiori, independent from the position of this word in the
basic representation. The contrast is more strongly specified
in (2) and (5) than in (1) and (4), and still more strongly
specified in (3) and (6), simply because the pairing of sentences
is, so to speak, more structured in (2) and (5), and even more
so in (3) and (6), than in (1) and (4). All this leads us to

recognize that the necessary and sufficient information for
the semantic and phonological interpretations of sentences
(2.b), (3.b), (5.b) and (6.b) as members of discourse pairs
(2), (3), (5), and (6), is simply that the word <u>even</u> or <u>also</u>
is contained in the sentences. In other words, given the above
assumptions, there seems to be nothing to prevent us from
taking the basic representations of (2.b), (3.b), (5.b), and
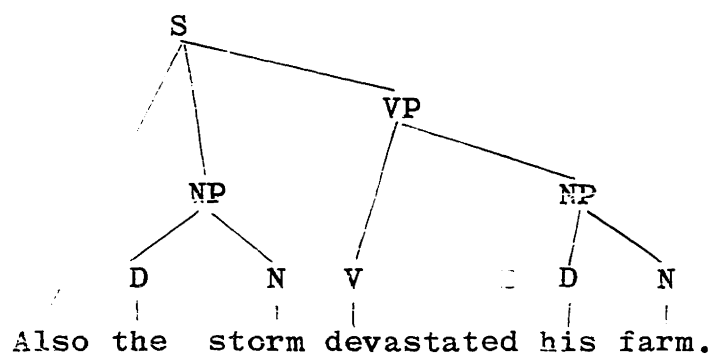(6.b) to be of the same form as that of (1.b) and (4.b):

(8-2)

Even the storm devastated his farm.

(8-3)

Even the storm destroyed his farm.

(8-5)

Also the storm devastated his farm.

(8-6)

Also the storm destroyed his farm.
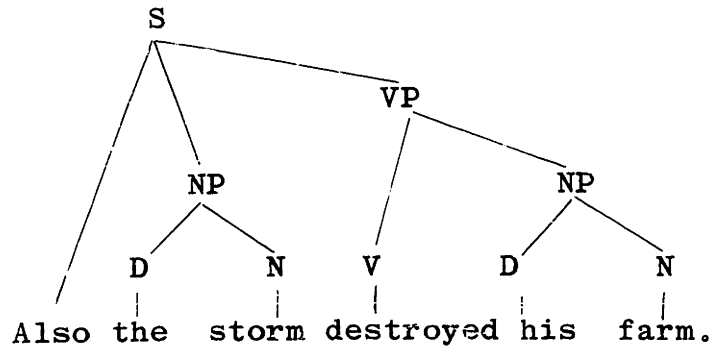
Then, (7-2), (7-3), (7-5), and (7-6) will be considered as derived representations of (2.b), (3.b), (5.b), and (6.b), respectively. The following transformation is introduced:[3]

$$(9) \qquad X_1 \begin{Bmatrix} VP_1 \\ NP_1 \end{Bmatrix} Y_1 \ \#\# \begin{Bmatrix} even \\ also \end{Bmatrix} X_2 \begin{Bmatrix} VP_2 \\ NP_2 \end{Bmatrix} Y_2$$

$$\longrightarrow \ X_1 \begin{Bmatrix} VP_1 \\ NP_1 \end{Bmatrix} Y_1 \ \#\# \ X_2 \begin{Bmatrix} even \\ also \end{Bmatrix} + \begin{Bmatrix} VP_2 \\ NP_2 \end{Bmatrix} Y_2$$

where $X_1 = X_2$, $Y_1 = Y_2$

This transformation will generate discourse forms (1) - (6).

If it were supposed that sentences containing _even_ or _also_ always appear as part of a pair as in (1) - (6), transformation (9) would be sufficient to account for such sentences. This would mean, however, that we would have to regard as ungrammatical any simple sentences containing _even_ or _also_, unless they were explicitly paired as in (1) - (6). This seems a too severe and counterintuitive limitation on the notion of grammaticality. It must be assumed, then, that some mechanism is needed to generate forms like (1.b) - (6.b) in isolation. Two different formulations will be introduced.

The first, which we shall call the _unspecified compounding approach_, makes use of the same transformational formalism as in (9) but allows the first component of compounding $X_1 \begin{Bmatrix} VP_1 \\ NP_1 \end{Bmatrix} Y_1$ to

be deleted. Since the content of the first component is to
be considered semantically unspecified, it is natural to assume
that it is also syntactically unspecified when deleted; that is,
more formally, what is deleted is a string of (terminal) syntactic
symbols, e.g., Det - N - V - Det - N, but not a string of words,
e.g., John saw Bill. Accordingly, it is to be assumed either
that the deletion (hence transformation (9)) takes place before
the lexical rule is applied or that the lexical rule can leave
unspecified those syntactic symbols to which transformations
(in particular, transformation (9) and the deletional trans-
formation in question) will apply.

The second approach, which we shall call the attachment
approach, will introduce the following optional transformation:

$$(10) \qquad \begin{Bmatrix} even \\ also \end{Bmatrix} X \begin{Bmatrix} VP \\ NP \end{Bmatrix} Y \longrightarrow X \begin{Bmatrix} even \\ also \end{Bmatrix} + \begin{Bmatrix} VP \\ NP \end{Bmatrix} Y$$

Trees of the form (7-2) or (7-3) and (7-5) or (7-6) will be
derived from trees of the form (7-1) and (7-4), respectively
by this transformation.

The difference between these two approaches does not end
with the transformational formalism; they also involve different
rules to assign the phrase-structure to independent sentences
containing even or also. In the attachment approach the follow-
ing phrase-structure rule is introduced:

$$(11) \qquad S \longrightarrow \begin{Bmatrix} even \\ also \end{Bmatrix} NP \ VP$$

In the unspecified compounding approach, on the other hand, the
string $\begin{Bmatrix} even \\ also \end{Bmatrix}$ NP VP is well-formed only if it is the second
member of the compounding, and hence the role of (11) is taken
by the rule:[4]

(12) $S \longrightarrow \left\{\begin{matrix} even \\ also \end{matrix}\right\}$ NP VP   <u>in env. S</u> ___

If a simple sentence is defined as having only one occurrence
of S in its basic form, sentences like (1.b) - (6.b) (in isola-
tion) are simple sentences in the attachment approach but not
in the unspecified compounding approach.

2.   But there is another approach which may be considered
standard in the recent framework of the transformational theory.
Thus transformations are now viewed not only as devices to yield
surface representations from basic representations but also
as devices to filter out ill-formed base forms. In accordance
with this line of thinking, the following explanation may be
given for sentences like (1.b) - (6.b).

(7-1)- (7-6) will now be taken as the basic representations
of (1.b) - (6.b). The words <u>even</u> and <u>also</u> are expanded under
the nodes S, VP, and NP by the phrase-structural rules, which
are something like:

(13) $S \longrightarrow \left(\left\{\begin{matrix} even \\ also \end{matrix}\right\}\right)$ NP VP

(14) $VP \longrightarrow \left(\left\{\begin{matrix} even \\ also \end{matrix}\right\}\right)$ V NP

(15) $NP \longrightarrow \left(\left\{\begin{matrix} even \\ also \end{matrix}\right\}\right)$ D N

It is, however, supposed that <u>even</u> (or <u>also</u>)directly dominated
by S is mutually exclusive with <u>even</u> (or <u>also</u>) directly dominated
by VP or NP. Thus, forms like the following are assumed to be
<u>ill-formed</u>:

(16)   *The flood even even devastated his farm.

(where the first <u>even</u> is assumed to modify the whole sentence
and the second the predicate), and:

(17)   *The flood even destroyed even his farm.

However, as context-free rules, (13) - (15) will produce these
unacceptable forms, and a transformation must therefore be
introduced to filter them out.[5]

It could be maintained that the attachment approach com-
plicates the over-all theoretical scheme of generative grammars
because it introduces transformations like (10), which presumably
change meaning. On the other hand, filtering approach does not
add a new notion because the concept of filtering is needed in
grammars anyway. However, the following may be worth noting
in this regard.

If unacceptable forms like (16) and (17) are formed and
then be filtered out, the filtering procedure has to take place
within the realm of simple sentence formation. But conceptually
(as well as formally, as will be pointed out later) there is a
difference between the filtering of ill-formed complex sentences
and ill-formed simple sentences. Indeed, one of the fundamental
properties of grammars is that the symbol S is the sole recursive
element in the phrase-structural rules, and hence every sentence
is reducible to a certain combination of simple sentences.
Filtering in connection with sentence embedding (i.e., complex
sentence formation) can be regarded as related to this particu-
lar recursive property of language. Vaguely but highly suggestive-
ly, the filtering out of ill-formed complex forms may be regarded
in a sense as a process which selects, out of all possible
free sequences of sentences (that can be considered discourses
in the most extended sense), those that can be combined into

one sentence. Furthermore, the ill-formedness arising from an inappropriate combination of sentences may still, in some sense, be differentiated from the total "chaos" of meaning that exists in cases like (16) and (17). Indeed, at least as far as a generalized base form can be paraphrased by a sequence of simple sentences (let us call this discourse paraphrase), its discourse paraphrase can have a meaning (although the meaning may be anomalous) even if it is ill-formed as a complex sentence. Thus, for example, assume that

(18)   A man whom John knows is standing there.

may be paraphrased by

(19)   A man is standing there.

(20)   John knows that man.

If someone says

(21)   A man is standing there.

(22)   John knows that boy.

it will strike the hearer as strange, but this strangeness is somewhat like the strangeness of, say,

(23)   This round table is square.

Then, in the sense that (23) has a meaning, (21)-(22) may also be considered to have a meaning, and so may the generalized base form:

(24)   A man # John knows that boy # is standing there.

   Sentence (23) may be put in the discourse form:

(25)   This table is round.

(26)   It is square.

Let us compare the anomalous discourses (21)-(22) and (25)-(26).

If language did not possess the syntactic device of relativi-
zation, complex sentences like (18) and (23) with relative
clauses would not obtain, and the ideas expressed by such
sentences would instead be expressed by the compounding of
simple sentences like (19)-(20) and (25)-(26). If that were
the case, any significant difference between the anomaly of
(21)-(22) and that of (25)-(26) might not be detected. Given
the relative transformation, however, the anomaly of (21)-(22)
will be detected syntactically and filtered out, while appar-
ently there is no transformation _fine_ enough to distinguish
anomalous ideas such as expressed in (23).

Let us now look at this more formally. Since not many
syntactic descriptions with an explicit formulation of the
filtering process are available as yet, it is difficult to make
definite statements. Still, it seems reasonable to suppose
that the filtering out of unacceptable forms in sentence
embedding is an automatic result of some general procedures in
accordance with particular types of transformations. Take
for instance the case of the relative clause transformation
as discussed in Chomsky (1965). The phrase:

(27)   the man # the man persuaded John to be examined
        by a specialist#

is well-formed and will be actualized as:

(28)   the man who persuaded John to be examined by a
                                                specialist

But the form:

(29)   the man # the boy persuaded John to be examined
        by a specialist #

is ill-formed and will be filtered out. The relative clause
transformation involves a deletion, and, according to Chomsky,
(29) is blocked because of the general condition that only
recoverable deletion is permitted. Thus the filtering out of
form (29) results automatically from the particular shape of
the relative clause transformation and from a general principle,
and it is not the case that a special filtering procedure must
be formulated as a rule of English grammar. It does not seem
accidental that filtering in connection with the relative
clause transformation is taken care of in a completely general
way; relative clause formation is a very general grammatical
device which probably exists in every language.[6] It is not
immediately clear whether filtering can work in such a general
way with transformations that are less general than relativiza-
tion. At any rate it still seems reasonable to say that filter-
ing is more or less connected with the positive role of trans-
formations in deriving surface forms from well-formed base forms.
With regard to filtering within the realm of simple sentence
formation, e.g., the filtering out of forms like (16) and (17),
the situation seems different. Here it appears that we must
introduce special filtering transformations which have no
positive role at all in deriving the surface forms of sentences.

Thus, it can be seen that conceptually as well as formally
the filtering out of ill-formed simple sentences is quite
different from the filtering out of ill-formed complex sentences.
Consequently, the fact that the notion of filtering is necessary
in connection with complex-sentence formation does not auto-

matically guarantee that it can be used in simple-sentence formation.[7]

3.   Let us now turn our attention to interrogative sentences. There are, currently, two different views about the markers involved in such sentences. One view assumes two markers, Q and WH, while the other assumes only WH. We shall subscribe to the latter view here, but the essential point of our discussion would not be affected should two markers be set up instead of one.

It is quite clear that wh-words require some kind of transformational treatment in the formation of simple sentences. A wh-word can occur in a simple sentence only if that sentence is not a "yes-no" question. Stated more formally, a node labeled NP may dominate what, for example, only if the marker WH does not appear at the head of the sentence. This contextual restriction is similar to that observed for even and also.[8] If there is recourse to a filtering device, NP will first be freely expanded to what, and then a filtering transformation will apply to filter out sentences with occurrences of WH both at their head and internally.

Unlike even and also, wh-words have been much discussed in transformational studies of English. Except for the recent work by Katz-Postal (1964), the positioning of WH in certain noun phrases is dealt with by a singulary transformation.[9] Our intention here is to present a (metagrammatical) justification for the use of a singulary transformation to describe wh-questions.

Let us consider the following wh-question:

(39)   Who bought books?

This is in some sense related to the compounding of so-called "yes-no" questions like:

(40)   Did John buy books?

Let us suppose that we are given a particular discourse context in which, say, three persons, John, Bill, and Tom, are referred to. Put into this context, (39) is paraphrased by the disjunctive sentence:

(41)   Did John buy books, or did Bill buy books, or

did Tom buy books?

then (41) may be transformed into:

(42)   Did John, Bill, or Tom buy books?[10]

For any set of n human nouns N_1, N_2, ..., N_n, we can conceive of a discourse context in which (39) is equivalent to:

(43)   Did N_1 buy books, or did N_2 buy books, ..., or did

N_n buy books?

or to its transform:

(44)   Did N_1, N_2, ..., or N_n buy books?

Similarly, for any set of n nouns N_1', N_2', insofar as their syntactic feature specifications are compatible with the context

(45)   John bought ____ .

we can conceive of a discourse context in which

(46)   What did John buy?

is equivalent to

(47)   Did John buy N_1', or did John buy N_2' ..., or did John

buy N_n'?

or to its transform:

(48)   Did John buy N_1', N_2', ..., or N_n'?

It is probably too much to claim the converse of the above statement in the strict sense, that is, to claim that whenever (39) (or (46)) is uttered we can paraphrase it in that particular context by forms like (43) (or (47)) with an appropriate choice of nouns N_1, ... (or N_1' ...). When one asks a question like (39) or (46), he may not have a _definite_ idea of the possible candidates for the answer. Still, to some extent it can be said that such a question can be approximated by certain disjunctive questions of the type (43) or (47). The fact that one can always surprise a questioner by giving a totally unexpected answer may be indirect evidence that the questioner presupposes the range of possible answers _to some extent_.

In this sense interrogative sentence (39) (or (46)) stands in a special relation, with respect to paraphrasability, to the set of disjunctive questions like (43) (or (47)).

The basic representation of the interrogative sentence (40) is taken to be:

(49)   WH John bought books.

Then the disjunctive questions (43) and (47) will have the basic forms:

(50)   WH N_1 bought books, or WH N_2 bought books,

        ... or WH N_n bought books.

(51)   WH John bought N_1' or WH John bought N_2' .. or WH John bought N_n'.

These forms will be transformed into:

(52)   WH (N_1, N_2, ..., or N_n) bought books.

(53)   WH John bought (N_1', N_2', ..., or N_n').

which are intermediate underlying forms of (44) and (48).
On the other hand, the generative explanation of (39) and (46)
is as follows. The basic forms are:[11]

    (54)   WH someone bought books.

    (55)   WH John bought something.

Then WH is adjoined to someone and something, respectively,
to give

    (56)   WH+someone bought books.

    (57)   John bought WH+something.

from which (39) and (46) will be derived. But note now the
formal similarity between the schemata (52) and (53) and the
basic forms (54) and (55). Indeed it is rather clear that
(54) and (55) (or, more specifically, someone and something)
are the most appropriate forms to represent the schemata (52)
and (53) (or the subschemata (N_1, N_2, ..., or N_n) and (N_1',
N_2', ..., or N_n')) within the finitary mechanism of syntax.
Thus we may have as a syntactic rule:[12]

    (58) $\text{WH X some} \begin{Bmatrix} \text{one} \\ \text{thing} \end{Bmatrix} \text{Y} \rightarrow \text{X WH some} \begin{Bmatrix} \text{one} \\ \text{thing} \end{Bmatrix} \text{Y}$

Let us now put together the observations made here and
in the preceding section. On the one hand, the discussion in
section 2 indicates that transformations related to complex-
sentence formation can be regarded in a natural way as filters
which separate certain anomalous meanings from other meanings
(which can be anomalous like (23), however.) But the applica-
tion of filtering in simple-sentence formation is not com-
patible with this natural interpretation of transformations
as filters. Indeed, with regard to interrogative sentences,
it would be necessary somehow to filter out forms like:

(59)   WH who saw Bill?

which, like (17) and (18), seem to represent complete semantic

chaos.[13] On the other hand, it was shown in this section that

an approach which is essentially faithful to the original

formulation of transformational theory can also be given a very

natural (metagrammatical) interpretation. Thus, this attach-

ment approach would seem to be better justified than the filter

approach.

　　　Finally, to explain sentences such as:

(60)   Who bought what?

We assume here that WH can be attached more than once. Thus,

rule (58) is revised as follows:

(61)   WH X some$\left\{\begin{matrix}\text{one}\\\text{thing}\end{matrix}\right\}$Y $\longrightarrow$ WH X　WH some$\left\{\begin{matrix}\text{one}\\\text{thing}\end{matrix}\right\}$Y

This formulation implies that if X or Y contains some, WH is

still available for attachment to it by the same rule. To

remove the sentence-initial WH, one more rule is needed:[14]

(62)   WH X $\longrightarrow$ X   if X contains WH

In appropriate contexts (60) may be paraphrased by

(63)   Did John buy books or did John buy magazines

　　　　　or did Bill buy books or did Bill buy magazines?

This sentence can obviously be generalized by a schema con-

taining an arbitrary number of human nouns and an arbitrary

number of nonhuman nouns.

4.   Note now the formal similarity between rule (10) and

rule (58). Once (58) or (61) is introduced into the grammar

as a rule, there seems to be no formal reason for not intro-

ducing (10) as well. But one must ask whether (10) has some

substantial justification of its own. Furthermore, in this

case we must consider the unspecified compounding approach
as well as the filtering approach in our justification of rule
(10) and the attachment approach it implies.

If we examine closely what it is that the unspecified
approach seems to express, it turns out that rule (10) has
the same kind of justification as rule (58). Consider first
the sentence:

(64)   Even John bought books.

It is assumed that this sentence implies the existence of some
other sentence(s) with which it is put in contrast. According
to the unspecified compounding approach, this other form would be
represented by an unspecified sentence, NP bought books. The
precise meaning of "unspecified" here is not immediately clear.
However, one may certainly say that someone (something) in rule
(58) represents in some sense an unspecified noun (actually
the unspecified noun phrase NP has also been used in the
formulation of the wh-question transformation), and may
recall the role of someone (something) in the discussion justi-
fying rule (58). Then, one may note that in appropriate con-
texts what seems to be meant by:

(65)   NP bought books and even John bought books.

is paraphrased by:

(66)   Bill bought books and even John bought books.

It was mentioned previously that in the basic representations,
even is assumed to be attached to the whole sentence. Thus,
the basic form for (66) is

(67)   Bill bought books and even $(\text{John})_{NP}(\text{bought books})_{VP}$.

Since (65) is assumed to appear as (64), it follows that (64)
is assumed to be synonymous with (67) in appropriate contexts.
As before, the number of nouns need not be two, and appropriate
contexts may be conceived of in which (64) is synonymous with:

(68) N_1 bought books, N_2 bought books, ..., N_{n-1}

bought books, and even (John)$_{NP}$ (bought books)$_{VP}$.

where N_1, N_2, ..., N_{n-1} are n-1 arbitrary human nouns. Con-
sequently, just as (39) stands in a special relation to schema
(43) with respect to paraphrasability, so does (64) with schema
(68). Now the transformation which is similar to (9) but
extended to n terms will transform (68) into

(69) N_1 bought books, N_2 bought books, ..., N_{n-1}

bought books, and (even John)$_{NP}$ bought books.

Furthermore, as schema (44) was derived from schema (43), the
following schema may be derived from (68):

(70)   (N_1, N_2, ..., N_{n-1} and even John)$_{NP}$ bought books.

In the case of the wh-question, the subschema N_1, N_2, ...,
N_{n-1}, or $N_{\bar{n}}$ was replaced by someone, and (56) was taken as a
syntactic expression of schema (44). But in the present case
there is no need for the intervention of neutral forms such
as someone, since the form even John is sufficient to represent
the subschema N_1, N_2, ..., N_{n-1}, and even John. The operation
of the adjunction of even represents, as does the operation of
the adjunction of WH, the structuring in the unspecified
compounding. The same argument holds for the word also. Thus, if
(58) is admitted as a syntactic rule, (10) can be admitted on
the same grounds. Under this interpretation, (10) is as informa-
tive as (or more informative than) (9) used with the first

component unspecified and appears formally simpler.[15]

Rules like (10) and (58) will be called attachment trans-
formations. Formally and substantially they are characterized
as follows. Formally they have one of the following forms:

(71)   Left-sided noniterative

         M X C Y → X M+C Y

(72)   Left-sided iterative

         M X C Y → M X M+C Y

(73)   Right-sided noniterative

         X C Y M → X C+M Y

(74)   Right-sided iterative

         X C Y M → X C+M Y M

Here C denotes certain constituents or morphemes to be specified
in each rule. An iterative attachment is generally to be ac-
companied by a deletional transformation of the form:

(75)   M X M+C Y → X M+C Y

or

(76)   X C+M Y M → X C+M Y

Substantially, an attachment transformation is assumed to be
given a metagrammatical interpretation similar to that given
to (10) and (58). It stands in a special relation, with respect
to paraphrasability, to a particular schema of sentence com-
pounding. The attachment transformation itself will not estab-
lish within the grammar a paraphrase relationship between the
sentence S to be generated by it and certain definite compound
sentences. But S is assumed to be paraphrased by each realiza-
tion of the schema in appropriate contexts. The operation
of the adjunction of M to C reflects a particular structuring
in the sentence compounding which makes the constituent C
distinguished.[16]

FOOTNOTES

[1]According to one informat, the discourse (1.a)-(1.b) is well-formed, but combining the two sentences into one by means of _and_ results in an unnatural form:

> The storm destroyed his house and the flood even
>
> devastated his farm.

Another informant accepted (1.a)-(1.b) only after some hesitation. Thus it is expected that some readers may disagree as to the acceptability of this discourse. However, grammaticality encompasses more than just "good" speech, and with this in mind perhaps even doubtful readers can judge the discourse as well-formed. The author, as a nonnative speaker of English, cannot dispute the judgement of a native speaker about the grammaticality of English forms. Those who cannot at all accept (1.a)-(1.b) as a discourse are simply asked to follow our discussion with the assumption that it is acceptable. The importance of the argument that follows lies in certain of its general theoretical aspects and not in its syntactic interpretation of a particular English construction. Even if (1.a)-(1.b) is not acceptable, it is believed that the English word _even_ can still be treated along the lines sketched below with some modification.

[2](6.2) may not be completely natural, and one might instead say:

> It (the storm) destroyed his farm also.

But whether <u>also</u> precedes or follows <u>his farm</u> is not essential for our discussion; this is rather a morphophonemic problem to be considered independently.

[3]The following convention will be established for the plus sign used in connection with an adjunction transformation: when an element E is adjoined to a certain constituent, say, for example, NP, from the left (or from the right), E+NP (or NP+E) indicates that E becomes the left-most (or right-most) constituent directly dominated by NP.

[4]This is not the only phrase-structure rule for sentences containing <u>even</u> or <u>also</u> in the unspecified compounding approach. For example one might have the rule:

$$\text{Sen} \longrightarrow \text{S} \quad (\begin{Bmatrix} \text{even} \\ \text{also} \end{Bmatrix}) \quad \text{NP VP}$$

This fact does not change the main point of our discussion. Incidentally, so long as it is considered that generative grammar must concern itself with explicitly paired discourses like (1) – (6), rule (12) is also needed in the attachment approach to generate the form S $\begin{Bmatrix} \text{even} \\ \text{also} \end{Bmatrix}$ S but not * $\begin{Bmatrix} \text{even} \\ \text{also} \end{Bmatrix}$ S S.

[5]Technically speaking it is certainly possible to formulate a set of phrase-structural rules that will generate only grammatical forms. It seems obvious, however, that the restriction on <u>even</u> and <u>also</u> is transformational, and that an attempt to account for it within the phrase structure would simply miss this linguistically significant fact.

[6]Recently E. Bach (1965) made an interesting remark on this point.

[7]Insofar as it is considered to filter out ill-formed complex sentences, the filtering function of the transformational component has always been implicit in transformational theory in the selection of permissible transformational markers (cf. Chomsky (1965)). Explicit recognition of the filtering function is quite important, however, in that it allows the structural conditions, formerly fully stated in each transformation, to be captured in more general terms and to be reduced, in the most favorable cases, to universal properties of the particular elementary transformations involved. (Cf. the above discussion of relativization taken from Chomsky (1965)) Thus, making the filtering function explicit can serve to simplify the grammar of a language considerably without essentially changing its theoretical basis. On the other hand, the implications involved in introducing transformations that serve only to filter out certain ill-formed simple sentences cannot be understood merely as a clarification of the earlier theory.

[8]It should be noted that wh-words can appear more than once in a sentence:

Who bought what?

while also or even cannot:

*Even John bought even books.

*Also John bought also books.

We shall return to this point later. In the meantime, to simplify our discussion, we shall restrict ourselves to sentences with at most one wh-word.

[9]Chomsky (1957), Lees (1962), Klima (1964). For a comparison of the treatment in these works, see in particular Klima (1964), footnote 6, and Katz-Postal (1964), chapter 4, note 10.

[10]This surface form is, except for intonation, homophonous with the "yes-no" question related to the disjunctive sentence:

John bought books or Bill bought books or Tom

bought books.
or
John, Bill, or Tom bought books.

(41) and (42) should not be confused with the "yes-no" question here.

[11]Those basic forms are suggested in Klima (1964), fn. 6.

[12]This rule will be reformulated below to take care of sentences with more than one wh-word, as in footnote 8.

[13]It might be thought that (59) could be considered the basic form of the echo question:

(A)   Did who see Bill? (echo question)

which could be a response to, for example:

(B)   Did John see Bill?

However, one can also think of an echo question as a reaction to an affirmative sentence:

(C)   John saw Bill.

(D)   Who saw Bill? (echo question)

Question (D) is different from both (A) and the wh-question:

(E)   Who saw Bill? (wh-question)

This seems to indicate the difficulty involved in dealing with echo questions solely with the marker WH and taking (59) to be

the basic form for (A). At present, however, we are not proposing any particular method for treating the echo question.

[14]Apparently this deletional rule may have to be combined with the familiar rule for the deletion of WH in "yes-no" questions. We will not be concerned with this problem here.

[15]The relation between rules (9) and (10) may need a further comment. Rule (10) was introduced to generate independent sentences with even or also. Rule (9) is still needed, as long as discourses like (1) - (6) are assumed to be within the range of generative grammars. More generally, for each $n > 1$, a version of rule (9) extended to n terms is to be assumed, as well as a shortening rule to derive forms like (70) from forms like (69). Just how such a schema of rules should be incorporated into the grammar is as yet not clear. At any rate, rule (10) should not be confused with a schema of rules; any rule, or combination of rules, of the schema of rules like (9) and the shortening rules cannot generate sentences like (64). The relation between rule (10) and this schema of rules parallels the relation between rule (58) and the schema of rules that derives forms like (44) or (48) from forms like (43) or (47); each rule of the schema is needed to generate a sentence like (42), but none can generate (39).

[16]Theoretically the formal condition above is arbitrary in the following sense. One could conceive of a language in which, for example, the wh-question is formed by repeating the indefinite determiner some. Thus, instead of

Who bought books?

we would have

Some-someone bought books?

The wh-rule would then take the form of reduplication instead
of adjunction:

$$\text{WH} \quad \text{X some} \left\{ \begin{array}{l} \text{one} \\ \text{thing} \end{array} \right\} \text{Y} \rightarrow \text{X some-some} \left\{ \begin{array}{l} \text{one} \\ \text{thing} \end{array} \right\} \text{Y}$$

There would then be no reason for admitting (58), but not this
reduplicative rule, as a syntactic rule.

CHAPTER II   <u>wa</u>

1.   In Japanese there are two particles <u>wa</u> and <u>ga</u> that

are often understood to denote the subject of the sentence.

In general, an English sentence seems to be translatable into

Japanese in two different ways, attaching one or the other

of these particles to the Japanese noun that translates the

original English subject. Thus:

    (1)   John bought books.

may be translated either as:

    (2)   John-wa hon-o kat-ta.

                book buy

or as

    (3)   John-ga hon-ə kat-ta

However, this does not mean that these two Japanese sentences are

synonymous. The native speaker clearly differentiates between

them, intuitively if not consciously, and does not fail to

use the right one in the right context. Hence we must first

clarify the semantic difference between constructions with <u>wa</u>,

as in (2), and those with <u>ga</u>, as in (3), and then determine

their syntactic structures. Toward this end we shall examine

the notion of subject and shall have to depart from its tra-

ditional interpretation in Western grammatical thinking.

Even in English the notion of subject is by no means clear, and there has much been discussion about the distinction between logical and grammatical subjects. This traditional problem has been carried over to transformational theory in terms of the distinction between the underlying and derived (or surface) subjects. However, the problem we are now going to concern ourselves with is a different one. We can restrict ourselves to cases where the notion of subject seems quite clear, as in sentence (1), and still be able to discuss our problem. Accordingly, it will be assumed in this chapter that the notion of subject is well established in English grammar.

In the Western grammatical tradition, the sentence is regarded as the linguistic expression of logical judgment. To quote a passage from Port-Royal's logic:

> Once we have formed ideas of things, we compare the ideas. We unite those which belong together by affirming one idea of another; we separate those which do not belong together by denying one idea of another. To judge is to affirm or to deny.
>
> The product of judging is expressed by a sentence which must contain two terms -- the one term is the subject, which expresses the idea of which we affirm or deny another idea; the second term is the predicate, which expresses the idea which is affirmed or denied of the idea expressed by the subject.

In judging, the mind not only conceives two ideas but also unites or separates them. The result of this activity of the mind is a proposition expressed by a sentence in which the verb 'is' either alone or with a negative particle connects the terms that express the ideas that are affirmed or denied. When I say 'God is just,' the idea of God is joined to the idea of just; and this idea is the attribute of the proposition expressed by the sentence. The word 'is' indicates my joining the idea of God with the idea of just. If we say 'God is not unjust', 'is not' indicates my separating the idea of God from the idea of unjust. I separate the two ideas because there is something in the idea of unjust which is contrary to the idea of God.

Although every proposition is necessarily composed of three elements - the subject-idea, the attribute, and the joining of these two ideas -- a proposition may, nonetheless, be expressed by two words, or even by one word, as we explained in the preceding chapter.

Men, to shorten their discourse, use words which express the attribute of a proposition and at the same time indicate assertion. All verbs except the copulative verb have this dual function -- 'God exists' means that God is existing; 'God loves mankind' means that God is a lover of mankind. Even the 'copulative' verb in expressions such as 'I think, therefore I am' has this dual function; for in such an expression the most general of attributes--the attribute of being--is understood.

Hence, 'I am' means the same as 'I am being'. (Arnauld
(1662) pp. 108-9)

This is a typical statement identifying the grammatical
notion of sentence with the logical notion of judgment and
predication. (Imperative and optative sentences may be
excluded here, of course, but for our purpose we need only
concern ourselves with typical declarative sentences.) It is
maintained here, however, that not every sentence can be
interpreted logically as a predication; the sentence may not
necessarily be a predication but rather a statement or descrip-
tion of a fact or situation.

It is first necessary to clarify the notion of judgment
assumed here. Two or three different kinds of judgment must
be distinguished, but at this point we shall concentrate on
one, which we shall call predication and which consists of a
premise and a conclusion, of the form:

(4)   If X is A, then X is B (is true).

In language this judgment appears in the form:

(5)   A is B.

or, more generally, as stated in Port-Royal's logic, a verb
plays the dual role of is and B above and the judgment may
appear in the form:

(6)   A B.

where A is the subject and B the predicate of a sentence in the
traditional sense. For example, the sentence quoted in the
above passage:

(7)　　　God is just.

may perhaps be reformulated in the form of (4) as:[1]

(8)　　　If something (or someone) is God, It (or He) is just.

Similarly,

(9)　　　God loves mankind.

may be reformulated as:

(10)　　　If something (or someone) is God, It (or He) loves mankind.

Thus, we may say that when the sentence is predicational, its subject is taken as the premise of the predication.

The claim made here is that a sentence does not necessarily represent a predication in the above sense but may be merely a description of a fact or situation. In such a sentence, which we shall call a nonpredicational description or simply a description,[2] the subject can be considered neither the premise of some judgment nor something about which a predication is made. Rather, the subject of the sentence is nothing more than an item which stands in a particular relation to the verb of the sentence, just as the object, if the sentence has one is an item which stands in a particular relation to the verb. It is problematic whether one can describe this particular relation of the subject to the verb as the "actor" of the "action." But if, for now, we avail ourselves of this interpretation, then we may say that the subject denotes the actor in both a predication and a nonpredicational description; but when the sentence is a predication, the role of the logical premise is superimposed on the role of the actor of the action.

In English there is no grammatical device to differentiate predicational judgments from nonpredicational descriptions. This distinction does cast a shadow on the grammatical sphere to some extent, but recognition of it must generally be made in semantic terms. It is maintained here that in Japanese, on the other hand, the distinction is grammatically realized through the use of the two particles _wa_ and _ga_.

2.   We shall first discuss this problem with reference to English. Let us assume that someone sees a man standing at the corner of a street and says:

(11)   A man is standing at the corner of the street.

Sentence (11) is not a predication but merely a description of a scene, that is, it is a nonpredicational description. In other words, this sentence is not a predication about a man, but a man is involved in the sentence merely as an item in the scene which has a particular relation, the grammatical relation of subject, to the verb stand. We cannot paraphrase sentence (11) by some form like:

(12)   If someone is a man, he is standing at the corner
        of the street.

where a man corresponds to the logical premise of a predication. Perhaps a more convincing, but basically similar, example is:

(13)   Two men are standing at the corner of the street.

Again, this is not a predication about two men.

(14)   Two men are drinking water.

This sentence is neither a predication attributing to two men the property of drinking water nor a predication attributing

to water the property of being drunk. In this sense, from the logical viewpoint, a man does not play any special role not played by water. It is assumed here, then, that the utterance of such sentences as (11), (13), and (14) is very much like the utterance of so-called one-word sentences like:

(15)   Dog!

These are all descriptions of a situation. The difference lies in the fact that there is more involved in the situations described in the former case than in the latter so that the descriptions take the form of full sentences. But it is not unreasonable to think of the following nominal expressions as being fairly close to (11), (13), and (14):

(16)   A man standing at the corner of the street!

(17)   Two men standing at the corner of the street!

(18)   Two men drinking water!

On the other hand, if another person, upon hearing (11), responds with:

(19)   No, that man is not standing,

(20)   but (he is) sitting on a chair.

sentences (19) and (20) are then predicational, with that man as the premise. These sentences express the judgment of the speaker that the attribute of sitting on a chair is to be ascribed to that man rather than the attribute of standing. Conceivably, instead of (19) and (20) one may say:

(21)   If you mean that man, he is not standing but sitting on a chair.

This would be the conversational equivalent of expressing (19) and (20) in the predication form represented by (4).

It may be further noted that the nominal form:

(22)   That man not standing but sitting on a chair.

cannot in any sense replace the predicational sentences (19)

and (20).

Indefinite noun phrases are the subjects of sentences

(11), (13), and (14) while definite noun phrases are the subjects

in (19) and (20). An indefinite noun phrase may be specific

or nonspecific; those in the above examples are specific.

In other words, the indefinite noun phrases in (11), (13) and

(14) have specific referents. We will now maintain that a

specific indefinite noun (phrase) cannot be the subject of a

predicational sentence; we cannot attribute a property to

something referred to in an indefinite way. In other words, a

predication requires an item that is linguistically or extralin-

guistically (i.e., anaphorically or independently)definite.[3]

This does not mean, conversely, that a definite noun cannot be

the subject of a nonpredicational description; furthermore,

an indefinite noun that is not specific can be the subject of a

predicational sentence. Before examining these cases, we shall

make two additional remarks.

First, such sentences as:

(23)   A big man is standing at the corner of the street.

may at first be taken as exceptions to the claim that a specific

indefinite noun cannot be the subject of a predicational sen-

tence, since here the property of bigness is attributed to the

specific indefinite noun man. However, the underlying form of the

complex sentence (23) can be taken to be:

(24)   A man # WH that man is big # is standing at the

corner of the street

Thus, the predication is actually made on the definite noun
that man, although on the surface level the definiteness marker
is not obvious. For a justification of the underlying form
(24), see Kuroda (unpublished b).

Second, it is observed that the sentence:

(25)   *A man is intelligent.

does not sound natural. Indeed, if (25) is to be taken to be
a predicational judgment, then the subject a man has to be
generic, and the judgment is semantically anomalous. On the
other hand, the adjective intelligent represents a constant
and inherent quality of a person, so that a person's being
intelligent cannot be considered an event or a situation.

(26)   An intelligent man!

which may be taken to be similar to a descriptive sentence,
contains a subordination and, as pointed out above, the
predication is made on a definite noun inside the subordinate
sentence:

(27)   A man # WH that man is intelligent

The unnaturalness of forms like (25) generally holds for
adjectives that denote certain constant or inherent qualities
of a man or a thing. But some adjectives may denote something more or
less transient in nature, such as sick and sleepy. In this
case expressions like (25) may be acceptable under certain
circumstances.[4] The comments made in this paragraph are also
generally applicable to Japanese, as will be seen below.

Let us now return to our main discussion. In (19) and
(20), definite nouns are the subjects of predication. However,
since English has no grammatical device to differentiate between
predications and nonpredicational descriptions, the same form
can be read as a predication and as a nonpredicational
description. This ambiguity can be dealt with semantically,
but not syntactically, in English grammar. But the problems
of English grammar are not the main concern here, and we are
interested merely in giving some English examples that relate
to our discussion.

If the person who was to utter sentence (11) recognized
that a man standing at the corner of the street was John, he
would have said:

(28)   John is standing at the corner of the street.
Thus the discourse environment of (11) and (28) is the same
except for the interchange of John and a man, and (28) should
be a description of situation and nonpredicational if (11) is
so. It is reasonable to assume that (28) can be replaced in
some sense by the nominal expression:

(29)   John standing at the corner of the street!
It is obvious, on the other hand, that (28) can also be a
predication.

We said that an indefinite noun which is specific cannot
be the subject of predication. But if it is nonspecific, it can
be, in which case the predication is a so-called generic sentence.
Thus,

(30)   A man is mortal.

is predicational. This is the same as saying

(31)   If something is a man, it is mortal.

A nonspecific indefinite noun plays the role of a logical variable. Besides nonspecific indefinite nouns, nouns with a so-called determiner such as every, some, or any may also play the same role. (Of course some may be used specifically, that is, as a plural form of the specific indefinite article a.) Nouns that behave like a logical variable will be called indeterminate. The range of an indeterminate noun as a logical variable is specified by a modifier of the noun. Thus, in:

(32)   Every man in this room speaks English.

the modifier in this room specifies the range of the logical variable. More precisely, an indeterminate noun phrase is an amalgam of the logical notions of the logical variable, its range, and the logical quantifier that binds the variable.

Some and the numerals imply the presence of the existential quantifier. Thus, there are existential statements such as:

(33)   Some men in this room speak English.

(34)   Two men in this room speak English.

These existential statements are not descriptions, and we would certainly like to regard them also as judgments, although they do not quite fit the model form of (4). Logical paraphrases of (33) and (34) would be:

(35)   There exist in this room some men who speak English.

(36)   There exist in this room two men who speak English.

Thus, we can add to (4) another model form of judgments:

(37)   There exists A such that A is B.

In language this form of existential judgment is generally

expressed as

(38)   A is B.

or

(39)   A B.

where A is an indeterminate noun phrase with the determiner corresponding to the existential quantifier; then A is taken as the subject of the sentence.

To summarize what has been said, a definite noun may be the subject of either a predication or a nonpredicational description; the indefinite specific noun can be the subject only of a nonpredicational description; the indeterminate noun can be the subject only of an existential or predicational judgment.

As already mentioned, the distinction between predication and description is not directly realized in English by a syntactic device, which generally results in semantic ambiguity in sentences with a definite noun as the subject. However, it can be seen from the discussion so far that this distinction is interdependent with many syntactic features. The summary in the preceding paragraph provides an example of this, as does the remark made above about adjectival sentences. There are other observations of this sort that can be made.

First, there is certainly some correlation between predication and sentences with the main verb in the present (not present progressive); that is, such sentences are predominantly predicational. The case of adjectival sentences mentioned above may be regarded as a special instance of this more general case. A more refined syntactic characterization

of this correlation would be an interesting topic, but it is beyond our area of interest here.

Secondly, sentence negation seems, in general, possible with judgments but not with nonpredicational descriptions. Seeing a man who is sitting on a chair, one would not say:

(40)   *A man is not standing.

But whether the sentence

(41)   No man is standing there.

should be taken as a nonpredicational statement or as some sort of judgment is not clear. Actually, the corresponding positive sentence:

(42)   Some men are standing there.

may be either a nonpredicational description (with an indefinite plural noun phrase some men) or an existential judgment (with an indeterminate noun phrase some men). It is worth noting, however, that the negation (41) of (42) does not apparently take the form of sentence negation.

3.   Let us now turn our attention to Japanese. The following are sentences that translate various English sentences given previously:

(43)   kami-wa koosei-de ar-u.

         God   just   is

         God is just   (=7)

(44)   kami-wa zinrui-o ai-su-ru.

         God   mankind   love

         God loves mankind.   (=9)

(45)   hito-ga macikado-ni tat-te i-ru.

         man   street-corner stand

         A man is standing at the corner of the street. (=11).

(46)   hito-ga hutari macikado-ni tat-te i-ru.

         man   two   street-corner stand

         Two men are standing at the corner of the street. (=13)

(47)   hito-ga hutari mizu-o non-de i-ru.

         man   two   water drink

         Two men are drinking water.   (=14)

(48)   iya, ano hito-wa tat-te i-na-i.

         no, that man   stand   not

         No, that man is not standing.   (=19)

(49)   ano hito-wa isu-ni suwat-te i-ru.

         that man   chair sit

         That man is sitting on a chair.   (=20)

It can be immediately observed from these sentences that the English subject of a predication is translated in Japanese with a wa-phrase, while the subject of a nonpredicational description appears as a ga-phrase. Thus, this distinction, which is semantic in English, is reflected syntactically in Japanese by a distinction between the wa-phrase and ga-phrase. Accordingly, sentence (28), which semantically can be interpreted in two ways, as predication and as nonpredicational description, has two different equivalents in Japanese:

(50)   John-wa macikado-ni tat-te i-ru.

         John is standing at the corner of the street. (=28)

(51)   John-ga macikado-ni tat-te i-ru.

         John is standing at the corner of the street. (=28)

This observation does not completely explain the use of <u>wa</u>- and <u>ga</u>-phrases, however. We shall refine our description of these phrases by continuing to consider the Japanese equivalents of English forms used above.

Form (25) was said to be ungrammatical. Similarly, in Japanese, we cannot say:

(52)   *hito-ga rikoo-da.

man   intelligent

*A man is intelligent.   (=25)

Let us take another example:

(53)   *hito-ga byooki-da.

man   sick

A man is sick.

This form does not sound quite natural, either. To clarify the point further, let us suppose that someone sees a man lying down. He may describe the situation by saying:

(54)   hito-ga taore-te i-ru.

man   lie

A man is lying down.

and may then make a judgment:

(55)   ano-hito-wa byooki-da.

that man   sick

That man is sick.

Or, the judgment and a description can be combined:

(56)   byooki-no hito-ga taore-te i-ru.

sick   man   lie down

A sick man is lying down.

However, a description such as (53) is not possible:[5]

Now if, on the one hand, use of the ga-phrase is restricted to nonpredicational descriptions and, on the other hand, use of the copulative expression byooki-da is restricted to predications, then it should follow that the ga-phrase can never be the subject of the predicate byooki-da. But this is not true, as seen below:

(57)　ano-hito-ga byooki-da.

　　　 that man　　sick

　　　 That man is sick.

(58)　John-ga byooki-da.

　　　 John is sick.

The English translations of (57) and (58) do not really help to clarify the meaning of these two sentences. The two English sentences are more naturally taken to be translations of:

(59)　ano-hito-wa byooki-da.

　　　 That man is sick.

(60)　John-wa byooki-da.

　　　 John is sick.

which represent the familiar type of predication. But sentences (57) and (58) are not descriptions either; seeing John lying on a bed, one would say:

(61)　a, John-ga biyooki-de ne-te i-ru.

　　　　　　　　　　　　　　　　 sleep (lie)

　　　 Oh, John is lying sick (on the bed).

but not:

(62)　a, John-ga byooki-da.

　　　 Oh, John is sick.

The difference between the kind of judgment represented
by (57) and (58) and that represented by (59) and (60) lies
in the fact that (57) and (58) mean not only that <u>that man</u>
<u>is sick</u> and <u>John is sick</u> in the usual reading of these English
sentences, but also, conversely, <u>the sick one is that man</u> and
<u>the sick one is John</u>. Sentences (57) and (58) characterize
<u>that man</u> and <u>John</u> by the property of sickness, rather than
just attributing that property to them. This characterization
is, of course, made within some <u>relativized universe</u>. In the
actual discourse the universe is explicitly or implicitly
delimited, so that the characterization takes place within
those limits (which may be vacuous, i.e., the relativized
universe may coincide with the whole universe). Let us give
an example. Assume that a doctor is called, and when he comes
he finds three people, <u>John</u>, <u>Bill</u>, and <u>Tom</u> lying in bed. He
then wants to know which one of them is sick. When his
question is answered, the relativized universe includes only
the three people in bed. If the answer is (58), then <u>John</u>,
but neither <u>Bill</u> nor <u>Tom</u>, is sick. If, on the contrary, <u>John</u>
and <u>Bill</u> are sick, but not <u>Tom</u>, the answer should be:

   (63)   John-to Bill-ga byooki-da.

       <u>John and Bill</u> are sick.

On the other hand, if the doctor is given (60) as an answer,
then he knows that <u>John</u> is sick, but he gets no information
about the other two.

   The following two sentences can replace (58) and (63),
respectively:

(64)   byooki-na-no-wa John-da.

The one who is sick is John.

(65)   byooki-na-no-wa John-to Bill-da.

Those who are sick are John and Bill.

These forms can be considered as derived from (58) and (63) by a transformation, but we will not discuss that transformation here.

As an another example one may say:

(66)   ningen-ga hane-no-na-i ninon-asi-no doobucu-da.

man   feather-not two-leg   animal

A man is a featherless biped.

characterizing human beings by that property. In this case one may say that the relativized universe of the characterization coincides with the whole universe, and in this sense (66) may be taken as a generic statement.

4.   Thus, there is a third kind of judgment, which we shall call characterization. The wa-phrase and ga-phrase serve syntactically to distinguish predicational judgment not only from nonpredicational description but also from characterizational judgment. In English stress may be used to indicate a characterizational judgment; in the English translations of (57), (58), and (63), stressing the underlined words may make the sentences characterizations. But the semantic effects of stress are varied and vague, and one would hesitate to say that in English characterizational judgments are separated from predicational judgments syntactically by means of stress. It is not clear that if John and Bill are both sick, the answer:

(67)   John is sick.

with stress on John, is necessarily a wrong answer, while
in Japanese the characterizational judgment (58) is clearly
wrong in this situation. It therefore seems best to say that
in English a characterizational judgment is a possible special
reading of a sentence which generally represents a predicational
judgment.

It is important to add that a characterization, either
specific or generic, seems to presuppose a linguistic or extra-
linguistic context. Most explicitly this context is expressed
by an interrogative sentence to which the characterization is
an answer. Thus,

(68)   dare-ga byooki-ka?

Who is sick?
and
(69)   nani-ga hane-no-na-i nihon-asi-no doobucu-ka?

What is a featherless biped?

would provide such a context for characterizations (58) and
(66), respectively. Thus, although it is a generic statement,
characterization (66) is difficult to conceive of as an isolated
discourse, while the generic sentence:

(70)   ningen-wa hane-no-na-i nihon-asi-no doobucu-da.

A man is a featherless biped.

does not sound unnatural even in complete isolation.

The characterizational judgment is distinguished from
the predicational judgment by means of the ga-phrase, but it
is then confused syntactically with the nonpredicational des-
cription, which is also represented by the ga=phrase. It is
claimed here that actually the distinction between a character-

ization and a description in Japanese is not syntactic but
semantic. That is, a sentence with a ga-phrase as the subject
is, in general, semantically ambiguous. However, as is often
the case with distinctive notions in semantics, while there are
certainly cases in which the distinction is clear, there are also
borderline cases in which the notions of characterization and
description seem to fuse. In the most typical case, the
description seems to presuppose a physical context, which is
the object of the description. However, this physical context
may well be confused with a mental context, which would be the
context of a characterizational judgment. In particular, when
the tense of the sentence is past, the physical context is
actually set up only as a mental image. Thus, given the sentence:

(71)   John-ga kinoo maci-kado-ni tat-te i-ta.

         John was standing at the corner of the street

                                                    yesterday.

one may argue as to whether this is meant to be a description
or a characterization of John with respect to a suitably delimited
universe. But from a syntactic viewpoint this confusion in
semantics is not a crucial problem; rather, it helps us to
understand why the syntactic line is drawn between predicational
judgment and characterizational judgment rather than between
characterizational judgment and nonpredicational description.

Special syntactic contexts may of course disambiguate the
semantic ambiguity. Thus, it is reasonable to view copulative
or adjectival sentences such as (58) as judgments just as (60) is.

Indeed, copulative sentences are in general judgments, whether predicational as in (60) or characterizational as in (58). However, there are apparent exceptions to this. For instance, seeing the sky redden with an evening glow, one may say:

(72)   sora-ga aka-i

         sky   red

         The sky is red.

This would not be considered a characterization of the sky in some relativized universe; it should, rather, be thought of as a description of a situation, if a choice between the two must be made. Probably a description is possible with the noun <u>sky</u> and the adjective <u>red</u> because one understands that color with respect to the sky is a changing condition. It is assumed, however, that no nonspecific indefinite noun can be the subject of any adjectival or copulative sentence.[6]

5.   It was stated above that in English a nonpredicational description cannot undergo sentence negation, and there is no description like:

(73)   *A man is not standing.

Similarly, seeing a man sitting on a chair, one cannot say:

(74)   *hito-ga tat-te i-na-i.

         man   stand   not

         *Man is not standing.

This does not imply that a sentence with a <u>ga</u>-phrase subject cannot be negative. Thus, if someone asks who is not coming to a party, the following is a possible answer:

(75)   John-ga ko-na-i.

              come-not

         John is not coming.

Strictly this answer implies that John, and only John, is not

coming; it is a negative characterizational judgment. However,

it is difficult to interpret every negative sentence with a

ga-phrase subject as a characterization. Assume that we are

going to see John, who is supposed to be sick in bed, and that

upon entering his room we find, to our surprise, that his bed

is empty. We would then say:

(76)   a, John-ga ne-te i-na-i.

oh,   sleep (lie) not

Oh, John is not in bed.

In some sense this is not strictly descriptive, since, when

the sentence is uttered, the image of John lying in bed has

already been prepared in the speaker's mind. It can be said

that (76) presumes a relativized universe including only John.

This is different from the situation in which one finds John

standing at the corner of the street and describes the scene with

sentence (51). However, (75) can be replaced by:

(77)   ko-na-i-no-wa John- da.

The one who will not come is John.

while (76) cannot be replaced by:

(78)   ne-te i-na-i-no-wa John-da.

The one who is in bed is John.

Accordingly, it would seem better to regard (76) as a description

rather than a characterization. (However, sentence (76),

disregarding the initial interjection, could be a characteriza-

tion, and form (78) itself is grammatical.) It is suspected,

however, that no specific indefinite noun can be the subject

of a negative description nor the subject of a judgment; if a

negative sentence has a <u>ga</u>-phrase as the subject, the subject
is probably either definite or nonspecific. It is assumed that
the above observation also holds in English, so that while
(73) is not grammatical, one may say

   (79) Look, John is not standing there!

 If the subject of a sentence is understood to be generic,
the sentence is a judgment, not a description. Form (66) is
an example of a generic characterizational judgment, and (70)
is an example of a generic predicational judgment. Since in
Japanese the distinction between definiteness and indefinite-
ness is not necessarily made syntactically, it may not be
completely appropriate to make an analogy between a generic noun
as found in (66) and (70) and logical variable. Probably,
one would prefer to consider a noun in a generic use as denoting
a class or a category of objects. Thus, for example, a struc-
turally more faithful translation of (70) would be

   (80) Man is a featherless biped.
However, it is certainly possible to make a generic, or, more
generally, a nonspecific statement with a constituent corres-
ponding to an English determiner. For instance,

   (81) ningen-wa dare-demo hane-no-na-i nihon-asi-no

                    doobucu-da.

    man   whoever featherless biped animal

    Every man is a featherless biped.
Existential judgments generally involve some determiner.
A possible translation of (33) would be:

   (82) kono-heya-ni i-ru dare-ka-ga eigo-o hanas-u.

     this-room be someone   English speak

     Some men in this room speak English.

We shall not give a detailed discussion of the existential judgment in Japanese here, since this would require an explanation of the determiner system.

6.   It has been stated that the wa-phrase is the subject of a predicational judgment and the ga-phrase is the subject of either a characterizational judgment or a nonpredicational description. However, the use of the wa-phrase extends further than the usual concept of subject and must therefore be discussed from a broader viewpoint.

In the sentence:

(83)   ano-hon-wa John-ga kat-ta.

          that book   buy

          John bought that book.

a wa-phrase translates the English object that book. The English equivalent here, however, does not help to clarify the effect of the wa-phrase, since the same English sentence could also be used as a translation of the following:

(84)   John-wa ano-hon-o kat-ta.

          John bought that book

(85)   John-ga ano-hon-o kat-ta.

          John bought that book.

Sentence (84) is a predicational judgment, as is sentence (83). The difference is that the premise of the predication in (83) is syntactically the object of the verb; the meaning of (83) may be approximated in English by such sentences as:

(86)   If you mean that book, John bought it.

(87)   As for that book, John bought it.

(88)   That book, John bought.

At this point, it becomes necessary to distinguish clearly
the notion of subject of the sentence from the notion of premise
of the predicational judgment. Up to now we have been saying
that the wa-phrase is the subject of a predicational judgment;
however, this did not lead to confusion simply because the wa-
phrases in question represented the syntactic subject of the
sentence and the logical premise of the predicational judgment
at the same time. Example (83) now shows that these two notions
are independent, since there the wa-phrase represents the
logical premise of the predicational judgment but the syntactic
object.

The nouns with wa that can represent the premise of the
predicational judgment are not limited to subjects and objects.
Virtually all nominal constituents, i.e., noun phrases followed
by a particle, may be the premise of the judgment. Even
modifying (relative) clauses may be the premises of judgments,
but in the present discussion we will restrict ourselves to
primary constituents. Thus, we may have the following sentences:

(90)   John-ni-wa Bill-ga ano-hon-o okur-u.

                    that-book send

     To John Bill will send that book

(91)   niciyoo-ni-wa gakkoo-ga na-i.

     Sunday   school   not

     On Sundays there is no school.

(92)   Nihon-ni-wa kankoo-kyaku-ga oozei ku-ru.

     Japan   tourist   many come

     To Japan many tourists come.

Often the subject is missing but can be understood appropriately:

(93)   Niciyoo-ni-wa New York Times-o yom-u.

Sunday   read

On Sundays (I)   read the New York <u>Times</u>.

(94)   ohasi-de-wa gohan-o tabe-ru.

chopsticks   meal   eat

With chopsticks (we) eat.

Those sentences are to be taken as predications about <u>John</u>,

(90) <u>Sunday</u>, (91) etc., which function as indirect object,

time adverbial, etc.   A sentence may have two or more <u>wa</u>-phrases:

(95)   John-wa niciyoo-ni-wa New York Times-o yom-u.

Sunday   read

On Sundays John reads the New York <u>Times</u>.

In this case both <u>John</u> and <u>Sunday</u> are to be taken as the premises

of the judgment. No significant alteration in meaning

occurs as the result of the interchange of the two premises:[7]

(96)   Niciyoo-ni-wa John-wa New York Times-o yom-u.

It is now clear that the particle <u>wa</u> superimposes the

semantic function of the premise of predication on various

nominal constituents.

7.   Let us now go back to sentence (84) as typical

predicational judgment and observe it from a different point

of view.

Consider the following sentence:

(97)   Bill-wa ano-hon-o kaw-anakat-ta.

that-book buy-not

Bill did not buy that book.

This represents negative predicational judgment about <u>Bill</u>.

This may be conjoined with (84) in the following way:

(98) John-wa ano-hon-o kat-ta-ga,

John bought that book, but

Bill-wa (ano-hon-o) kaw-anakat-ta.

Bill did not buy (that book).

But we may also have the sentence:

(99) John-ga ano-hon-o kai-wa-si-ta-ga,

Bill-ga ano-hon-o kai-wa si-nakat-ta.

Sentences (98) and (99) may be considered to paraphrase each other, and it is reasonable to assume that they are generatively related in some way. (98) appears to be a compound sentence consisting of the following two sentences combined by the conjunction <u>ga</u> ("but"):

(100) John-wa ano-hon-o kat-ta.

(101) Bill-wa ano-hon-o kaw-anakat-ta.

According to the explanation in the preceding sections, (100) and (101) are predications on <u>John</u> and <u>Bill</u>, respectively. Then, (98) may be regarded as a combination of the two predications by means of the conjunction <u>ga</u>. (99), on the other hand, appears to consist of the following two sentences combined by <u>ga</u>:

(102) John-ga ano-hon-o kai-wa si-ta.

(103) Bill-ga ano-hon-o kai-wa si-nakat-ta.

Then, if the compound sentences (98) and (99) were paraphrasable <u>component-wise</u>, (102) and (103) would have to be regarded as predications on <u>John</u> and <u>Bill</u>, respectively. But that this is untenable may be seen immediately from the fact that <u>John</u> and <u>Bill</u> are not marked at all in (102) and (103) and hence it is not

indicated that they (and not the object ano-hon) are the premises

of the predication. Thus, we must give additional attention to

the semantic and syntactic nature of sentences (100) - (103) and

of their relation in (98) and (99).

Let us notice that (102) can also be found in the compound

sentences like the following:

(104)   John-ga ano-hon-o kai-wa si-ta-ga,

John bought that book, but

(John-ga) kono-hon-o kai-wa si-nakat-ta.

(John) did not buy this book.

While in (99) the component sentences share the same object

and verb but have different subjects, in (104) the component sen-

tences share the same subject and verb but have different

objects. Just as (99) is paraphrased by (98), in which wa is

attached to the distinctive terms John and Bill, (104) can be

paraphrased by the following form (105), in which wa is attached

to the distinctive terms ano=hon and kono-hon:

(105)   John-ga ano-hon-wa kat-ta-ga,

(John-ga) kono-hon-wa kaw-anakat-ta.

Furthermore, (102) can appear in compound sentences such as:

(106)   John-ga ano-hon-o kai-wa si-ta-ga,

John bought that book, but

Bill-ga kono-hon-o kai-wa si-nakat-ta.

Bill did not buy this book.

and

(107)   John-ga ano-hon-o kai-wa si-ta-ga,

John bought that book, but

Bill-ga kono-hon-o uri-wa si-nakat-ta.

Bill did not sell this book.

Neither the subject nor the object is shared by the component

sentences in (106), and furthermore in (107) the verb is not

shared, so that the component sentences are totally independent.

In all of the forms (99), (104), (106), and (107), the particle

wa serves to contrast two component sentences. But in (99) and

(104), the contrast is concentrated on the subject and the

object, respectively, and the positioning of the particle wa

in (98) and (105) emphasizes this fact. The first and second

component sentences of (99), i.e., (102) and (103), can each

be used as an independent sentence, in which case they imply not

only the facts:

> (108)   John-ga ano-hon-o kat-ta.
>
> John bought that book.

and

> (109)   John-ga ano-hon-o kaw-anakat-ta.
>
> John did not buy that book.

respectively, but also that these facts are put in contrast

with some other facts, which in actual discourse contexts may

or may not be linguistically explicit. Thus, it can be noted

that the situation here with respect to wa is quite similar to

the situation noted in Chapter I with respect to even and also.

We can then assume that (102) and (103) have the basic repre-

sentations:

> (110)   John-ga ano-hon-o kat-ta wa.
>
> (111)   Bill-ga ano-hon-o kaw-anakat-ta wa.

and that (100) and (101) are derived from these forms by

attaching <u>wa</u> to <u>John</u> and <u>Bill</u>, respectively. Indeed, sentences such as (100) and (101), which have been considered to be predication-al judgments, can be regarded as being related to basic forms like (110) and (111) in the same way that sentences like

(112)   Even John bought that book.

(where <u>even</u> is assumed to be attached to the subject) are described in Chapter I as being related to basic forms like:

(113)   Even - (John)$_{NP}$- (bought that book)$_{VP}$

In other words, as (112) implies, however vaguely, a sentence of the form:

(114)   Someone bought that book.

which is supposedly put in contrast with (112), so (100) can be assumed to refer in some sense to the sentence of the form

(115)   X-wa ano-hon-o kaw-anakat-ta.

Actually, this reference to a "shadow partner" is, in general, even vaguer here than in the case of <u>even</u>. Of course it could be made definite in certain discourse contexts so that it could specifically mean, say, (111). In general, however, the best we can say is probably that proposition (115) with unspecified X is implied in (100) as a possible supplementary statement. But, after all, this does not seem incompatible with the nature of predicational judgment. Looking at the predicational judgment:

(116)   John bought that book.

or, put into the model form of (4):

(117)   If you mean John, he bought that book.

It may be said that this judgement itself implies that one

is not making any judgment on anyone else, and hence the possibility of someone else <u>not buying that book</u> is left open. In Japanese this can be made quite explicit in certain discourse contexts, especially with a heavy stress on <u>wa</u>.

The following generative rules will now be introduced to account for the <u>wa</u>-phrase in the simple sentence:

(118)   Sen → S -wa

(119)   wa-Attachment

$(X - NP - Y)_S - wa \longrightarrow (X - NP+wa - Y)_S -wa$

(120)   wa-Deletion

$(X - NP + wa - Y)_S - wa \rightarrow (X-NP+wa - Y)_S$

(121)   si-Insertion

$V - Aux - wa \longrightarrow V - wa - si - Aux$

(122)   wa-Phrase Inversion

$\#\# \ X - NP - wa \longrightarrow \#\# \ NP - wa - X$

where X is not X'-NP-wa

Rule (118) is a phrase-structure rule that will generate the basic form of the sentence with the <u>wa</u>-phrase. By <u>wa</u>-Attachment (119), the sentence-final <u>wa</u> may be attached to a constituent NP. This attachment rule may be repeated so that a sentence may contain more than one <u>wa</u>-phrase. If <u>wa</u> is attached to some constituent(s), the sentence-final <u>wa</u> will be deleted by <u>wa</u>-Deletion (120). If <u>wa</u> remains in the sentence-final position, by <u>si</u>-Insertion (121) it will be incorporated into the verb and the empty verb <u>si</u> will be inserted to carry Aux. By <u>wa</u>-Phrase Inversion (122), the <u>wa</u>- (noun) phrases will be gathered in the sentence-initial

position. Wa-Attachment is optional, and si-Insertion is
obligatory. We will assume that wa-Deletion and wa-Phrase
Inversion are (unconditionally) obligatory.[8]

It seems necessary here to reexamine the semantic signi-
ficance of the particle wa, which, up to this point, has been
taken as the premise marker. The premise of a predication is,
to be sure, expressed in a wa-phrase, and in this sense one
may say that the particle wa serves to mark the premise.
But, as has been noted, the status of the wa-phrase as the
premise is not established within the phrase structure; rather,
the wa-phrase is generated transformationally by attachment.
Thus the role of the premise marker is not inherent in the
particle wa, but is secondarily imposed on it by the trans-
formational mechanisms of compounding and attachment. Indeed,
inasmuch as (99) is considered to be synonymous with (98),
John and Bill in (99) should be regarded as the premises of
the (component) predications just as they are regarded in (98).
But John and Bill in (99) are not in a wa-phrase; it should be
assumed that their premise status derives rather simply from
the fact that they are put in contrast in compounding. Then
the same should be true in (98), and the role of wa as the
premise marker seems to be reduced to being of secondary origin.
In simple sentences like (100), there is no clue other than the
particle wa to indicate that John is the premise. But if the
attachment of wa in simple sentences like (100) should be
considered to differ from its attachment in compound sentences
like (98) only in that the partner in compounding is implicit,
then the primary semantic role of the attachment of wa may

have to be taken as indicating the structure of compounding,
meaning that the premise status of the wa-phrase then becomes
a secondary consequence. At any rate, it is clear that the
generative, syntactic nature of the semantic notion of premise
is by no means simple and straightforward; the notion of
premise as a syntactic notion cannot be phrase-structural, but
transformational.

What is semantically inherent in the particle wa is to
be abstracted from its effect on sentences like (102, in which
it remains at the end, where it was introduced by the phrase-
structure rule. Sentence (102) maintains the truth of the
fact that John bought that book and at the same time, implies
that some other facts, which in some sense contrast with this,
did not take place, or, more generally and vaguely, it may
imply that the speaker reserves judgment on some other facts.
The speaker's contention of the truth of the sentence is
therefore strongly and clearly indicated. There is no such
indication in the sentence without wa when not conceived of as
a characterizational judgment. As a typical example, the
sentence:

(123)   hito-ga asoko-ni tat-te i-ru.

A man is standing there.

does indicate that the speaker has perceived a man standing
there, but it is an expression of this perception as such and
does not specifically indicate any reflection on this percep-
tion on the part of the speaker. To be sure, unless the speaker
is telling a lie, sentence (123) does represent a true fact,
i.e., that a man is standing there. But this would result

merely from the speaker's perception, and is independent of any real claim of truth on his part. Returning to sentence (102), the sentence-final wa may then best be considered as a predicational judgment marker. However, one might well ask what would be taken as the premise and what as the conclusion of this predicational judgment. In the case of (84) it can be said that the term John is somehow contrasted with some other items and therefore that term can be viewed as the premise of the predicational judgment (84). In the case of (102), it is the whole sentence that is somehow put in contrast with some other facts; and by analogy, then, one may say that the whole sentence is the premise of the predicational judgment. Compare the following paraphrases of (84) and (102):

    (124)   If X is John, that X bought that book is true.

    (125)   If S is that John bought that book, S is true.

We shall conclude this section with an additional remark on the particle wa. The conjunctive particle ba ("if") has been assumed to be historically related to the particle wa. (Cf., for example, Sanson (1928), p. 272) It seems reasonable to relate these two particles generatively as well. Thus, it will be assumed that the subordinate (conditional) clause of the sentence:

    (126)   John-ga ano-hon-o ka-e-ba, Bill-wa kono-hon-o ka-u.

                      that-book buy-if   this-book buy

        If John buys that book, Bill will buy this book.

has the same basic form as (94), namely:

    (127)   (John-wa ano-hon-o ka-u)$_S$ - wa.

As stated previously, this basic form maintains the truth of
the proposition "John buys that book" against some other propo-
sitions which are, implicitly or explicitly, put in contrast
with it. The conditional meaning is superimposed on this
when (127) appears as a conditional subordinate clause in (126).

8.   In this chapter, we first described the semantic dif-
ference between the wa-phrase and the ga-phrase as the subject
of a sentence and then turned our attention to the more general
use of the wa-phrase. We have seen that we must distinguish
between the concepts of the subject of a sentence and the
premise of a predicational judgment. In English (and in Indo-
European languages in general) there is no explicit syntactic
device to distinguish these two notions, and in most cases they
are confusingly represented by the so-called subject of the
sentence.

In some English cases, however, the premise of a predication
does seem to be separated syntactically from the subject of a
sentence, although this depends on one's conception of the
subject. Thus, grammarians of various schools of thought have
talked about the distinction between the grammatical subject
and the logical or real subject, or the distinction between
the underlying and the derived or surface subject. In sentences
in which these two kinds of subjects are distinguished, the
grammatical or surface subject seems to serve to indicate the
premise of the predication. For instance, take the following
examples:

(128)   Someone reads every book.

(129)   Every book is read by someone.

In the natural reading of these sentences, they seem to talk about someone and every book in (128) and (129), respectively. Thus, every book is the premise of the judgment expressed in (129) but not in (128). If it is admitted that every book is not the underlying or real subject in (128), then this can be taken as a case where the subject of the sentence and the premise of the predication are not the same.

In such pairs as:

(130)   Cats eat rats.

(131)   Rats are eaten by cats.

there is no difference in logical meaning in the two sentences, but, as linguistic expressions, one may say that the former is about cats while the latter is about rats, and in that sense the premise of the judgments in (130) and (131) are cats and rats, respectively.

Furthermore, some linguists claim that the window in

(132)   The window broke.

is not the subject;[9] the grammatical relation of the window to the verb broke is the same in (132) as in

(133)   Someone broke the window.

(The particular choice of the subject someone has no bearing on our present problem.) Yet one may still say that sentence (121) is about the window. Even more interesting is the following case with the same verb:

(134)   Every cup will break.

This is a judgment about every cup, but one cannot express this

judgment in the natural reading of a sentence with a real

subject. The sentence:

(135)   Someone will break every cup.

is not about every cup, in the natural reading, and is

logically different from (134). If one assumes that the intransi-

tive construction as in (134) is derived by some transforma-

tion from the transitive construction, this transformation,

together with the passive transformation, can be said to make

it possible in English to assign the status of the premise of

predication to the object.

In this sense, the notion of surface subject suitably

defined in English represents the notion of premise as reflec-

ted in Japanese in the sentence-initial wa-phrase. However this

structural correspondence between the surface subject and the

wa-phrase is only partial. Actually, nonpredicational des-

criptive sentences can also undergo these transformations in

English so that the surface subject may not necessarily be a

premise. Compare the following pairs of sentences in English

and Japanese:

(136)   A cat is eating a rat.

(137)   A rat is being eaten by a cat.

and

(138)   neko-ga nezumi-o tabe-te i-ru.

cat   rat   eat

A (or the) cat is eating a (or the) rat.

(139)   nezumi-wa neko-ga tabe-te i-ru.

rat   cat   eat

The rat is being eaten by a (or the) cat.

In English, (136) and (137) are synonymous, and both are nonpredicational. But in Japanese, (139) is not a nonpredicational description, and nezumi ('rat") cannot be taken to be indefinite specific; it is the premise of the predication represented by (139).

Furthermore, not only the subject and object but other nominals as well can appear as wa-phrases. In English, on the other hand, the noun phrases that can be understood as the surface subject are much more restricted; time or place adverbial noun phrases rarely move into the position of the surface subject. Compare, for example, the following Japanese sentences and their English translations:

    (140)   sakana-wa ike-ni sun-de i-ru.

              fish   pond   live

              Fish live in ponds.

    (141)   ike-ni-wa sakana-ga sun-de i-ru.

              In a pond live fish.

Sakana and ike are the premises of predications (140) and (141), respectively. The English sentence given in (141) can be read as a predication on pond (i.e., with the premise pond), but the premise status of pond is not as definite as that of ike in the corresponding Japanese sentence. At any rate, it cannot be said that pond is the surface subject of that English sentence.

However, some examples can be found in which place or time noun phrases may be considered to be surface subjects. Well-known examples of this sort are:

    (142)   Yesterday is when he came.

    (143)   New York is where he came from.

But this device is not a general one, so that one would not say:

(144)   Every Sunday is when someone reads the New York Times.

intending to mean

(145)   Every Sunday someone reads the New York Times.

In connection with this, it may be interesting to note the use of there as in

(146)   There are three men in this room.

(147)   There are some misprints in every book.

On the one hand, these sentences can be regarded semantically as judgements on this room and every book. Note, in particular, that in the preferred reading of (147) the order of the two quantifiers is the reverse of the order in the corresponding logical formula, while in most preferred readings these two orders coincide. Indeed, the preferred reading of (147) is the same as (148):

(148)   In every book there are some misprints.

On the other hand, it has been proposed to take there in such sentences as (146) and (147) to be the surface subject.[10] There is some syntactic similarity between this there and the surface subject, so that one says, for example:

(149)   John expected there to be three men in this room.

(150)   John expected there to be misprints in every book.

Thus one may say that there is a dummy surface subject representing the noun phrase in a place adverbial. Then such sentences as (146) and (147) can be brought into the general case of surface subjects assuming the role of logical premise.

At any rate one can say that in English there is no general and consistent syntactic mechanism by which the premise of a

predication is brought into the surface subject. Then, some other device may be employed, case by case, to indicate the premise. One common device of this type is the word order change found in the English translation of (141), although the first phrase (i.e., in a pond) will not be assigned the status of premise unambiguously. If a precise statement is demanded, a periphrastic paraphrase like the following is necessary:

(151)   For every pond there exists some fish that lives

there.

Thus, there is no syntactic device in English that really corresponds to the Japanese wa-Attachment.[11] But both languages seem to point to the logical notion of premise not being grammatically realized solely within the phrase-structural scheme.[12]

FOOTNOTES

[1]One may also think of (7) as having existential import,
in which case its reformulation in (8) would be preceded by:

God exists, and...

More generally, (4) would be replaced by:

A exists, and...

Substituting the above for (8) and (4), respectively, will
not affect our discussion, and we shall continue to assume
forms like (8) and (4) as originally stated.

[2]The adjective nonpredicational in the term nonpredicational
description is superfluous in the sense that we will not intro-
duce the notion predicational description. However, the simple
term description may be mistaken to mean a description about the
subject of the sentence, in which case the description reduces
to a predication about the subject. To avoid this and to keep
the distinction between predication and description in our
sense, the adjective nonpredicational will generally be added.

[3]This is logically quite natural. When one uses an
indefinite noun to refer to an object, one conceives of that
object as an arbitrary representative of the category denoted by
that noun. If one makes a predication on that object, one is
attributing a property to an arbitrary member of the category.
Thus a sentence with an indefinite subject can be a predication

only if it is taken as a generic statement, and then the subject is not taken to be specific.

[4]Thus, the sentence:

> A man is sick.

is possible, for example, in the context:

> Please come; a man is sick.

[5]In footnote 4 the English sentence

> A man is sick.

was said to be acceptable in certain circumstances. But the Japanese counterpart, (53), seems unnatural even in those contexts.

[6]Apparent exceptions would be sentences such as:

> nihon-zin-ga kono-kaisya-no syacyoo-da.
>
> Japanese   this-company   president.
>
> A Japanese is the president of this company.

But, although we will not go into detail here, it is probably reasonable to consider this form to be derived from:

> kono-kaisya-no syacyoo-wa nihonzin-da.
>
> The president of this company is a Japanese.

[7](96) may be paraphrased as:

> If someone is John, and if a day is Sunday, he
>
> reads the New York Times on that day.

[8]This assumption seems reasonable in the early steps of a description of Japanese syntax. But this means that such sentences as

> Jonn-wa kyoo ano-hon-wa yon-da.

will not be generated within our scheme. Furthermore, the

sentence-final <u>wa</u> in such forms as:

> Ano-hon-wa John-ga yomi-wa si-nakat-ta.

should probably be explained as not having undergone <u>wa</u>-Deletion. It is quite natural to assume that detailed contextual specifications will be added to the rules given above as the description of Japanese syntax progresses.

[9] See Hall (1965).

[10] E. S. Klima, in lectures on the Structure of English given at MIT.

[11] Various constituents can be brought to the <u>primary</u> position in so-called cleft sentences, and one might then assume that the cleft sentence transformation corresponds to the <u>wa</u>-Attachment rule. However, it seems that the cleft sentence expresses a characterizational judgment rather than a predicational one. Thus, the cleft sentence:

> It is John who bought that book.

is translated by

> ano-hon-o kat-ta-no-wa John-da.

which in turn is considered to be derived from the characterizational reading of:

> John-ga ano-hon-o kat-ta.

Compare, further, sentences like

> God is just.

and

> It is God who is just.

[12] The reader familiar with Japanese will note that <u>wa</u> may also be attached to nonnominal constituents such as modifiers

of noun phrases, adverbs and verbs; throughout this work,
however, we are concentrating primarily on nominal phrases
(or, more specifically, subjects and objects). It is quite
probable that many of the transformations introduced here will
be generalized as the description of Japanese is expanded.

Chapter III   mo, demo, and ka

1.   In Chapter II the particle wa was interpreted as being
generated at the end of the sentence by the phrase structure
and then attached to various nominal constituents by trans-
formation.   This chapter will deal with the particles mo and
demo, which seem to be like wa in this regard, and with the
particle ka, which has related attachment characteristics.
The particle mo will be discussed first.

Let us look at the following examples:

(1)   John-ga hon-mo zassi-mo kat-ta.

book   magazine buy

John bought both books and magazines.

(2)   John-mo Bill-mo hon-o kat-ta.

Both John and Bill bought books.

(3)   John-ga niciyoo-ni-mo doyoo-ni-mo hon-o kat-ta.

Sunday   Saturday   book   buy

John bought books both on Sunday and Saturday.

In (1) hon and zassi are objects and in (2) John and Bill
are subjects of the verb kat-ta.   The object marker o and the
subject marker ga[1] are not obvious in these sentences, but this
is the result of the morphophonemic rule which deletes ga and o
before mo.   The other particles are generally preserved, as seen
in (3), where ni actually appears before mo.

Semantically it is clear that these sentences involve
two sentences. Thus, for example, (1) contains

(4)   John-ga hon-o kat-ta.

          John bought books.

and

(5)   John-ga zassi-o kat-ta.

          John bought magazines.

·A similar breakdown can be made for (2) and (3). Let us now
look into the question of the generative relation between such
a breakdown and the sentences (1) - (3).

Two sentences can generally be combined by means of mo
in the way illustrated in the following example:

(6)   John-ga hon-o yomi-mo-si, Bill-ga rekoodo-o kiki-mo si-ta.

                book   read   record   listen to

          John read books and Bill listened to records.

If sentences (4) and (5) are combined in the same way, the
result is:

(7)   John-ga hon-o kai-mo-si, (John-ga) zassi-o kai-mo si-ta.

          John bought books, and (John) bought magazines.

Sentence (7) has the same meaning as (1), and it is reasonable
to connect (1) generatively to (7). That is, (7) will be
assumed to be the underlying form of (1), from which (1) is
derived by combining and "shortening." Similarly, the under-
lying forms of (2) and (3) are respectively,

(8)   John-ga hon-o kai-mo si, Bill-ga hon-o kai-mo si-ta.

          John bought books and Bill bought books.

and

(9)   John-ga niciyoo-ni hon-o kai-mo si, (John-ga)

        doyoo-ni hon-o kai-mo si-ta.

        John bought books on Sunday and (John) bought

        books on Saturday.

Thus it is reasonable to suppose that the particle mo

in sentences (1) - (3) is not originally, i.e., phrase-struc-

turally, found in the position in which it appears there.

Mo does not appear only with obvious pairs. Sentences

like the following are very common:

(10)   John-ga hon-mo kat-ta.

        John bought books (and some other things).

(11)   John-mo hon-o kat-ta.

        John (and some other persons) bought books.

(12)   John-ga niciyoo-ni-mo hon-o kat-ta.

        John bought books on Sunday (and on some other days).

The introduction of "shadow sentences" with a dummy would allow

(10)-(12) to be generated in a way parallel to sentences (1)-(3).

For example, the underlying form of (10) could be assumed to be

(13)   John-ga hon-o kai-mo si, John-ga D-o kai-mo si-ta,

where D represents the dummy. This would result in

(14)   John-ga hon-mo D-mo kat-ta.

From which the phrase containing the dummy D would be deleted

to yield (10).

However, we will use attachment instead of a dummy and

take the following as the basic form of (10) and (11):

(15)   (John-ga hon-o kat-ta)-mo.

Sentences (10) and (11) are then derived from (15) by an

attachment transformation that attaches mo to the constituent

hon-o or John-ga. It is also possible for sentence-final mo

in the basic form (15) not to be attached to any noun phrase.
Then, like the particle <u>wa</u>, <u>mo</u> will be incorporated into the
verb (stem), and the empty verb <u>si</u> will be introduced to carry
the auxiliary. This will yield the speech form:

(16)   John-ga hon-o kai-mo si-ta.

John bought books (and some other things happened).
Semantically we can say that the attachment transformation
makes (10) and (11) more specific than (15) (or (16)). In
other words, (10) and (11) can be said to imply (16) semantically.

Formally, the <u>mo</u>-Attachment and <u>mo</u>-Deletion rules would
be stated as follows:

(17)   mo-Attachment

$$(X - NP - Y) - mo \quad \longrightarrow \quad (X - NP + mo - Y) - mo$$

(18)   mo-Deletion

$$(X - NP + mo - Y) - mo \rightarrow (X - NP + mo - Y)$$

Actually the attachment of <u>mo</u> to a particular constituent
can be more vague semantically than would be expected. For
instance, the sentence

(19)   musuko-mo daigaku-ni hait-ta.

son   college   enter

(His) son entered college.

does not necessarily imply that some other person also entered
college. In the compound sentence

(20)   (zyuunen tat-te) musuko-mo daigaku-ni hairi,

ten years pass   son   college   enter

(Ten years passed and) his son entered college

musume-mo yome-ni it-ta.

daughter   marry

and his daughter was married.

What is involved is not that the son entered college with
someone else or that the daughter and someone else were married,
but rather that the two events - the son's entering college
and the daughter's marrying - occurred together. Thus the
logical meaning of (20) is that of its basic form:

(21)   (zyuunen tat-te) musuko-ga daigaku-ni hairi-mo si,

musume-ga yome-ni iki-mo si-ta.

Sentences like (19) and

(22)   musuko-ga daigaku-ni hairi-mo si-ta.

can certainly be used as independent sentences, and, when they
are, the precise semantic result of the mo-attachment may not
be immediately evident.

Note that the sentence-final mo of (21) is attached in (20)
to the subjects of the two component sentences even though the
components do not represent two identical sentences except for
different subjects. This is not only true when mo is attached
to subjects. It may also be attached to objects even if the
component sentences are not identical except for different
objects. Thus, changing the verb in (20) from intransitive to
transitive, we have

(23)   (zyuunen tat-te) musuk-mo daigaku-ni ire,

(Ten years passed and) he sent his son to college

musume-mo yome-ni yat-ta.

and married off his daughter.

2.   It is difficult to give a tag translation for the
particle demo. It can be equivalent to the English word even
as in:

(24)   John-demo hon-o kat-ta.

Even John bought books.

However, demo does not mean "even" in the most natural reading
of the imperative sentence in (25), for example:

(25)   hon-demo yon-de i-nasai.

Be reading books or something.

Here demo adds to the word hon ("book") a nuance that books are
one possible choice among some other things. But there is some
semantic constant shared by both uses of the particle demo.
When one says even John, John is put in contrast with some
other persons; furthermore, John is conceived of as one of the
last choices one would expect. Thus, although one English word
or phrase may not always be used as a tag translation of this
particle, it is assumed that there is one syntactic item
throughout. Polarization of the nuance "among other persons or
things" is assumed to be determined by the particular context
of the demo-phrase, but this semantic problem will not concern
us here.

The particle demo, like wa and mo, can be attached to the
whole sentence. Here, again, the particle appears after the

verb and the empty verb <u>si</u> is inserted:

(26)   ame-ga huri-demo si-ta-no-daroo.

rain   fall

It seems that it rained or something.

The attachment of <u>demo</u> to the subject <u>ame</u> will not basically alter the meaning of this sentence.

(27)   ame-demo hut-ta-no-daroo.

Likewise we assume that the form:

(28)   (John-ga hon-o kat-ta)-demo.

is the basic form of (24). In this case, however, the form directly derived from (28):

(29)   John-ga hon-o kai-demo si-ta.

may <u>not</u> be taken, in a natural reading, as meaning

(30)   Even such a thing as that John bought books happened.

But it will still be assumed that the phrase-structural basic form of (24) is (28), and, if necessary, we will say that the <u>demo</u>-attachment rule is obligatory to obtain the meaning of "<u>even</u>." This situation undoubtedly arises from the vagueness of the range of meaning of <u>demo</u> as mentioned above. It should be noted that <u>datte</u>, the colloquial variant of <u>demo</u>, invariably means "even," and the form corresponding to (29)

(31)   John-ga hon-o kai-datte-si-ta.

is quite natural and means (30). In more formal style, <u>demo</u>, when it means "even," can be replaced by the particle <u>sae</u>, and then again the form corresponding to (29):

(32)   John-ga hon-o kai-sae si-ta.

clearly means (30). Thus, with the particles <u>datte</u> and <u>sae</u>, the semantic relation between (31) and (32) and the forms generated from them by attachment may more clearly be seen:

(33)   John-datte hon-o kat-ta.

         Even John Bought books.

(34)   John-sae hon-o kat-ta.

         Even John bought books.

The occurrence of two particles _demo_ (or _datte_ or _sae_) in one
sentence sounds unnatural:

(35)   *John-demo hon-demo kat-ta.

         Even John bought even books.

We will therefore assume that sentence-final _demo_ may be
attached to one, but not more than one, constituent.

The following represents the _demo_-Attachment rule.

(36)   demo-Attachment

         (X - NP - Y)-demo   →   (X - NP + demo - Y).

In Chapter II the particle _wa_ was related to the condi-
tional conjunction _ba_; conditional clauses ending in _ba_ are
assumed to be sentences with _wa_ subordinated. With regard to
demo, there is a concessive conjunction which appears phoneti-
cally as _temo/demo_. It is supposed that this conjunction is
generatively the same as the particle _demo_ we have been dealing
with. Within a _temo/demo_-clause, _demo_ cannot be attached to
a nominal phrase. One may say:

(37)   John-ga Bill-o yon-demo, Bill-wa kotae-nakat-ta.

                           call   answer not

         Even though John called Bill, Bill did not answer.

One would not say:

(38)   *John-demo Bill-o yon-demo, Bill-wa kotae-nakat-ta.

But by using another concessive conjunction, _noni_, the following

is possible:

(39)   John-demo Bill-o yon-da-noni, Bill-wa kotae-nakat-ta.

         Though even John called Bill, Bill did not answer.

It is fair to assign the translations "even if," "even though"

to the concessive conjunction temo/demo, and "though" to noni.

Thus, formally as well as semantically, there is enough motiva-

tion to suppose that the underlying form of the concessive temo/

demo clause is the same as the independent sentence attached

to the sentence-final demo. Accordingly, the basic form of

the subordinate clause of (37) is assumed to be

(40)   (John-ga Bill-o yob)-demo, ...

         Even if John called Bill, ...

Later, when the indeterminate pronouns are discussed, further

formal evidence will be given for this.

3.   The particle ka is equivalent to English "or" in the

sentence:

(41)   John-ka Bill-ga hon-o kat-ta.

         John or Bill bought books.

This sentence can be paraphrased:

(42)   John-ga hon-o kat-ta-ka Bill-ga hon-o kat-ta.

         John bought books or Bill bought books.

In (42) there is a disjunction between the two sentences. (41)

will be assumed to be derived from (42) by a common "shorten-

ing" device.

       On the other hand, (41) can also be paraphrased:

(43)   John-ka Bill-ka-ga hon-o kat-ta.

         John or Bill bought books.

Here the particle _ka_ is repeated after **Bill**. The generative

origin of the second _ka_ in (43) is not immediately clear from

(42). However, when (42) is put in the _desu_-style, for example,

the result is:

(44) John-ga hon-o kat-ta-ka Bill-ga hon-o kat-ta-ka-desu.

John bought books or Bill bought books.

Here the particle _ka_ is repeated after the second sentence.

Thus it is supposed that in the underlying form of disjunction

of two sentences, _ka_ is repeated after each component sentence.

In other words (42) has the basic form:

(45) John-ga hon-o kat-ta-ka Bill-ga hon-o kat-ta-ka.

Then the appearance of _ka_ after **Bill** in (43) can be explained

as the remnant of the _ka_ after the second component sentence

of the basic form (45). This _ka_ will have to be deleted when

(42) is derived from (45). Accordingly, the _ka_-Deletion rule

is formulated as follows:[2]

(46) ka-Deletion

$$ka)_{Sen} \longrightarrow)_{Sen}$$

The shortening transformation may apply either before or after

this deletion transformation. The one that applies before (46)

will be formulated as:[3]

(47) ka-Shortening 1

$$((X-Y-Z)-ka \ (X-Y'-Z)-ka)_{Sen} \longrightarrow (X-Y-ka-Y'-ka-Z)_{Sen}$$

The transformation given below will apply after ka-Deletion (46):

(48) ka-Shortening 2

$$((X-Y-Z)-ka \ (X-Y'-Z))_{Sen} \longrightarrow (X-Y-ka-Y'-Z)_{Sen}$$

(It is supposed that Y-_ka_-Y'-_ka_ and Y-_ka_-Y' in the right-hand

side of (47) and (48) replace Y in the left-hand side in the
derived phrase structure.) Thus, if (47) is applied to (45),
we will get (43); if (47) is not applied to (45), then (46)
will apply to it and, depending on whether (48) applies or not,
we will get (41) or (42).

An actual speech form of a sentence may end in ka. Such
a sentence will then be either interrogative or exclamatory.

(49)   John-ga hon-o kat-ta-ka?

        Did John buy books?

(50)   John-ga hon-o kat-ta-ka!

        John did buy books.

One might immediately assume that these two sentences are dif-
ferentiated in their basic forms by different markers, the
question marker Q or the exclamation marker E. Then the follow-
ing would be the basic forms for (49) and (50):

(51)   John-ga hon-o kat-ta-ka-Q.

(52)   John-ga hon-o kat-ta-ka-E.

Actually, although we do indeed take (52) to be the basic form
of (50), additional considerations are involved in determining
the basic form of the interrogative sentence. Note that ka-
Deletion (46) does not apply to the basic form (52) because of
the existence of E, so that ka is preserved in the actual speech
form (50).

In considering the interrogative sentence, it should be
noted that indirect interrogation always takes the form of dis-
junction. Thus it is not natural to say

(53)   *John-ga hon-o kat-ta-ka-no mondai.

Instead one will say

    (54)   John-ga hon-o kat-ta-ka kaw-anakat-ta-ka-no mondai

                 book   buy   buy-not   question

       the question whether John bought books or not

or

    (55)   John-ga hon-o kat-ta-ka doo-ka-no mondai

                 book   buy   how   question

       the question whether John bought books or not

(55) will naturally be considered a reduced form of (54), which

has, in turn, a more basic representation:

    (56)   John-ga hon-o kat-ta-ka John-ga hon-o kaw-anakat-

                                       ta-ka-no mondai

       the question whether John bought books or John did

       not buy books

Two disjoined sentences may not necessarily be related affirmative-

ly-negatively as in the above; one may say:

    (57)   John-ga hon-o kat-ta-ka Bill-ga zassi-o ut-ta-ka-no

                                       mondai

       the question whether John bought books or Bill sold

       magazines

   It seems reasonable to suppose, then, that in the basic

forms only disjoined sentences can be put in the interrogative.

"Yes-no" questions such as (49), which do not appear to be

disjunctive in the actual speech forms, are now assumed to have

a special type of disjunction in the basic form, that is,

affirmative-negative disjunction. Thus, (49) is assumed to

have the basic form:

(58)   ((John-ga hon-o kat-ta)-ka (John-ga hon-o

kaw-anakat-ta)-ka-Q

This may appear on the surface as

(59)   John-ga hon-o kat-ta-ka kaw-anakat-ta-ka.

Did John buy books or not?

or, possibly,

(60)   John-ga hon-o kat-ta-ka doo-ka.

Did John buy books or not?

But the most common actual speech form of (58) is obtained by
deleting the second component of disjunction,[4] resulting in (49).
The component sentences of the interrogative disjunction need
not bear an affirmative-negative relation. In this case no
significant transformation is needed to derive the actual
speech form from the basic form. Thus, the basic form:

(61)   John-ga hon-o kat-ta-ka Bill-ga hon-o kat-ta-ka Q.

will yield:

(62)   John-ga hon-o kat-ta-ka Bill-ga hon-o kat-ta-ka.

Did John buy books or did Bill buy books?

Although (45) and (62) appear to have the same form, they are
different: (45) is a basic form which is actualized as (41),
(42), or (43), while (62) is a speech form which is the actuali-
zation of (61). Let us recall further that ka-Shortening rules
(47) and (48) refer to the parentheses labeled Sen. Thus,
these rules are prevented from applying, in, for example,

(63)   (John-ga hon-o kat-ta-ka Bill-ga hon-o kat-ta-ka Q)$_{Sen.}$

where the final ka is separated from the parenthesis labeled Sen.
Thus, the forms

(64)   John-ka Bill-ka-ga hon-o kat-ta-ka.

(65)   John-ka Bill-ga hon-o kat-ta-ka.

are not actual speech forms of (63) but have the meaning

(66)   Did John or Bill buy books? ("yes-no" question)

It follows from our discussion of "yes-no" questions such as

(49) that the basic form of (64) and (65) should be assumed

to be the disjunction of (45) and its negation, which can be

represented as follows:

(67)   (((John-ga hon-o kat-ta)-ka (Bill-ga hon-o

kat-ta)-ka)$_{Sen}$-ka)

(((John-ga hon-o kat-ta)-ka (Bill-ga hon-o

kat-ta)-ka)$_{Sen}$-Neg-ka) Q.

Then rules (46) - (48) may affect the second ka in (67) as

they may affect the second ka in (45). The deletion of the

negative component of the disjunction in (67) will then yield

(64) or (65) as actual speech forms. On the other hand, if

none of rules (46) - (48) are applied to (67), the result will

be:

(68)   John-ga hon-o kat-ta-ka Bill-ga hon-o kat-ta-ka-ka.

This form may strike the native ear as strange, but consider

the following form which differs from (68) only in stylization:

(69)   John-ga hon-o kat-ta-ka Bill-ga hon-o kat-ta-ka

desu-ka.

Notice finally that there is no attachment transformation,

like wa-Attachment, mo-Attachment, and demo-Attachment, that

attaches ka to the (general) nominal constituent. Thus, we do

not have such forms as

(70)   *John-ka hon-o kat-ta.

which would be expected to mean

(71)   John or someone bought books.

In this respect the particle _ka_ is different from the others
already discussed.

However, it will be shown below that _ka_ may be attached
to the indeterminate pronouns, and in this respect shares a
syntactic characteristic with the particles _mo_ and _demo_. It
is for this reason that _ka_ is included in this chapter.

By indeterminate pronouns we mean words such as _dare_, _nani_,
doko, etc. These are often called interrogatives (or interroga-
tive pronouns),[5] and are equivalent to English "who," what,"
"where," etc. The discussion here will clarify why it seems
preferable to refer to these as indeterminate pronouns rather
than interrogatives. To some extent it is misleading to use
the English tag translations given above. But with the reminder
that the English words(or, better, morphemes) are not neces-
sarily restricted to the interrogative use (as in the so-called
relative and concessive pronouns), the _wh_-words will be used
as translations. Indeed, tag translations are to be regarded
primarily as a convenience, and their use does not imply per-
fect structural similarity between the corresponding Japanese
and English words. There will be some discussion of the re-
lationship between English _wh_-words and Japanese indeterminate
pronouns at the end of this chapter.

4.   When <u>demo</u> is attached to an indeterminate pronoun, the

result is an <u>every</u>-word: <u>dare-demo</u>, "everyone"; <u>nan-demo</u>

"everything." We call such words <u>demo</u>-pronouns. They can be

stronger in meaning than English <u>every</u>-words and may sometimes

be more closely equivalent to <u>wh-ever</u>-words like <u>whatever</u>:

(72)   John-ga nan-demo dat-ta.

        John bought everything. (<u>or</u> John bought whatever

        it might be.)

(73)   dare-demo hon-o kat-ta.

        Everyone bought books.

<u>Demo</u> attached to an indeterminate pronoun will be viewed

in the same way as <u>demo</u> attached to a general nominal phrase.

Thus, the following basic forms are assumed for (72) and (73):

(74)   (John-ga nani-o kaw)-demo

(75)   (dare-ga hon-o kaw)-demo

(In the next chapter we will set up forms more basic than (74)

and (75), and hence they are actually intermediate. For our

purposes here, however, they may be referred to as basic forms.)

In the preceding chapter it was said that <u>demo</u> generated

by the phrase-structure at the end of a sentence results in the

so-called concessive conjunction <u>temo/demo</u> when the sentence

is subordinated. The generative relationship between this con-

cessive conjunction and <u>demo</u> after indeterminate pronouns is

evidenced by the fact that the <u>demo</u>-pronouns never appear within

a <u>demo</u>-concessive clause; the indeterminate pronouns are used

in their place. Indeterminate pronouns are often regarded as

interrogative, but here they appear in sentences where no in-

terrogation is involved. Thus,

(76)   dare-ga hon-o kat-temo ...
        Whoever buys books, ...

(77)   John-ga nani-o kat-temo ...

Whatever John buys, ...

It is rather difficult to find direct evidence of generative relatedness between demo in the demo-pronouns and the sentence-final demo in an independent sentence. However, the following form, which is probably permissible, seems to imply this relatedness:

(78)   ano-koro-wa hitobito-wa nani-o tabe-demo si-ta.

that-time   people   what   eat

Around that time people ate whatever it might be.

The form with demo attached to nani sounds better:

(79)   ano-koro-wa hitobito-wa nan-demo tabe-ta.

5.   We will now turn our attention to words such as dare-mo, nani-mo, etc., which we will call mo-pronouns. These are similar to English "any"-words in that they are used primarily in negative sentences. Thus:

(80)   dare-mo hon-o kaw-anakat-ta.

No one bought books.

(81)   John-ga nani-mo kaw-anakat-ta.

John did not buy anything.

The generative origin of mo at the end of the sentence is again supported by examples in which mo appears at the end of a negative sentence.

(82)   kore-made dare-ga kangae-mo si-nakat-ta aidia

this-till who   think   do-not   idea

the idea which no one has ever thought of

(83)   John-wa nani-o ka-oo-to-mo si-na-i.

               what   buy-will   do-not

      John will not buy anything.

These forms are presumed to be grammatical, although the forms

with mo attached to dare and nani, respectively, are more

natural:

(84)   kore-made dare-mo kangae-nakat-ta aidia

(85)   John-wa nani-mo ka-oo-to si-na-i.

Note that the deletion of mo from these forms results in

nonsentences:

(86)   *kore-made dare-ga kangae-nakat-ta aidia

        *John-wa nani-o yomoo-to si-na-i.

Accordingly, the underlying forms of (80) and (81) might

be assumed to be

(88)   (dare-ga hon-o kaw-ana-i)-mo

(89)   (John-ga nani-o kaw-ana-i)-mo

However, there seem to be reasons for regarding the above as

intermediate and setting up basic forms with the particle demo:

(90)   (dare-ga hon-o kaw-ana-i)-demo

(91)   (John-ga nani-o kaw-ana-i)-demo

This seems justified by the fact that demo-pronouns and mo-

pronouns do not contrast. The forms

(92)   *dare-demo hon-o kaw-anakat-ta.

(93)   *John-ga nan-demo kaw-anakat-ta.

are not acceptable as actual speech forms. Thus the following

rule can be introduced:

(94)   mo-Conversion

        demo $\longrightarrow$ mo   in env. $\begin{Bmatrix} \text{dare} \\ \text{nani} \end{Bmatrix}$ -X- na- Aux_____

This will convert the basic forms (90) and (91) into the intermediate forms (88) and (89). But nouns in negative sentences may have either <u>demo</u> or <u>mo</u> attached.

(95)   John-demo hon-o kaw-anakat-ta.

         Even John did not buy books.

(96)   John-mo hon-o kaw-anakat-ta.

         Also John did not buy books.

6.   The indeterminate pronouns seem to be related to the particle <u>mo</u> in the comparative construction as well as in negatives. This is interesting in that the comparative construction in English also requires <u>any</u>-words.

   In discussing the comparative here we will restrict ourselves to those points directly related to the present topic.

(98)   John-wa Bill-yori-mo rikoo-da.

                      than   intelligent

         John is more intelligent than Bill.

(99)   John-wa Bill-ga kat-ta-yori-mo takusan hon-o kat-ta.

                      buy   than   many   book   buy

         John bought more books than Bill did.

The comparative construction clearly involves a subordinate sentence, which may undergo various ellipses. Thus, (99) may be reduced to

(100)   John-wa Bill-yori-mo takusan hon-o kat-ta.

Conversely (98) should probably be regarded as the obligatory ellipsis of

(101)   John-wa Bill-ga rikoo-de ar-u-yori-mo rikoo-da.

          John is more intelligent than Bill is intelligent.

Now, if <u>John</u> is not compared with <u>Bill</u> but with <u>anyone</u>, we have

    (102)   John-wa dare-yori-mo rikoo-da.

               John is more intelligent than anyone else.

    (103)   John-wa dare-ga kat-ta-yori-mo takusan hon-o kat-ta.

               John bought more books than anyone else did.

or

    (104)   John-wa dare-yori-mo takusan hon-o kat-ta.

               John bought more books than anyone else.

Sentence (103) provides another interesting example of an indeterminate pronoun without any implication of interrogation. But notice that the subordinate sentence is followed by <u>mo</u> after the conjunction yori, and one may suppose the basic form of the subordinate sentence to be:

    (105)   (dare-ga hon-o takusan kat-ta)-mo

But <u>mo</u> after <u>yori</u> is generally redundant. Instead of (98) and (99) one may say, without changing the meaning:

    (106)   John-wa Bill-yori rikoo-da.

    (107)   John-wa Bill-ga kat-ta-yori takusan hon-o kat-ta.

Only when the subordinate sentence contains an indeterminate pronoun will the absence of <u>mo</u> result in unnatural forms:

    (108)   *John-wa dare-yori rikoo-da.

    (109)   *John-wa dare-ga kat-ta-yori takusan hon-o kat-ta.

From this deletability of <u>mo</u> and from the fact that in the case of negation we do not set up the underlying <u>mo</u>-sentences with an indeterminate pronoun, we interpret <u>mo</u> after <u>yori</u> as being of secondary origin, inserted by:

    (110)   mo-Insertion

              $\emptyset \longrightarrow$ mo   in env. yori_____

This rule is generally optional, but obligatory when the subordinate sentence contains an indeterminate pronoun.

A psychological explanation of the introduction of the particle mo in comparative constructions may be given as follows. Sentence (99) may be paraphrased by the following two sentences:

(111)   Bill-mo hon-o takusan kat-ta.

         Bill, too, bought many books.

(112)   (sikasi)   John-wa motto takusan kat-ta.

         (but)   more   many   buy

         (But) John bought more.

Or, better, the following sentence may occur before (111):

(113)   John-wa hon-o takusan kat-ta.

         John bought many books.

Of course, read strictly logically, (99) does not necessarily imply that Bill bought many books. But psychologically, and in the ordinary sense, the comparison of (99) generally would not be made if Bill did not buy many books.

7.   The particle ka is also attachable to the indeterminate pronouns. The ka pronouns, dare-ka, nani-ka, etc., are equivalent to the English "some"-words like "someone," "something," etc.

(114)   dare-ka-ga hon-o kat-ta.

         Someone bought books.

(115)   John-ga nani-ka-o kat-ta.

         John bought something.

It might be supposed that the basic forms of these sentences are

(116)   (dare-ga hon-o katta)-ka

and

(117)   (John-ga nani-o kat-ta)-ka

with ka then being attached to dare and nani, respectively. Recall,
however, that ka is not attachable to an ordinary noun, so that
we do not have

(118)   *John-ka-ga hon-o kat-ta.

supposed to be derived from

ι(119)   (John-ga hon-o kat-ta)-ka

Actually, disjunction by means of ka needs at least two com-
ponent sentences. Thus, while (119) cannot be a basic form,
the following can:

(120)   (John-ga hon-o kat-ta)-ka (Bill-ga hon-o kat-ta)-ka

(=45)

It will be assumed, then, that the basic form of (114) is:

(121)   (dare-ga hon-o kat-ta)-ka (dare-ga hon-o kat-ta)-ka

The second component sentence will be deleted to yield (116) as
an intermediate form, and the actual speech form (114) will be
obtained by attaching ka to dare. Note that (116) is not dis-
joined with itself necessarily as in (121): there may be basic
forms like

(122)   (John-ga hon-o kat-ta)-ka (dare-ga hon-o kat-ta)-ka

which will yield

(123)   John-ga hon-o kat-ta-ka dare-ka-ga hon-o kat-ta.

or, by the Shortening rule (47),

(124)   John-ka dare-ka-ga hon-o kat-ta.

Another shortened form which might be expected from (123) by
the Shortening rule (48) is

(125)   *John-ka dare-ga hon-o kat-ta.

But this is not well-formed. To exclude it we have only to

assume that the attachment of ka to dare occurs before ka-

Deletion (46). Similarly, the basic form of (115) is assumed

to be

(126)   (John-ga nani-o kat-ta)-ka (John-ga nani-o kat-ta)-ka

To assume the basic form (121) for (114) has an additional

consequence in connection with the interrogative sentence

corresponding to (114):

(127)   dare-ka-ga hon-o kat-ta-ka.

The explanation of the above sentence is parallel to that given

in section 3 for the interrogative sentence:

(128)   John-ka Bill-ka-ga hon-o kat-ta-ka.   (= 64)

         Did John or Bill buy books? ("yes-no" question)

If the basic form of (114) is (121), the basic form of (127)

should be assumed to be:

(129)   ((dare-ga hon-o kat-ta)-ka (dare-ga hon-o kat-ta)-ka)

         ((dare-ga hon-o kat-ta)-ka (dare-ga hon-o kat-ta)-ka)-

                                                     Neg-ka Q

From this the negative ll be deleted, just as in (128):

(130)   ((dare-ga hon-o kat-ta)-ka (dare-ga hon-o kat-ta)-ka)-
                                                         ka Q

Then the second component of the disjunction is deleted, as in

(114):

(131)   (dare-ga hon-o kat-ta)-ka-ka Q

From this the speech form (127) is derived by attaching ka to dare.

The generative origin of the two occurrences of ka in (127)

should be noted and compared with the instances of <u>ka</u> in (128);
the sentence-final <u>ka</u> and the <u>ka</u> after <u>dare</u> in (127) corres-
pond generatively to the sentence-final <u>ka</u> and the <u>ka</u> after
<u>John</u> in (128). It is clear that the interrogative form of (124):

    (133)   John-ka dare-ka-ga hon-o kat-ta-ka.

will now be completely explained as parallel to (128).

Thus, "yes-no" questions containing <u>ka</u>-pronouns are, just
like general "yes-no" questions, derived from disjunction of a
special type that is, disjunction of a sentence and its nega-
tion. We know that the general type of disjunction yields non-
"yes-no" questions. Thus, if

    (133)   (John-ga hon-o kat-ta)-ka (Bill-ga hon-o kat-ta)-ka

is put into the interrogative,

    (134)   (John-ga hon-o kat-ta)-ka (Bill-ga kat-ta)-ka Q

we will get the actual speech form:

    (135)   John-ga hon-o kat-ta-ka Bill-ga hon-o kat-ta-ka.

        Did John buy books or did Bill buy books?

Then the non-"yes-no" question:

    (136)   dare-ga hon-o kat-ta-ka.

        Who bought books?

can reasonably be understood to be an analogue of (135) when
(133) is replaced by (121); that is, the basic form of (136) is
now assumed to be

    (137)   (dare-ga hon-o kat-ta)-ka (dare-ga hon-o kat-ta)-ka Q.

The second component of the disjunction is again deleted:

    (138)   (dare-ga hon-o kat-ta)-ka Q

It should be noted that <u>ka</u> will not be attached to <u>dare</u> in this

case. Thus, if a sentence ending with ka contains an indeterminate pronoun, ka is attached to the pronoun unless ka is directly followed by the question marker.

7.   We will now assume we have justified calling dare, nani, etc., indeterminate pronouns rather than interrogative pronouns. It can be said that the role of the indeterminate pronouns are very much like that of yet unbounded logical variables. Attachment transformations will then be regarded as the process of binding those variables in some sense or other. However, the indeterminate pronouns appear to be generated only in sentences that end in either demo or ka. That is, the node Noun Phrase can dominate dare and nani only if either demo or ka is attached to the sentence. This mutual dependence of the indeterminate pronouns and the particles demo and ka is essentially not phrase-structural. It seems, then, that we have been led to an unsatisfactory situation.

At this point let us recall that part of English structure corresponding to the part of Japanese structure we are dealing with. English interrogative and relative pronouns what, who, which, as well as concessive pronouns like whoever, whichever, and whatever and other related forms, explained elegantly if we view them as resulting from the attachment of the WH-marker to the determinate and indeterminate determiners that and some. Briefly, and not too precisely, which and what are regarded as WH + that and WH + something, respectively. Now, if we want to generate the interrogative pronouns which and what directly in the phrase structure, they would be subject to the restriction

that they can appear only if the sentence is not headed by
the WH marker. However, if these words are generated by attach-
ment, the problem will not arise. The determinate and indeter-
minate pronouns that and something are not subject to the same
kind of restriction; they can appear in both declarative or
interrogative sentences.

In the case of Japanese, the word corresponding to some-
thing, "nani-ka," is derived from the word corresponding to
what, "nani." Thus nani must be considered a more basic form
than nani-ka, and it would seem that we are led to having to
generate nani directly. The conclusion we shall come to,
however, is that the indeterminate pronouns are themselves not
primitive. They will be understood to be an amalgam of a
nominal element PRO(noun) and the indeterminate marker IND.
More precisely, PRO will be introduced within the phrase-struc-
tural scheme just as ordinary nouns are, and IND, which will
be generated at the end of the sentence, will be attached to
PRO to yield the indeterminate pronouns dare, nani, etc. Thus
there will be some parallels with English.

To justify this interpretation, the nature of the nominal
element PRO will have to be clarified, and this will be done
in Chapter IV. Here, therefore, the description of indeter-
minate pronouns will be left incomplete, and we will return to
it at the end of the next chapter.

FOOTNOTES

[1]As will be shown in Chapter VI, ga and o cannot precisely be called subject and object markers, respectively, when sentence embedding is involved. But these terms can be used here for convenience without any danger of misinterpretation.

[2]We assume that Sen is a different syntactic label from S, and that a disjoined sentence has the following structure: $(S\text{-}ka\ S\text{-}ka)_{Sen}$

[3]At this moment reference to $(\quad)_{Sen}$ in (47) and (48) is not motivated. It will be shown later that this reference is meaningful.

[4]Answers to (59) (or (60)) and (49) will take different forms. A "yes-no" answer such as

Iya, kaw-anakat-ta.

No, (he) did not.

will be given to (61) but not to (59) (or (60)). But this does not prevent us from setting up the same basic form for (49), (59), (60).

CHAPTER IV   Pronominalization

1.   Traditionally English grammar recognizes a part of speech
called pronoun.   In the study of Japanese grammar, on the other
hand, the pronoun has not enjoyed so secured a position.   Some
grammarians set up pronouns as a part of speech, while others
do not.   Thus, turning to two different modern Japanese grammar-
ians, S. Hasimoto and M. Tokieda, we see that the latter recog-
nizes pronoun as a part of speech, but not the former.   Hasimoto
maintains that distinguishing substantives as proper nouns,
common nouns, pronouns, and numerals may be of some semantic
interest but is not necessary in grammar since there is no formal
difference corresponding to the semantic difference.   (S. Hasi-
moto (1948) p. 66).   Tokieda does not give any formal character-
ization either.   His discussion is based solely on gross semantic
considerations.   (M. Tokieda (1950) p. 72)   Thus, words called
personal pronouns in Japanese are semantically identified, whether
or not one views them as representing a part of speech.   For
practical purposes they can be roughly identified as words that
translate English personal pronouns.   Generally, however, more
than one personal pronoun is allotted to one grammatical category.
Thus in Kindaiti (1952), watasi, boku, and temae are all listed
as first person pronouns, and anata, kimi, omae as second person

pronouns. We shall come back later to this problem of the
multiplicity of the so-called personal pronouns in Japanese.

In English grammar, as opposed to Japanese, one can easily
point out formal (i.e., syntactico-morphological) characteris-
tics of the personal pronouns. If we review some of these
formal characteristics we can see that there is nothing corres-
ponding to them in the case of the Japanese so-called personal
pronouns. First, in Indo-European languages in general, the
personal pronoun generally has a characteristic declension. In
English, in which ordinary nouns have lost this declension, only
the personal pronouns still preserve it. Secondly, the personal
pronouns are not modified by adjectives in the way ordinary
nouns are. Thus, we have

(1)   the short man

but not

(2)   *short he

In Japanese the so-called personal pronouns exhibit no such
obvious peculiarities. They can be modified by an adjective
just like ordinary nouns. We have

(3)   ciisa-i hito

(4)   ciisa-i kare

        small he

2.   It appears, then, that personal pronouns are not syntacti-
cally characterizable in Japanese as they are in English. But
are these properties really significant in characterizing the
personal pronouns in English? Is there nothing in Japanese that
deserves to be called personal pronoun? These questions seem

difficult to handle within the framework of the traditional or the taxonomic approach. The syntactic nature of the personal pronouns lies in the transformational structure of language and therefore could not really be clarified before the development of the generative grammar approach. We intend to show that an understanding of the transformational nature of English personal pronouns leads to the view that there is indeed <u>one</u> grammatical entity in Japanese that may well be called personal pronoun, but that it is different from any of those that have been called this previously.

Before going into the transformational analysis of the personal pronouns, it would be interesting to mention a taxonomic observation which reflects the transformational character of such pronouns. The personal pronouns "are repeatable as nouns (and most other pronouns) are not, so that though it is not usual to say

(5)   George does George's work when George feels

        like doing George's work

it is quite normal to say

(6)   He does his work when he feels like doing it."
(Long, (1961) p. 50) (The example was slightly changed for convenience in giving the Japanese equivalent.) The sentence that would normally replace (5) is, of course,

(7)   George does his work when he feels like doing it.

The Japanese form corresponding to (5) and (6) would be

(8)   George-wa George-ga George-no sigoto-o si-ta-i-toki-ni

                                        work   do-want-time

        George-no sigoto-o su-ru.
                work   do

(9) kare-wa kare-ga kare-no sigoto-o si-ta-i-toki-ni kare-no

            work do-want-time

 sigoto-o su-ru.

 work do

In the Japanese case, however, neither (8) nor (9) is usual.
In other words, the so-called personal pronouns are not
repeatable either. Furthermore, if we replace George in (8)
by kare, just as we replace George by he in (5) to get the
grammatical (7), the result is

(10) George-wa kare-ga kare-no sigoto-o si-ta-i-toki-ni

    kare-no sigoto-o su-ru.

which is, again, not usual. To get a normal sentence from (8),
it is necessary to delete all the repeated George's and
George-no sigoto:

(11) George-wa si-ta-i-toki-ni sigoto-o su-ru.

    George does his work when he feels like doing it.

Similarly, to get a normal sentence from (9), the repeated
kare's and kare-no sigoto are deleted:

(12) kare-wa si-ta-i-toki-ni sigoto-o su-ru.

    He does his work when he feels like doing it.

We have therefore arrived at the taxonomic observation that
in English the personal pronoun he and the noun George are
shown by (6) and (7) to have different distribution, while in
Japanese the so-called personal pronoun kare reveals no dis-
tributional peculiarity.

3. This observation will now be described in terms of genera-
tive grammar. Sentence (7) is derived from (5) by means of

pronominalization, which, according to Lees (1960), is formalized as follows:

(13)   Pronominalization in English

$X - N_1 - Y - N_2 - Z \rightarrow X - N_1 - Y - N_2 + \text{Pron} - Z$

where $N_1 = N_2$

Here Pron is a marker, and the string N+Pron will be replaced by *he* etc., by morphophonemic rules. In Japanese, on the other hand, the grammatical form (11) is derived from (8) by deleting the repeated nouns. The transformation for Japanese corresponding to (13) may be formalized as:

(14)   Pronominalization in Japanese

$X - N_1 - Y - N_2 - Z \rightarrow X - N_1 - Y - Z$

where $N_1 = N_2$

It can be claimed that (13) and (14) have the same syntactic role and therefore can both be called pronominalization, although in the Japanese case a "pronoun" does not appear in the actual speech form.

But now let us look at the English (6) and Japanese (12), in which the subject is a so-called personal pronoun. In the Japanese case, it is clear that (14) again applies to (9) to get (12). Thus, the so-called personal pronoun behaves in the same way as a noun with respect to Pronominalization (14). What is implied here is the taxonomic observation made above, that in Japanese the so-called personal pronoun has the same distribution as the ordinary noun. To generate the English sentence (6), on the other hand, there does not at first seem to be any need to apply rule (13). However, "it is important not to confuse independently chosen nouns *he*, *she*, *it*, *her*, etc.,

which can also occur in kernel sentences along with <u>John</u>, <u>Mary</u>, <u>table</u>, etc., with the <u>pro</u>-nouns of the same shape which must be introduced transformationally in place of certain repeated nouns at this stage. In fact, we might even conceive that certain repeated nouns <u>he</u>, <u>she</u>, etc., are themselves vacuously replaced by the corresponding pro-nouns of the same shape, for otherwise unnecessary restrictions on these pronoun rules would have to be formulated, and also a false representation of grammatical structure of sentences would result from our derivations of sentences." (Lees (1960) p.100) According to this view the generation of the actual speech form (6) completely parallels that of (7), and the above-mentioned observation that the personal pronoun is repeatable while ordinary nouns are not would be reduced to an illusion caused by the phonological fact that the noun <u>he</u> and the <u>pro</u>-noun <u>he</u> happen to have the same phonetic shape.

Although the treatment of English pronominalization as formulated in rule (13) will, essentially, be followed, some formal clarification seems desirable. Indeed, the relation between the noun <u>he</u> and the <u>pro</u>-noun <u>he</u> is not sufficiently clear from the above explanation. In this regard it seems profitable to reinterpret the marker Pron in formula (13) as a feature specification. More precisely, let us introduce a syntactic feature Pro-ness[1] and assume that an ordinary noun is specified as nonPro in its complex xymbol. Pronominalization is then reinterpreted as a rule of respecification of a feature. We may rewrite it in the form familiar in phonology:

(15)   Pronominalization

+Noun $\longrightarrow$ +Pro   <u>in env.</u> $X - A - Y - \overline{A} - Z.$

On the other hand each personal pronoun is represented in the dictionary by an entry including the specifications Noun and Pro, among others. This dictionary entry is assumed to possess no phonological matrix (or, more exactly, no specification is entered in the phonological part of the dictionary entry), for reasons that will be made clear below. Thus, the personal pronoun he will be represented by

(16)
$$\begin{bmatrix} +\text{Pro} \\ +\text{Noun} \\ +\text{Human} \\ +\text{Singular} \\ +\text{ThirdPerson} \\ +\text{Masculine} \\ \quad \text{etc.} \\ \hline \emptyset \end{bmatrix}$$

Compare this with the dictionary entry of an ordinary noun, say, George:[2]

(17)
$$\begin{bmatrix} -\text{Pro} \\ +\text{Noun} \\ +\text{Human} \\ +\text{Singular} \\ +\text{ThirdPerson} \\ +\text{Masculine} \\ +\text{ProperNoun} \\ \quad \text{etc.} \\ \hline /\text{George}/ \end{bmatrix}$$

Let us consider the two sentences (6) and (7). For convenience we will disregard pronominalization of the noun phrase his work and concentrate on the words George and he. We may then consider the following to be underlying forms of (6) and (7), respectively:

(18)   He does his work when he feels like doing it.

(19)   George does George's work when George feels like doing it.

In (18) <u>he</u> stands for the complex symbol (16), and in (19)

<u>George</u> stands for (17). Pronominalization, as reinterpreted

in (15), will apply vacuously to (18), while in (19) it will

change the specification nonPro in the second and the third oc-

currences of <u>George</u> into Pro. The following complex symbol

then will appear in these two positions:

(20)
$$
\begin{bmatrix}
+Pro \\
+Noun \\
+Human \\
+Singular \\
+ThirdPerson \\
+Masculine \\
+ProperNoun \\
\hline
/George/
\end{bmatrix}
$$

To get actual phonetic forms like (6) and (7), there is

assumed to be a morphophonemic rule as follows:

(21)
$$
\begin{bmatrix}
+Pro \\
+Singular \\
+ThirdPerson \\
+Masculine
\end{bmatrix}
\longrightarrow \quad /he/
$$

That is, when the complex symbol has the specifications listed

on the left-hand side of the rule, the phonological part of

that symbol will be replaced by the phonological matrix that

appears the right-hand side of the rule. This rule applies

uniformly to the complex symbols (16) and (20) contained, res-

pectively, in (18) and in the form obtained from (19) by appli-

cation of Pronominalization. Now let us use A and B to denote

the complex symbols obtained from (16) and (20) by application

of the morphophonemic rule (21):

(22)   A = $\begin{bmatrix} +Pro \\ +Noun \\ +Human \\ +Singular \\ +ThirdPerson \\ +Masculine \\ \quad etc. \\ \hline \\ /he/ \end{bmatrix}$

(23)   B = $\begin{bmatrix} +Pro \\ +Noun \\ +Human \\ +Singular \\ +ThirdPerson \\ +Masculine \\ +ProperNoun \\ \quad etc. \\ \hline \\ /he/ \end{bmatrix}$

Then the intermediate forms underlying (6) and (7) at this stage will be, respectively,

(24)   A does A's work when A feels like doing it.

(25)   George does B's work when B feels like doing it.

The complex symbols A and B are different, but their difference is not actually relevant: all the rules to be applied to (24) and (25) are morphophonemic or phonological rules which are assumed not to refer to any syntactic features differently specified in A and B, like ProperNounness, for example. A and B are eventually replaced by their identical phonological part /he/, which will result in the actual speech forms (6) and (7).

In the case of the first and second person pronouns there is no need for morphophonemic rules like (21) to be introduced. Accordingly it will be assumed that the dictionary entries representing these pronouns do include the phonological matrix. That is, the dictionary entry for the pronoun I will be

$$(26) \quad \begin{bmatrix} \begin{matrix} +\text{Pro} \\ +\text{Noun} \\ +\text{Human} \\ +\text{Singular} \\ +\text{FirstPerson} \\ \text{etc.} \end{matrix} \\ \hline \text{/I/} \end{bmatrix}$$

As far as our present problem is concerned, the form:

(27)   I do my work when I feel like doing it.

itself can be taken as the basic form of the sentence (27),

understanding that I represents the complex symbol (26).

Pronominalization (15) applies on this string vacuously, just

as it did on the basic form (18).

It now becomes clear that we do not have to conceive of

two different entries noun he and pro-noun he, noun I or pro-

noun I, etc., as done in earlier work in generative grammars,

and the taxonomic observation cited above that "the personal

pronouns are repeatable as nouns (and most other pronouns)

are not" is, in a reasonable sense, supported. This new inter-

pretation of the pronoun is, as we have seen, a result of recent

developments in syntactic theory, bringing the notions of feature

and of feature specification into syntax. For details see

Chomsky (1965).

4.   Let us now go back to Japanese and investigate the

process (14) corresponding to English pronominalization and

the nature of the so-called personal pronouns. The deletion

process (14) applies indiscriminately to nouns and the so-called

personal pronoun. Consequently the distributional difference

observed in the case of English in (6) and (7) does not exist

here, and in (12) the personal pronoun appears only in the

position corresponding to the independent use of the personal

pronoun in the English sentence (6); i.e., the Japanese

so-called personal pronoun corresponds only to the nominal in-

stance, in Lees' sense, of the English pronoun. Thus, in

connection with the process of pronominalization there is no

reason to give special treatment to the so-called personal

pronouns; they may be regarded simply as nouns.

It would seem, then, that Japanese differs from English

with regard to the existence of personal pronouns. Neverthe-

less, the grammatical process of pronominalization in English

is paralleled in Japanese by (14). Since (14) is a deletion

rule, there is a distributional correspondence between the

pronominal use of the pronouns in English and the zero in

Japanese. Given our formulation of Pronominalization in

English, it does not seem accidental that the independent and

anaphoric uses of the pronoun appear in the same phonetic form.

Indeed, one may suspect that human psychology generally demands

the same form for the independent and anaphoric pronouns.

This appears to be violated in Japanese, since the form kare

seems to correspond to the independent use of he, and zero

to the anaphoric use. But the fact is that zero can also be

taken to correspond to independently chosen English pronouns

since the following is well-formed:

(28)   hon-o kat-ta.

book   buy

X bought books.

This type of sentence can be used when the subject of the action

is clear from the extra-linguistic or discourse context. The

subject can be first, second, or third person, singular or
plural. The dependence of (28) on context may lead one to
question its grammaticality, but it can be taken to be as
well-formed as the English sentence

(29)   He bought books.

where the referent of he is also dependent on the extra-
linguistic or discourse context. The difference between zero
in (28) and he in (29) is that the latter has a more restricted
range of possible referents. In taxonomic terms, then, it
can be said that zero in Japanese has structurally the same
distribution as the set of all personal pronouns in English.
To reflect this in a generative device, we need only introduce
the syntactic feature Pro-ness in Japanese and take (15) rather
than (14) as the Pronominalization rule in Japanese as well
as in English. There will be one dictionary entry in Japanese
corresponding to all the personal pronouns in English:

(30)
$$\begin{bmatrix} +\text{Pro} \\ +\text{Noun} \\ \hline \emptyset \end{bmatrix}$$

Corresponding to the morphophonemic rule (21) will be the
following:

(31) $[+\text{Pro}] \longrightarrow \emptyset$

The phonological matrix of a complex symbol which has the spe-
cification Pro is replaced by nothing at some stage in the
phonological component. From here on, we will refer to the
complex symbol with the specification Pro by PRO.

5.   Up to this point we have been discussing pronominaliza-
tion within the range of facts that formulation (13) in Lees
(1960) was originally intended to cover. It can be shown,
however, that in English this process can be understood in a
broader perspective. On the one hand the rule of Pronominaliza-
tion can be interpreted in a more general way; on the other hand,
another special rule, Definitization, can be introduced to sup-
plement Pronominalization as it operates in the more restricted
sense we have been dealing with thus far. The more general
interpretation of pronominalization appears to be highly sig-
nificant in connection with the mechanism of relativization
and interrogation in English. We shall give only a brief
account here of the principles underlying this generalization.
(For a more complete treatment, see Kuroda (unpublished a, b))

As a formulation of the syntactic process intended by
Lees to be represented by (13), neither that rule nor rule (15),
which was meant to be a revision of that rule, is strictly
correct. Actually a repeated noun is to be replaced by a
personal pronoun only if it has the same referent as its
predecessor. Thus, as an extreme case, (5) is grammatical if
all the instances of George are considered to refer to different
persons with the same name. On the other hand, however, even
when a repeated noun does not have the same referent as the
antecedent noun, the repetition of the noun is still in general
avoided. Usually there is either deletion or the use of the
so-called indefinite pronoun one (ones).

(32)   John prefers a hard pencil to a soft one.

(33)   John prefers hard pencils to soft ones.

(34)   John likes sour milk better than fresh.

These are the surface forms, respectively, of

(35)   John prefers a hard pencil to a soft pencil.

(36)   John prefers hard pencils to soft pencils.

(37)   John likes sour milk better than fresh milk.

It should be noted that the substitution of indefinite pronouns for repeated nouns is not totally unconditioned. When George in the when-clause of (5) does not refer to the same George as in the main clause, it is not replaced by an indefinite pronoun. This unsubstitutability is not just a peculiarity of proper nouns, since it still holds if George is replaced in (5) by a common noun, say, boy. Explicit indication of the distinctness of referents by means of different modifiers apparently permits the substitution of the indefinite pronoun in many cases, as seen from the above examples and from the following slight variation of (5):[3]

(38)   The younger boy does his work when the older one
          feels like doing his.

Substitutability of the personal pronoun for a co-referential repeated noun is not totally unconditional, either.   Thus, it is grammatical to say

(39)   After having described the way that he would
          disappear, he then disappeared that way before
          our eyes.

and

(40)   After having described the picture he would draw,

he then drew that picture before our eyes.

But the latter becomes more natural when <u>that</u> <u>picture</u> is

replaced by the personal pronoun <u>it</u>, while substitution of

<u>it</u> for <u>that</u> <u>way</u> in (39) will result in a totally ungrammatical

form:

(41)   *After having described the way he would disappear,

he then disappeared it before our eyes.

(42)   After having described the picture he would draw,

he then drew it before our eyes.

The following remarks can be made on the basis of the above

observations. First, in neither coreferential or noncorefer-

ential cases is substitutability of the pronoun totally un-

conditional as a rule of the form (15) would imply. Secondly,

putting aside the independent problem of specifying the con-

ditions of substitutability, it is reasonable to assume that

these two cases are not independent syntactically but rather

involve one and the same process, which may be called Pronomin-

alization. The difference is then ascribed to some additional

syntactic process that co-occurs with Pronominalization in one

case or in the other. Actually, as (39)-(42) suggest, the

process of pronominalization by means of personal pronouns

(i.e., the coreferential case) may properly be divided into

two independent syntactic processes: one would derive (39)

and (40) from their underlying forms, whatever these may be,

by assigning the definite determiner <u>that</u> to the repeated noun

phrases _way_ and _picture_, respectively; the other would be
responsible for further deriving (42) from (40). The burden
of processing the information for coreference is, then, turned
over to the first process, which may be called Definiteization,
and the second process, Pronominalization, which we formerly
viewed as being involved in both coreferential and noncoreferen-
tial cases, will now work only on formal identities. Leaving
aside certain details and technicalities, we may now formulate
Definitization as follows:

(43)   Definitization

$$X - N - Y - N - Z \rightarrow X - N - Y - DEF{+}N - Z$$

where the two N's on the left-hand

side are coreferential.

(Here DEF is a marker which, when phonetically realized, is
that in most cases.) Rule (15) will be reinterpreted as apply-
ing more generally, that is, without assuming coreference.
As a result of this revised interpretation of pronominalization,
the morphophonemic rule, (21), will have to be subject to the
contextual restriction 'after the marker DEF':

(44) $\begin{bmatrix} +\text{Pro} \\ +\text{Singular} \\ +\text{ThirdPerson} \\ +\text{Masculine} \end{bmatrix} \rightarrow /he/ \quad \underline{\text{in env. DEF} \underline{\quad}}.$

In other environments, Pro will be phonetically realized as
one (_ones_) or will be deleted:

(45) $[+ \text{Pro}] \rightarrow \begin{cases} /one(s)/ & \underline{\text{in some environment}} \\ \emptyset & \underline{\text{in some others}} \end{cases}$

Let us now again turn our attention to Japanese. Certain
arguments having to do with semantics and universality may lead

one to suspect a parallel organization of the pronominalization
process in Japanese. One may further suspect that in Definiti-
zation the word <u>sono</u> will play the role of <u>that</u> in English.
We are not at present in a position to develop organized and
meaningful syntactic argument about Definitization, which quite
probably will have to be introduced in Japanese. However,
it does seem fairly clear that Pronominalization should be
understood in the broader sense, that is, to cover the non-
coreferential case as well as the coreferential. The use of
the word <u>no</u> as the so-called formal noun (<u>keisiki-meisi</u>) can
safely be taken as a typical example of noncoreferential pro-
nominalization. Thus the English examples (32) – (34) can be
rendered into Japanese as

(46)   John-wa yawaraka-i enpicu-yori-mo kata-i-no-o kono-u.

         soft   pencil-than   hard-one   like

    John likes hard pencils better than soft ones.

(47)   John-wa sinsen-na gyuunyuu-yori-mo suppai-no-o konom-u.

         fresh   milk-than   sour-one   like

    John likes sour milk better than fresh.

It should be noted that the Japanese sentences do not become
less natural when the nouns are repeated. It is quite all right
to say:

(48)   John-wa yawaraka-i enpicu-yori-mo kata-i enpicu-o

                                      konom-u.

The discussion here will remain informal, and no statement
will be made that <u>no</u> is a phonetic form of the pronoun in the
exact sense, that is, we are <u>not</u> proposing any morphophonemic

rule like:

(49)   [+Pro]   →   no   <u>in some environments</u>

Rather, <u>no</u> in this instance can probably be explained as one

case of a more general morphophonemic process that inserts <u>no</u>

as an empty carrier of a modifying clause when the noun to

be modified is removed from its ordinary position.

(50)   ringo-no aka-i-no-o tabe-ru

        apple   red   eat

The above form has an inverted order and is clearly related

to the normal form:

(51)   aka-i ringo-o tabe-ru

        red   apple   eat

Whatever syntactic and semantic processes are involved here, it

seems fair to assume that <u>no</u> is inserted automatically after

the removal of the noun from its original position. Thus, in

the noncoreferential as well as the coreferential case the

phonetic realization of Pro can be taken as zero.

We will not introduce a Definitization Rule here explicitly,

but we will understand that the same rule (15), Pronominalization,

will apply directly either coreferentially or noncoreferentially,

whenever the condition of pronominalization is satisfied.

6.   The syntactic mechanism of pronominalization in the

two languages has now been clarified. It can be said that

in a deeper part of the syntax, pronominalization has the same

structure in the two languages, as embodied in the same rule,

(15). The differences seem to lie in the fact that there are

several personal pronouns in English but only one in Japanese,
and while those in English are always realized by phonetic
entities the single one in Japanese is never phonetically
realized.

These differences are, in reality, less surprising than
they may seem at first. The fact that English has several differ-
ent personal pronouns can be regarded as a natural consequence
of something quite independent of the process of pronominaliza-
tion itself, that is, the presence of the syntactic features
of person, number, and gender. Different combinations of these
features with the specification Pro are responsible for pro-
ducing the different forms of the personal pronouns. The
uniqueness of the pronoun in Japanese will then be simply a
consequence of the fact that Japanese does not possess (and never
has possessed) those features as syntactic features.

The fact of the unique personal pronoun being phonetically
realized as zero is not peculiar only to Japanese. Even in
English, as soon as the pronoun is relieved of the syntactic
features of person and number (and the marker DEFiniteness),
it tends to disappear. In examples (32) and (33), grammatical
number is carried by the forms one and ones, but in (34), since
mass nouns are not marked for number, there is nothing to be
carried by the pronoun and it simply disappears.

As already mentioned, those Japanese nouns which are
generally called personal pronouns (watasi, "I," kimi, "you,"
kare, "he," etc.) are not considered here to be personal pro-
nouns. More precisely, these nouns are assumed to be specified

as nonPro. If we can talk about universal semantic features,
perhaps we must say that they have the same semantic features
as the English personal pronouns and from this point of view
should also be called by that name. The important point is
not their name however, but their syntactic nature. The fact
that there is more than one so-called personal pronoun for
the same grammatical person is probably related to their
nominal character. Thus, watakusi, (watasi), ore, temae, boku,
sessya, zibun, and perhaps some others, are listed as first
person pronouns in Kindaiti(1952), and anata, kimi, omae, temae
as second person pronouns. Each of these has a particular
connotation for the speaker and listener. Choosing one of
them is much like choosing an appropriate ordinary noun to
denote some entity. Specialization in meaning in the so-called
personal pronouns is certainly incompatible with the highly
syntactic nature of the anaphoric use of the real personal
pronoun. Indeed it suggests that these items are, instead,
members of a major category, i.e., noun.

The comparison made here between the two languages, either
by implication (e.g., using the same name for certain trans-
formations in both languages) or by explicit statements, are
motivated solely by formalism in the rules. It is quite
another problem to compare the languages on the level of lan-
guage behavior based on those rules. Thus, when it is said
that the single personal pronoun in Japanese, which phonetically
appears as zero, corresponds to the whole class of the English
personal pronouns, it by no means implies that, given an English

sentence either in isolation or in some context, replacing every
English personal pronoun with zero in the corresponding Japanese
sentence necessarily results in the equivalent natural Japanese
sentence. Varying degrees of ungrammaticality, ranging from
total unacceptability to near grammaticality, can be expected
to result from such automatic replacement. In the first
place, the contextual conditions which might be imposed on
Definitization and Pronominalization can differ in the two
languages. Secondly, other rules may affect the applicability
of these two rules in each of the languages. As will be seen
in the next chapter, Reflexivization in Japanese involves
different conditions than in English, so that the extent of
application of Pronominalization immediately fails to match
in both languages. These two factors contribute to the dis-
crepancies between the languages, about which more and more
will be said as the syntactic description of the two languages
progresses. There is a third factor, too, and that is the
different _habits_ involved in the utilization of structurally
corresponding rules in actual language behavior. This is,
in principle, out of the realm of the generative grammar of
each language. For example, in the situation in which the
following English sentences would be uttered,

(52)   There is a book there. I bought it yesterday.

it would not be usual to say in Japanese

(53)   asoko-ni hon-ga ar-u. watasi-ga kinoo kat-ta.

        there   book   be   I   yesterday buy

Instead one would say

(54)   asoko-ni hon-ga ar-u. watasi-ga kinoo sore-o kat-ta.

or

(55)   asoko-ni hon-ga ar-u. sore-wa watasi-ga kinoo kat-ta.

The word sore as used above can most reasonably be compared
with the demonstrative pronoun that, rather than the personal
pronoun it. It is, of course, possible to use that instead of
it in (52):

(56)   There is a book there. I bought that yesterday.

A careful speaker would probably differentiate between (52)
and (56); and, after all, whether the personal or the demon-
strative pronoun is used in the above English and Japanese
sentences is a problem of language behavior and not of genera-
tive grammar. If, for example, one assumes a similarity between
sore and it in these sentences, it would be a matter of interest
in the study of comparative language behavior but not of
generative grammars.

7.   We will now return to the indeterminate pronouns.
At the end of the preceding chapter it was noted that, while in
English wh-words are considered to be derived from some-words,
in Japanese the indeterminate pronouns dare, nani, etc., cannot
be derived from the ka-pronouns, dare-ka, nani-ka, etc.
However, to consider the indeterminate pronouns as primitive
elements would lead us to admit that they are subjected to an
unfavorable nonphrase-structural restriction.

Once it is recognized that Japanese possesses the pronoun
PRO, which is realized as zero on the phonetic level, it can
then be presumed that the indeterminate pronouns are really an

amalgam of PRO and something atta ned to it. It is certainly reasonable from a semantic viewpoint to suppose that the indeterminate pronouns can be marked Pro. PRO can be generated freely by the phrase-structural scheme, and the nonphrase-structural restriction can be handled by the nonphrase-structural mechanism of attachment.

Following this line of thinking, one might take the sentence

(57)   dare-demo hon-o kat-ta.

Everyone bought books

to have the basic form

(58)   PRO-ga hon-o kat-ta-demo

and say that attaching demo to PRO yields (57), introducing a morphophonemic rule to convert the string PRO-demo into dare-demo.

However, the indeterminate pronouns can sometimes appear without demo or ka attached. This suggests that attachment occurs twice. That is, to get dare-demo from PRO, for example, there would be one step to produce the form dare and then a second step to produce the form dare-demo. We will therefore introduce the marker INDeterminate and assume that ka and demo are introduced phrase-structurally accompanied by this marker. The marker can be interpreted as symbolizing the common syntactic characteristics of the two particles demo and ka. The basic form of (57) is now assumed to be

(59)   PRO-ga hon-o kat-ta-demo-IND

First IND is attached to PRO to yield

(60)   PRO-IND-ga hon-o kat-ta-demo

Then demo is attached as usual to yield (57). When (59) is used as a concessive subordinate clause, demo is not attached

to _dare_, and the result is then

 (61) dare-ga hon-o kat-temo, ...

    Whoever buys books, ...

Let us now turn to the following sentences:

 (62) dare-ka-ga hon-o kat-ta.   (=III.114)

    Someone bought books.

 (63) dare-ga hon-o kat-ta-ka.   (=III.136)

    Who bought books?

The basic forms of these sentences are assumed to be

 (64) (PRO-ga hon-o kat-ta)-ka-IND (PRO-ga hon-o kat-ta)-

                 ka-IND

 (65) (PRO-ga hon-o kat-ta)-ka-IND (PRO-ga hon-o kat-ta)-

                 ka-IND Q

The second component of disjunction is deleted from (64) and

(65), as described in the preceding chapter:

 (66) PRO-ga hon-o kat-ta-ka-IND

and

 (67) PRO-ga hon-o kat-ta-ka-IND Q

IND is then attached to PRO:

 (68) dare-ga hon-o kat-ta-ka

 (69) dare-ga hon-o kat-ta-ka Q

These represent intermediate stages proposed in the preceding

chapter, and the generative process proceeds as described there.

  The introduction of the marker IND is not motivated just

phonologically. Semantic significance can be given to IND-

attachment, just as it was to the other attachment transforma-

tions. In some cases IND-Attachment is optional, and when

PRO does not have IND attached, it will be interpreted simply
as PRO, that is, the pronoun phonetically realized as zero.
For example, by not attaching IND to PRO in (59) and (67),
we get, respectively:

(70)   hon-o kai-demo si-ta. (or hon-demo kat-ta.)

        PRO bought books or some other thing happened.

        (or PRO bought even books or books or some other

        thing.)

(71)   hon-o kat-ta-ka.

        Did PRO buy books?

It must somehow be stated, however, that IND in (66) obliga-
torily attached to PRO, since there is no[4]

(72)   *PRO-ka ga hon-o kat-ta

The semantic significance of IND-Attachment is very much like
that of WH-Attachment in English as explained in Chapter I.

    To account for such comparative forms as

(73)   John-ga dare-yori-mo rikoo-da.

        John is more intelligent than anyone.

we will now assume that not only mo but IND is inserted after
the comparative marker yori. The basic form of (73):

(74)   John-ga #(PRO-ga rikoo-da)#yori-rikoo-da

will first be changed into:

(75)   John-ga #(PRO-ga rikoo-da)#yori-mo-IND rikoo-da.

The string rikoo-da in parentheses will be deleted and IND will
be attached to PRO, yielding the actual speech form (73).

    It should be pointed out that IND-Attachment is applied
before Pronominalization. Consider the following sentence:

(76)   John-wa hon-o kat-ta-toki kane-o harat-ta-ka.

         Did John pay when he bought the books?

with the basic form:[5]

(77)   (John-wa (John-ga hon-o kat-ta-toki) kane-o harat-ta)-

                                             ka-IND

         (John-wa (John-ga hon-o kat-ta-toki) kane-o

                             harawanakat-ta)-ka-IND Q

The second component of the disjunction will be deleted as

usual, giving:

(78)   John-wa (John-ga hon-o kat-ta-toki) kane-o ` rat-

                             ta-ka-IND Q

If Pronominalization were now to apply to this string, the

result would be:

(79)   John-wa (PRO-ga hon-o kat-ta-toki) kane-o harat-

                             ta-ka-IND Q

If IND-Attachment attached IND to PRO in this form, we would get:

(80)   John-wa dare-ga hon-o kat-ta toki kane-o harat-ta-ka.

As an actual speech form, this means:

(81)   John payed when who bought the books?

Obviously, then, (80) cannot be assumed to be generatively

derived from the basic form (77). This situation can be avoided

simply by stipulating that IND-Attachment must apply before

Pronominalization. In other words, IND is attachable only to

the independently chosen, not the anaphorically introduced PRO.

The basic form of sentence (80) is:

(82)   (John-wa (PRO-ga hon-o kat-ta-toki) kane-o harat-ta)-

                                             ka-IND

         (John-wa (PRO-ga hon-o kat-ta-toki) kane-o haraw-

                             anakat-ta)-ka-IND Q

In the foregoing explanation of the generation of indeterminate pronouns (and ka-pronouns, etc.), the Human form dare (and dare-ka etc.) was used. The nonHuman form nani (and nani-ka etc.), is assumed to be generated in the same way, resulting from IND-Attachment to PRO. Obviously, though, dare and nani must be generatively differentiated in some way. This can be accomplished fairly easily by introducing the feature Humanness. This feature is needed anyway in Japanese to exclude such anomalous forms as

(83)   *zassi-ga hon-o kat-ta.

        Journals bought books.

Thus, if the specification Human is assigned to PRO, then PRO-IND will be supposed to be phonetically realized as dare, while if the specification nonHuman is assigned to PRO, the phonetic form nani will result.

The feature Humanness does not result in any need for two pronouns (dictionary entries), one PRO-Human and one PRO-non-Human. Let us assume that

(84)   A-ga B-o C-ta.

is the base form, in the sense of Chomsky (1965), of the sentence

(85)   John-ga hon-o kat-ta.

        John bought books.

A, B, and C are appropriate complex symbols. The complex symbol A is specified as Human and C as HumanSubject. When PRO is inserted in A, it will inherit the specification Human. Thus with the basic form

(86)   (A-ga B-o C-ta-ka)-IND (A-ga B-o C-ta)-ka-IND Q

we get

(87)   dare-ga hon-o kat-ta-ka.

but not

(88)   *nani-ga hon-o kat-ta-ka.

         What bought books?

On the other hand, B is probably specified as nonHuman, so
that we can have:

(89)   John-ga nani-o kat-ta-ka.

         What did John buy?

but not:

(90)   *John-ga dare-o kat-ta-ka.

         Whom did John buy?

     Some verbs can take either Human or nonHuman subjects.
Thus, the verb taore ("fall"), for example, can be inserted
in the base form

(91)   D-ga E-ta.

where either D is Human and E is HumanSubject or D is nonHuman
and E is nonHumanSubject. In the former case we can get:

(92)   dare-ga taore-ta-ka.

         Who fell?

and in the latter case:

(93)   nani-ga taore-ta-ka.

         What fell?

The form below, in which IND-Attachment has not taken place,

(94)   taore-ta-ka?

         Did PRO fall?

is correctly regarded ambiguous with respect to Humanness of

the subject when compared with

    (95)   hon-o kat-ta-ka.

             Did PRO buy books?

which is invariably understood to have a Human subject.

FOOTNOTES

[1]We will establish the following convention for denoting features and feature specifications. A feature is referred to by a noun with the suffix -ness. The form without -ness is used to denote the plus specification of that feature, and the minus specification is denoted by adding the prefix non. For example, man is specified as Human, meaning that man is specified as plus for the feature Humanness; dog is specified nonHuman, meaning that dog is specified minus for the feature Humanness.

[2]Actually some of the specifications in (16) and (17) may be redundantly derived from others, so that they may be left blank in the dictionary. Further some features, in particular Singularness, are not really considered inherent features of the noun, and the actual feature specifications will be introduced after the noun is inserted in the sentence by lexical rules. Obvious simplification of this sort in the theory will be ignored for simplification of exposition.

[3]But this does not seem to be a necessary condition for substitutability; in fact while one can say

     John saw a policeman, and Bill saw one too.

the reaction of informants to the form

     A policeman saw John and one saw Bill too.

ranged from rejection through acceptance. Probably the form

A policeman was seen by John, and one was seen by
Bill too.

is located between the first two with regard to its grammaticality.
On the other hand, all of the following are quite all right:

John saw a tall policeman, and Bill saw a short one.

A tall policeman saw John, and a short one saw Bill.

A tall policeman was seen by John, and a short one
by Bill.

[4]The ill-formedness of (72), seems to be related, on the
one hand, to the ill-formedness, say, of the form:

*John-ga hon-o kat-ta-ka John-ga hon-o kat-ta-ka.

Did John buy books or did John buy books?

and, on the other hand, to the ill-formedness of a class of
forms in which particles lose their carrier when PRO is deleted,
like:

John-to PRO-ga hon-o kat-ta.

John and PRO bought books.

which, if PRO were regularly replaced by zero, would be repre-
sented by:

*John-to ga hon-o kat-ta.

The mechanism for filtering out these types of ill-formedness
will not be specified here.

[5]In this discussion we shall ignore the wa-Attachment
transformation and assume that wa already appears in the initial
phrase John-wa. Actually it occurs at the end of the sentence
and is then attached to John.

Chapter V. REFLEXIVIZATION.

1.   It is well known in English that the process of
pronominalization, as formulated in Definitization (IV-43),
Pronominalization (IV-15), and morphophonemic rules (IV-21),
does not appear to work within a simple sentence. Thus, in
the actual speech form derived from the underlying form

(1)   John saw John.

the second John will be replaced, not by the personal pronoun
he, but by the so-called reflexive pronoun himself:

(2)   John saw himself.

To account for this apparent exception to Pronominalization,
the following rule, Reflexivization, is introduced:

(3)   Noun X Noun   →   Noun X Noun+Refl

Pronominalization can still be assumed to apply on this string
after Reflexivization. Some morphophonemic adjustment will have
to be made, of course, to account for forms like myself instead
of meself, etc.

Turning to Japanese, similar apparent exceptions to
Pronominalization can immediately be noted. Thus, the actual
speech form

(4)   John-ga mi-ta.

       John saw PRO.

may mean

(5)   John saw it.

or

(6)   John saw him.

or

(7)   John saw someone.

but it is not natural to interpret (4) to mean (2). That is,
(4) is the speech form derived by Pronominalization from the
basic form

(8)   John-ga PRO-o mi-ta.

but not from

(9)   John-ga John-o mi-ta.

To express the idea of (2), one may say either

(10)   John-ga John-zisin-o mi-ta.

        John saw John-self.

(11)   John-ga zibun-zisin-o mi-ta.

        John saw himself.

(12)   John-ga zibun-o mi-ta.

        John saw himself.

Hence the following ordered set of rules could be proposed to
correspond to English Reflexivization:

(13)   Noun X Noun   ⟶   Noun X Noun+zisin

(14)   Noun+zisin   ⟶   zibun-zisin   (optional)

(15)   zisin   ⟶   o   (optional)

We will continue our discussion assuming these rules even though we shall eventually abandon them.

The essential character of English Reflexivization lies in the restriction of its application to the simple sentence. Thus, in the underlying form:

(16)   John made Bill see John.

Reflexivization does not apply to the second John since it is not within the same simple sentence as the first John;   (16) will undergo only Pronominalization, resulting in the actual speech form:

(17)   John made Bill see him.

On the other hand, in the basic form:

(18)   John made Bill see Bill.

Bill is the subject and the object of the verb see, so that Reflexivization applies within the same simple sentence to give the actual speech form[1]

(19)   John made Bill see himself.

At this point we can see that Reflexivization in Japanese does not exactly parallel the English counterpart. From the basic causative form:[2]

(20)   John-ga Bill-o (Bill-ga John-o mi)$_{Comp}$ sase-ta.
                                    see   make

         John made Bill (Bill saw John)$_{Comp}$.

we will get, by Reflexivization applied on John:

(21)   John-ga Bill-ni zibun(-zisin)-o mi-sase-ta.

         John made Bill see him.

On the other hand, from the basic form:

(22)   John-ga Bill-o (Bill-ga Bill-o mi) sase-ta.

John made Bill (Bill saw Bill).

we will get, by Reflexivization applied inside the complement,
the same speech form as (21):

(23)   John-ga Bill-ni zibun(-zisin)-o mi-sase-ta.

John made Bill see himself.

Thus, as actual speech forms, (21) and (23) are ambiguous.[3]
This ambiguity results from the fact that Reflexivization may
be applied beyond the boundary of the simple sentence. It will
be our task, then, to try to find the conditions which limit
the applicability of Reflexivization.

It should be noted for completeness' sake that the form
to be expected from (20) and (22) by application of Pronomin-
alization instead of reflexivization, namely

(24)   John-ga Bill-ni mi-sase-ta.

see-make

John made Bill see PRO.

cannot be taken as the actual speech form representing either
(20) or (22): Reflexivization is therefore obligatory for both
forms.

2.   We will begin our examination by noting that if Reflexi-
vization were unrestricted in its applicability, the process of
pronominalization, in the coreferential case, would be reduced
simply to a limited optional variant of Reflexivization. The
fact that it is not so seems trivial, but there is some merit

in posing this problem explicitly.

Let us return to example (IV-11) in the preceding chapter:

(25)   George-wa si-tai toki-ni sigoto-o suru.

               do-want time   work   do

George does his work when he feels like doing it.

The subject <u>George</u> in the time adverbial clause

(26)   George-ga sigoto-o si-tai toki-ni, ...

            work   do-want time

When George feels like doing his work, ...

is pronominalized and hence deleted in the actual speech form

(25). If the tentative reflexivization rules (13) - (15) apply

to <u>George</u> in (26), the following forms result:

(27)   George-wa George-zisin-ga si-tai toki-ni sigoto-o suru.

        George does his work when George-self feels like

                                 doing it.

(28)   George-wa zibun-zisin-ga si-tai toki-ni sigoto-o suru.

        George does his work when he himself feels like

                                 doing it.

(29)   George-wa zibun-ga sitai toki-ni sigoto-o suru.

        George does his work when he feels like doing it.

All of these forms are grammatical. Before discussing their

meaning let consider the following:

(30)   John-wa Bill-ga mi-ta toki hon-o yon-de i-ta.

                     see   time book read be

John was reading a book when Bill saw him.

The underlying form of the time adverbial clause in this sentence

is

(31)   Bill-ga John-o mi-ta toki, ...

                    see   time

When Bill saw John, ...

and <u>John</u> in (31) is Pronominalized and hence deleted in (30).
Application of the tentative reflexivization rules to <u>John</u>
yields the following three forms:

(32)   John-wa Bill-ga John-zisin-o mi-ta toki hon-o yon-de

                                                    i-ta.

        John was reading a book when Bill saw John-self.

(33)   John-wa Bill-ga zibun-zisin-o mi-ta toki hon-o yon-de

                                                    i-ta.

        John was reading a book when Bill saw himself.

(34)   John-wa Bill-ga zibun-o mi-ta toki hon-o yon-de i-ta.

        John was reading a book when Bill saw himself.

The forms (33) and (34) are grammatical but as indicated in the
English translation, do not have the same meaning nor the same
underlying form as (30). The underlying forms for (33) and (34)
should be:

(35)   John-wa Bill-ga Bill-o mi-ta toki hon-o yon-de i-ta.

        John was reading a book when Bill saw Bill.

Form (32) should probably be taken to be grammatical also, and
clearly involves some emphatic implication, as conveyed by the
pseudo-English translation.

Returning to sentences (27) - (29), it can be observed that
(28) and (29) involve the same emphatic implication as (32).
Thus, it may reasonably be assumed that the basic forms for (27),
(28), and (32) contain the emphatic marker, attached to <u>George</u>

in the first two cases and to <u>John</u> in the last one. In other words, the basic forms of (27) and (28) are assumed to be different from that of (25) and the basic form of (32) different from that of (30). In the case of (29) the emphatic implication is not obvious.

The reasonable conclusion seems to be the following. The form <u>zibun</u> is taken to be a token of the reflexive marker, while the form <u>zisin</u> is taken to be a token of the emphatic or distinguishing marker. Thus, <u>zisin</u> is to be introduced from the beginning in the basic forms, while <u>zibun</u> will be introduced transformationally. Accordingly, we will now abandon rules (13) - (15) and introduce the following rule:

(36)   Reflexivization

Noun   X   Noun $\longrightarrow$ Noun X zibun

The question posed at the beginning of this section now seems to be answered: Reflexivization does not apply to the object of time adverbial clauses.

This statement seems challenged when it is recognized that <u>zibun</u> in (33) and (34) could be interpreted as referring to <u>John</u>, the subject of the main sentence. Forms (33) and (34) are repeated below, with this suggested interpretation reflected in the English translation:

(37)   John-wa Bill-ga zibun-zisin-o mi-ta toki hon-o

                       yon-de i-ta.

John was reading a book when Bill saw John himself.

(38)   John-wa Bill-ga zibun-o mi-ta toki hon-o yon-de i-ta.

John was reading a book when Bill saw him (=John).

However, we will claim that _zibun_ in this reading is not to be
regarded as the result of Reflexivization. The problem is
somewhat specialized, but we will discuss it briefly.[4]

A sentence is usually understood to express a speaker's
assertion. When someone says

(39)   John saw Bill.

or

(40)   John was sad.

it is understood that he is asserting the fact represented by
(39) or (40). Sometimes, however, a sentence is to be understood
simply as a narration of a fact, without any implication of
assertion. For example, in novels sentence (39) or (40) does
not necessarily mean that the author is asserting the fact repre-
sented by the sentence. This distinction generally remains
simply semantic, but in Japanese it becomes relevant in certain
special cases, and some forms are permissible only in usual
speech or in the narrative style.

Let us look at the set of adjectives which are paired with
the verb form with the suffix _garu_; e.g., _sabisii:sabisi-garu_
("sad"). These adjectives with a non-first person subject are
likely to sound somewhat unnatural in ordinary speech; but in
narration they may be used freely with any type of subject.[5]
Furthermore, let us consider sentences to which the sentence-
final particle _yo_ is attached. This particle seems to serve to
identify sentences as assertions of the speaker. Thus it is not
natural to say:

(41)   *John-wa kanasikat-ta-yo.

                     sad

          John was sad.

or

(42)   *John-wa samukat-ta-yo.

cold

John was (felt) cold.

We may say, on the other hand:

(43)   John-wa sabisi-gat-ta-yo.

sad

John was sad.

(44)   John-wa samu-gat-ta-yo.

John   cold

John was (felt) cold.

Returning to examples (37) and (38), it can be seen that the attachment of yo will preclude the reading of these sentences as below:

(45)   John-wa Bill-ga zibun-(zisin-)o mi-ta toki hon-o

yon-de i-ta-yo.

*John was reading a book when Bill saw him.

The translation of (45) should instead be that given in (33). Thus, the reading given in (37) and (38) belongs to the marrative style, and this particular use of zibun can be excluded from our discussion of Reflexivization.

3.   We have observed that when the object of the constituent sentence is coreferential with the subject of the matrix sentence, there are two possibilities: either it is Reflexivized as in the causative sentence (21) or Pronominalized as in the time adverbial clause in (30). The next question, then. has to do with the conditions of Reflexivization and Pronominalization.

The subordinate sentence of (30) is a time adverbial.
We can observe that more generally the object of a subordinate
clause which is coreferential with the matrix subject will be
Pronominalized rather than Reflexivized. Thus, from the basic
form:

(46)   John-wa Bill-ga John-o mi-te iru aida-wa sigoto-o suru.

                              see be interval work   do

        John does his work while Bill watches John.

we will get:

(47)   John-wa Bill-ga mi-te iru aida-wa sigoto-o su-ru.

        John does his work while Bill watches him.

but not:

(48)   John-wa Bill-ga zibun-o mi-te iru aida-wa sigoto-o suru.

        John works while Bill watches himself.

Similarly we have, by Pronominalization:

(49)   John-wa Bill-ga yob-eba kotae-ta.

                         call-if reply

        John replied if Bill called him.

(50)   John-wa Bill-ga yon-demo kotae-nakat-ta.

                         call-even reply-not

        Even if Bill called him, John did not reply.

(51)   John-wa Bill-ga yon-da-noni kotae-nakat-ta.

                         call   though reply-not

        John did not reply though Bill called him.

If the deleted PRO in the above sentences is replaced by zibun,
semantically rather anomalous sentences result:

(52)   John-wa Bill-ga zigun-o yob-eba kotae-ta.

        John replied if Bill called himself.

(53)   John-wa Bill-ga zigun-o yon-demo kotae-nakat-ta.

        John did not reply even if Bill called himself.

(54)   John-wa Bill-ga zibun-o yon-da-noni kotae-nakat-ta.

        John did not reply though Bill called himself.

Now compare the following sentences, which have place adverbial clauses:

(55)   John-wa Bill-ga kinoo mi-ta tokoro-ni kyoo-mo tat-te iru.

                        yesterday see   place today stand be

       John is standing today at the place where Bill saw

                        him yesterday.

(56)   John-wa Bill-ga kinoo zibun-o mi-ta tokoro-ni kyoo-mo

                                  tat-te iru.

             yesterday   see   place today

                                stand be

       John is standing today at the place where Bill saw

                        himself yesterday.

The constituent sentence of (20) is dominated by the node Comp, and Comp is in turn dominated by Verb. More typical complement constructions are those in which Comp takes the form of the object of the matrix sentence. In this case, too, the object of a complement coreferential with the matrix subject will be Reflexivized as in (20) rather than Pronominalized. Thus:

(57)   John-wa zibun-o miru-no-o yame-ta.

                 see-that stop

       John stopped seeing himself.

(58)   John-wa Bill-ga zibun-o miru-no-o tome-ta.

                       see-that prohibit

       John prohibited Bill from seeing him.

(59)   John-wa Bill-ga zibun-o settoku-suru-daroo-to

                                       omot-te iru.

                         persuasion-do-will-that think he

John thinks that Bill will persuade him.

(60)   John-wa Bill-ga zibun-o miru koto-o kitai-si-te iru.

                             see   that   ct-do   be

John expects that Bill will see him.

These forms, with the exception of (57), are in principle
ambiguous; for example, (58) can also mean:

(61)   John prohibited Bill from seeing himself.

On the other hand if <u>zibun</u> is replaced by PRO, i.e., by zero,
the natural interpretation assumes some person or thing other
than <u>John</u> as the object of the constituent sentence. This means
that Reflexivization, but not Pronominalization, is applied on
the constituent object of the basic forms of (57) - (60).

The next examples are particularly interesting in that the
objects of the same sentence forms are Pronominalized or Reflexi-
vized according to whether they are in an adverbial clause, as
in (62) and (63), or the matrix object, as in (64) and (65):

(62)   John-wa Bill-ga kakumat-ta ie-de kurasi-te iru.

                           Shelter   house live   be

John is living in the house in which Bill sheltered him.

(63)   John-wa Bill-ga mi-ta hi-ni-wa byooki-dat-ta.

                           see   day   ill

John was ill when Bill saw him.

(64)   John-wa Bill-ga zibun-o kakumat-ta ie-o mi-te iru.

                           shelter   house see   be

John is looking at the house in which Bill sheltered

                                           him.

(65)   John-wa Bill-ga zibun-o mi-ta hi-o oboe-te iru.

                                see   day   remember bc

John remembers the day when Bill saw him.

In examples (62) - (65) the constituent clauses are intro-
duced by relativization, and the modified nouns are in an adverbial
phrase in the constituent sentences:

(66)   Bill-ga sono ie-ni John-o kakumat-ta.

                that house   shelter

Bill sheltered John in that house.

(67)   Bill-ga sono hi-no John-o mi-ta.

                that day   see

Bill saw John on that day.

Let us now consider cases of relativization in which the modified
noun is the object in the constituent sentences. Thus, let us
relativize (66) and (67) with respect to Bill with the matrix
sentences:

(68)   John-wa Bill-o uragit-ta.

        John betrayed Bill.

(69)   John-wa Bill-o syoonin-ni tanon-da.

                        witness   ask

John asked Bill to be a witness.

Insertion of (66) and (67) into (68) and (69), respectively, will
yield the forms:

(70)   John-wa sono ie-ni John-o kakumat-ta Bill-o uragit-ta.

                that house   shelter   betray-past

John betrayed Bill, who sheltered John in that house.

(71)   John-wa sono hi-ni John-o mi-ta Bill-o syoonin-ni

                                        tanon-da.

         that day   see   witness ask

         John asked Bill, who had seen John that day, to be a

                                        witness.

Then John in the constituent sentences will be Reflexivized,

giving the forms:

(72)   John-wa sono ie-ni zibun-o kakumat-ta Bill-o uragit-ta.

         John betrayed Bill, who sheltered him in that house.

(73)   John-wa sono-ni-ni zibun-o mi-ta Bill-o syoonin-ni

                                        tanon-da.

         John asked Bill, who saw him on that day, to be a

                                        witness.

If, instead, we Pronominalized John in (70) and (71), we would get:

(74)   John-wa sono-ie-ni kakumat-ta Bill-o uragit-ta.

         John betrayed Bill whom he sheltered in that house.

(75)   John-wa sono hi-ni mi-ta Bill-o syoonin-ni tanon-da.

         John asked Bill, whom he had seen on that day, to be

                                        a witness.

However these forms, as the English translations suggest, are

most naturally construed to be derived from the following basic

forms by Pronominalization:

(76)   John-wa John-ga sono ie-ni kakumat-ta Bill-o uragit-ta.

                         that house shelter   betray

         John betrayed Bill, whom John sheltered in that house.

(77)   John-wa John-ga sono- hi-ni mi-ta Bill-o syoonin-ni

                                        tanon-da.

                         that day   see   witness ask

> John asked Bill, whom John had seen on that day,
>
> to be a witness.

Thus, again, Reflexivization, but no Pronominalization, is applied
on the object of the constituent sentence in (70) and in (71).

To conclude, when the object of the constituent sentence
is coreferential with the matrix subject, that object is Reflexi-
vized if it is in the object or complement of the matrix verb,
and Pronominalized if it is in an adverbial clause. Since the
adverbial clauses are here assumed to be outside the node VerbPhrase,
this may be restated in the following way: when the object
of the constituent sentence is coreferential with the matrix
subject, it is Reflexivized if it is dominated by the node
VerbPhrase of the matrix sentence, and Pronominalized otherwise.

4.   The preceding section dealt with the case of coreference
between the matrix subject and the constituent object. Let
us now turn to other possible combinations.

Examples of coreference between the matrix subject and the
constituent subject have already been encountered. In Section 2
it was noted that from the basic form

> (78)   George-wa George-ga si-tai toki-ni sigoto-o suru.
>
> do-want time   work   do
>
> George does his work when George feels like doing it.

is derived the actual speech form

> (79)   George-wa zibun-ga si-tai toki-ni sigoto-o suru.
>
> George does his work when he feels like doing it.

In the preceding chapter the form

(80)   George-wa si-tai toki-ni sigoto-o suru.

George does his work when he feels like doing it.

was also taken to be an actual speech form of (78). Thus, either

Reflexivization or Pronominalization is applicable to the con-

stituent subject George in (78).

Sentences (74) and (75) in the preceding section were

considered to be derived from (76) and (77), respectively, by

the application of Pronominalization to the constituent subject.

Here, again, Reflexivization is also applicable and we may have

(81)   John-wa zibun-ga sono ie-ni kakumat-ta Bill-o uragit-ta.

John betrayed Bill, whom he sheltered in that house.

(82)   John-wa zibun-ga sono hi-ni mi-ta Bill-o syoonin-ni

tanon-da.

John asked Bill, whom he had seen on that day, to be

a witness.

It may now be stated as a principle that when the constituent sub-

ject is coreferential with the matrix subject, it may either be

Reflexivized or Pronominalized.

In all other combinations of coreference, the second occurrence

is generally Pronominalizable but not Reflexivizable. This may

seem rather trivial, since it is semantically clear that Reflexi-

vization always refers back to the main subject.[6] But for the

sake of completeness several examples will be given.

First, the matrix object may be coreferential with the

constituent subject or object. We may have the following basic

forms:

(83)   John-wa Bill-ga Boston-ni ki-ta-toki Bill-o Tom-ni

                                        syookai si-ta.

                              come time   introduce do

         John introduced Bill to Tom when Bill came to Boston.

(84)   John-wa Tom-ga Bill-o suisen-si-ta-no-de Bill-o

         zyuuyaku-ni nimei-si-ta.

                              recommend-do for

         executive   appoint-do

         John appointed Bill an executive since Tom recommended

                                        Bill.

Repetition of the noun does not sound too awkward in these

sentences, and they can be used as actual speech forms.   But

Pronominalization is certainly possible:

(85)   John-wa Bill-ga Boston-ni ki-ta-toki Tom-ni syookai-si-ta.

         John introduced Bill to Tom when he came to Boston.

(86)   John-wa Tom-ga Bill-o suisen-si-ta-node zyuuyaku-ni

                                        ninmei-si-ta.

         John appointed Bill an executive since Tom recommended

                                        him.

Reflexivization, however, cannot apply to (83) and (84); if the

matrix object Bill were replaced by zibun, zibun would have to be

taken as referring to the matrix subject, thus resulting in the

semantically more or less anomalous sentences:

(87)   John introduced himself to Tom when Bill came to Boston.

(88)   John appointed himself executive since Tom recommended

                                        Bill.

Pronominalizability of the object, however, seems to be subject

to an additional constraint which is not clear-cut.   For example,

when the matrix predicate is <u>too short</u>, Pronominalization of the object seems to be prevented. One would not derive from

    (89)   John-wa Bill-ga Boston-ni ki-ta toki Bill-o mi-ta.

                                        come   time   see

            John saw Bill when Bill came to Boston.

the Pronominalized form

    (90)   John-wa Bill-ga Boston-ni ki-ta toki mita

                                     come   time see

            When Bill came to Boston, John saw him.

But one would probably say

    (91)   John-wa Bill-ga Boston-ni ki-ta toki MIT-no Kresge-

                                           koodoo-de mita.

                                  come   time auditorium see

            When Bill came to Boston, John saw him at the

                                    Kresge Auditorium of MIT.

In any case, the matrix object cannot be Reflexivized when it refers back to the constituent subject or object.

In the basic forms (83) and (84), the order of the constituents of the matrix sentence can be so changed that the matrix object precedes the constituent sentence:

    (92)   John-wa Bill-o Bill-ga Boston-ni ki-ta toki

                                      Tom-ni syookai-si-ta.

    (93)   John-wa Bill-o Tom-ga Bill-o suisen-si-ta-node

                                      zyuuyaku-ni ninmei-si-ta.

Then, the constituent subject or object referring back to the matrix object is Pronominalized:

(94)   John-wa Bill-o Boston-ni ki-ta-toki Tom-ni syookai-si-ta.
                                   come   time   introduce-do

John introduced Bill to Tom when he came to Boston.

(95)   John-wa Bill-o Tom-ga suisen-si-ta-node zyuuyaku-ni

                                        ninmei-si-ta.

                         recommend-do for executive appoint

John appointed Bill executive since Bill recommended him.
Pronominalizability of the constituent subject and object re-
ferring back to the matrix subject is not influenced by the
<u>shortness</u> of the matrix sentence.   One can say:

(96)   John-wa Bill-o Boston-ni ki-ta toki mi-ta.

                                   come time see

John saw Bill when he came to Boston.
This Japanese form is of course ambiguous in the same way that
the English is.   The amibguity will disappear if the deleted PRO
in (96) is replaced by <u>zibun</u>.   But then <u>zibun</u> refers back to
the matrix subject <u>John</u>.   Thus, again, the constituent subject
or object can be Pronominalized but not Reflexivized when it
refers back to the matrix object.

Finally, word-order change may put the matrix subject after
the matrix object or the constituent subject or object.   But
in such situations the matrix subject can neither be Pronominalized
nor Reflexivized.   Thus, if Pronominalization or Reflexivization
were applied to the following:

(97)   John-o John-ga mi-ta.

John John saw.

(98)   John-ga Boston-ni ki-ta toki John-ga Bill-o Tom-ni

                                        syookai-si-ta.

                 come   time   introduce-do

When John came to Boston, John introduced Bill to Tom.

(99)   Bill-ga John-o mi-ta toki John-ga hon-o yon-de i-ta.

                    see   time   book read   be

When Bill saw John, John was reading a book.

the resulting forms could not be taken as having been derived

from the above:

(100)   John-o mi-ta.

                    see

PRO saw John.

(101)   John-ga Boston-ni ki-ta toki Bill-o Tom-ni syookai-si-ta.

                         come time   introduce-do

When John came to Boston, PRO introduced Bill to Tom.

(102)   Bill-ga John-o mi-ta toki hon-o yon-de i-ta.

                         time book read   be

When Bill saw John, PRO was reading a book.

(103)   John-o zibun-ga mi-ta.

                         see

I saw John.

(104)   John-ga Boston-ni ki-ta toki zibun-ga Bill-o Tom-ni

                                              syookai-si-ta.

                    come time   introduce-do

When John came to Boston, I introduced Bill to Tom.

(105)   Bill-ga John-o mi-ta toki zibun-ga hon-o yon-de i-ta.

                    see   time   book read   be

When Bill saw John, I was reading a book.

In these sentences, PRO and zibun should be taken as independently

chosen by the lexical rule. According to the circumstances, PRO

may be rendered as <u>I</u>, <u>he</u>, etc. <u>Zibun</u> is to be taken as one form

of the first person noun in a particular style or social dialect.[7]

The fact treated in this paragraph is easily taken care of by

stipulating that when Reflexivization and Pronominalization

are applied, the subject is located at the head of the sentence.

5.   To conclude, we will now state the fundamental condition of

Reflexivization as follows: Referring back to the main subject,

Reflexivization applies obligatorily on the main object and on

the constituent object dominated by the main node VerbPhrase,

and optionally on the constituent subject. The applicability

of Reflexivization is therefore much wider in Japanese than it

is in English, where the condition is simply application within

the simple sentence.

Apparent counterexamples to this fundamental condition in

Japanese will probably emerge. But counterexamples observed on

the surface level may well be due to the intervention of some

other grammatical factors on a deeper level, so that as essential

revision of the fundamental condition itself would not be neces-

sarily called for.

The so-called passive construction presents what appears

to be a counterexample. The passive sentence:

(106)   John-wa Bill-ni mi-rare-ta.

see-pass

John was seen by Bill.

is assumed to have the underlying form:[8]

(107)   John-wa (Bill-ga John-o mi)$_{Comp}$ rare-ta.

Apparently this has a formal similarity to the causative con-
struction, in that in both cases the constituent sentence is
directly attached to the (auxiliary) verb. But notice that
John in the complement of (107) is deleted in the actual speech
form (106), rather than replaced by zibun, which would be
expected from the general statement given above. Thus it would
seem that the Reflexivization rule should be provided with an
exceptional prohibiting condition referring to the passive
auxiliary verb.

However, the passive auxiliary verb may be seen not as an
isolated exception, but as one case of a more general gramma-
tical phenomenon responsible for a set of apparent counter-
examples to our fundamental condition on Reflexivization.

To see this, let us consider the (auxiliary) verb -te
moraw. Syntactically it behaves in a way similar to the
causative case (for a more exact account, see Chapter VI),
and we can have the following sentence frame:

(108) N_1-ga N_2-ni VP   -te morau

N_1 and N_2 are the matrix and constituent subjects, respectively.
The meaning of this form may be rendered as "N_1 (asks and)
gets N_2 to do VP" We have said that the actual speech form
(24), which we repeat here,

(109)   John-ga Bill-ni mi-sase-ta.

John made Bill see PRO.

is not to be taken as derived from the basic form:

(110)   John-ga Bill-ni John-o mi-sase-ta.
                                   see-make
John made Bill see John.

If -te moraw is substituted for sase in (109), we will get the
form:

(111)   John-ga Bill-ni mi-te morat-ta.

          see   get to

John got Bill to see him.

and this form, as the above translation may indicate, can

naturally be understood with the deleted object <u>John</u>; that is,

this can be understood as derived from the basic form parallel

to (110):

(112)   John-ga Bill-ni John-o mi-te morat-ta.

                              see   get to

John got Bill to see John.

In principle, then, (111) is ambiguous, also being possibly

derived from:

(113)   John-ga Bill-ni PRO-o mi-te morat-ta.

John got Bill to see PRO.

The following pairs may be added:

(114a)   John-ga Bill-ni suisen-sase-ta.

John made Bill recommend PRO.

(114b)   John-ga Bill-ni suisen-si-te morat-ta.

John got Bill to recommend him.

(115a)   John-ga Bill-ni syootai-sase-ta.

John made Bill invite PRO.

(115b)   John-ga Bill-ni syootai-si-te morat-ta.

John got Bill to invite him.

(116a)   John-ga Bill-ni yurus-ase-ta.

John made Bill forgive PRO.

(116b)   John-ga Bill-ni yurusi-te morat-ta.

John got Bill to forgive him.

The difference shown between the _sase_ form and the -te mcraw

form is due to the fact that the latter has the semantic implica-

tion that the action of the constituent sentence is done in

favor of, or for the benefit of the matrix subject. This impli-

cation makes it possible for the deleted object of the con-

stituent verb to be understood as referring to the matrix subject.

Still, it is possible to replace the constituent object with

zibun instead of deleting it, as in:

> (117)   John-ga Bill-ni zibun-o mi-te morat-ta.
>
> John got Bill to see him.
>
> (118)   John-ga Bill-ni zibun-o suisen-si-te morat-ta.
>
> John got Bill to recommend him.

Thus the constituent object coreferential with the matrix subject

is still Reflexivizable; what is new is its deletability.

Another example of this sort is supplied by the (auxiliary)

verb -te kure. With regard to the meaning of this verb, it can

probably be said that in the simple sentence it always implies the

benefit of the speaker while in the complex sentence it could

also imply the benefit of the matrix subject. Thus, let us

add -te kure after the verb kakumaw ("shelter") in the con-

stituent sentence in (64):

> (119)   John-wa Bill-ga zibun-o kakumat-e kure-ta ie-o mi-te
>
> iru.
>
> shelter   house see be
>
> John is looking at the house in which Bill sheltered
>
> him.

The deletion of <u>zibun</u> here seems quite permissible:

(120)   John-wa Bill-ga kakumat-te kure-ta ie-o mi-te iru.

Here again it is the semantic implication of the form <u>-te kure</u>
that seems responsible for the deletability of the constituent
object coreferential with the matrix subject. The following
pairs may be added for comparison:

(121a)   John-wa Bill-ga suisen-suru koto-o kitai-si-ta.
                            recommend   expect
          John expected Bill to recommend PRO

(121b)   John-wa Bill-ga suisen-si-te kureru koto-o kitai-si-ta.

          John expected Bill to recommend him.

(122a)   John-wa Bill-ga syootai-suru-yoo-ni tanon-da.

                          invite   ask

          John asked Bill to invite PRO.

(122b)   John-wa Bill-ga syootai-si-te kureru koto-o tanon-da.

          John asked Bill to invite him.

(123a)   John-wa Bill-ga yurusu koto-o nozon-da.

                          forgive   hope

          John hoped that Bill would forgive PRO.

(123b)   John-wa Bill-ga yurusi-te kureru koto-o nozon-da.

          John hoped that Bill would forgive him.

One may call the two verbs treated above first person dative
verbs, since they have the implication of <u>dativus commodi</u> of
the speaker, if they are in the simple sentence, and of the
matrix subject, if they are in the constituent sentence. There
are also the verbs, <u>-te age</u> and <u>-te yar</u>, which may be called
non-first person dative verbs, which incorporate within them
the feature of <u>dativus commodi</u> of the suitably understood

non-first person.

Let us now return to the passive sentence with which we
began our present discussion. We have observed that, in spite of
their morphological similarity, the causative and passive verbs
sase and rare treat the constituent object coreferential with the
matrix subject differently: the former Reflexivizes it and the
latter deletes it. It should be noted, however, that the
Japanese passive sentence is, in principle, not neutral as it is
in English, but carries an implication of disadvantage for
the subject. Semantically, then, the passive verb can also be
understood as an instance of the dative verb, the verb of dativus
incommodi. Syntactically, then, the passive verb can also be
understood as an instance of the dative verb, the verb of dativus
incommodi. Syntactically it actually parallels the verb of dati-
vus commodi, -te moraw, in its treatment of the constituent
object coreferential with the matrix subject.

The objection may be raised that in the case of -te moraw
Reflexivization may also be applied on the constituent object,
while it may not in the case of passivization. It is true that
most commonly the object is deleted in passivization if it is
identical with the matrix subject, but after closer observation
it will seem better to assume that in principle Reflexivization
is permissible here as well. Indeed, the form:

(124)   John-wa Bill-ni zibun-o mirare-ta.

                                see-pass

        John was seen by Bill.

is not to be considered totally ill-formed. Furthermore let us

consider the following form, syntactically well-formed if not semantically normal:

(125)   John was stolen by Bill.

To express the idea of this sentence in Japanese, one would expect to have the corresponding form:

(126)   John-wa Bill-ni nusum-are-ta.

                    steal-pass

derived from:

(127)   John-wa Bill-ni John-o nusum-are-ta.

However, as an actual speech form (126) is most naturally interpreted as derived from:

(128)   John-wa Bill-ni PRO-o nusum-are-ta.

PRO will refer to some belonging of John's implicitly understood in the discourse context. This of course is due to the fact that generally one steals something, not someone. To effectively convey the idea of (125), one would quite probably say:

(129)   John-wa Bill-ni zibun-o nusum-are-ta.

FOOTNOTES

[1]For a generative treatment of English Reflexivization, see Lees-Klima (1963).

[2]For the complement construction in general see chapter VI. For the causative construction in particular see also Kuroda (1965).

[3]The forms (21) and (23) may sound somewhat unnatural. Indeed sentences (10) - (12) do not sound quite natural either, probably because of some semantic fact peculiar to the verb mi ("see"). If the ambiguity of (21) and (23) is not immediately obvious, in order to follow our discussion it would be advisable to add the modifying clause kagami-no naka-no ("in the mirror") or to substitute the verb but ("hit") for mi ("see"). Thus:

John-ga Bill-ni kagami-no naka-no zibun-zisin-o

mi-sase-ta.

mirror   inside

John made Bill see him(self) in the mirror.

John-ga Bill-ni zibun(-zisin)-o but-ase-ta.

hit-make

John made Bill hit him(self).

[4]Since later topics do not depend on the discussion that follows, the reader may proceed to the next section if he prefers.

[5]This observation was brought to my attention by
Mr. G. Itasaka of Harvard University.

[6]Main subject here will refer either to the subject of
the simple sentence or the matrix subject of the complex
sentence.

[7]For example it is well known that zibun was used as the
first person noun in the Japanese armed forces.

[8]For a discussion of the so-called passive sentence, see
Chapter VI. Here, in particular, it should be noted that the
Japanese passive sentence clearly involves the constituent
sentence, contrary to the case of the passive sentence in
English.

CHAPTER VI   _ga_, _o_, and _ni_

1.   In chapter II it was explained that the main use of
the particle _ga_ is to mark the subject; many of the previous
examples show that the object, on the other hand, is marked by
the particle _o_. Up to this point it has been tacitly assumed
that these particles are generated in the phrase structure.
Thus, putting aside for a while constituents other than subject
and object, we may have the rules:

    (1)   S   → NP ga VP Aux

    (2)   VP → NP o V

These rules will correspond to the following familiar rules in
English:

    (3)   S   → NP Aux VP

    (4)   VP → V NP

If these two systems are compared from a purely formal point of
view, it can be seen that the former system is less economical,
for _ga_ and _o_ are essentially redundant. The rules:

    (5)   S   → NP VP Aux

    (6)   VP → NP V

will suffice to determine which NP in the string NP NP V Aux
is the subject and which the object of the sentence. The

particles ga and o which appear on the phonetic level may then be supplied by the transformational rules:

(7) $\phi \longrightarrow$ ga   in env. ##NP____

(8) $\phi \longrightarrow$ o   in env. NP____V

This explanation remains valid even if some adverbial phrases intervene between the subject and the object.

But the simplification of the phrase structure obtained by replacing (1), (2) with (5), (6) is counteracted by the complication of the transformational part resulting from the introduction of (7) and (8), so that it may not be immediately clear which way is to be taken. However, further observation will indicate that the introduction of the particles ga and o by a transformational rule is to be preferred. More precisely, let us look at the following. The sets of rules (1) and (2) on the one hand and (7) and (8) on the other will give different structural significance to the particles ga and o. The former set gives a substantial interpretation of the particles and the latter a formal interpretation; in the former the particles will be associated exclusively with the grammatical notion of subject and object, while in the latter they are characterized by a certain formal property on some level of the transformational component. It has been made rather clear that the distinction between the nominative and accusative cases in English (though actually realized only by the personal pronouns, e.g., I vs. me, etc.) is formal rather than substantial. The main purpose of this chapter is to show that the same is true for Japanese with respect to the particles ga and o, which are usually taken as the

subject and object markers, respectively. For this purpose, of course, the formal interpretation (7), (8) will have to be duly refined.

Particles other than ga and o may also appear in actual speech forms. They are usually contained in an adverbial phrase of some sort or other, e.g., Tokyo-de or Tokyo-ni (in Tokyo", niciyoo-ni ("on Sunday"), isi-de ("with stone"). In the following discussion we will not concern ourselves with the level on which these particles are to be introduced but will simply assume that they are introduced before application of the rules which insert ga and o. We will call noun phrases marked if they have these particles attached. It is thus assumed that just before the insertion rules are applied, at most those noun phrases which eventually acquire the particle ga or o may be left unmarked.[1]

2.   So far as simple sentences are concerned, either of the sets of rules (1), (2) and (5), (6), (7), and (8) will generate the right forms, and we will not have much to say about their evaluation from a purely formal point of view. In English the formal character of the case distinction is revealed by passivization within the range of simple sentences. But as was observed in the preceding chapter, passive sentences are complex in Japanese, and the formal nature of the particles ga and o is revealed only after the extension of our discussion to the complex sentence. Actually the problem becomes the investigation of certain aspects of sentence embedding.

In English three types of sentence embedding can be distinguished: clausal, infinitival, and gerundial. In each of the three cases, embedding the sentence does not change its structure, except possibly for its subject and auxiliary. In clausal embedding virtually no change occurs; the subject and the auxiliary system of the independent sentence are kept intact (except for possible intervention of the subjunctive mood and the sequence of tense). In gerundial embedding the verb takes the present participial form and the subject is expressed, if at all, in the genitive case. In infinitival embedding the verb takes the infinitive form and the subject is expressed, if at all, in the accusative case with or without the preposition _for_.

We will not attempt an exhaustive survey of the types of sentence embedding in Japanese. As a general remark we can note that as in English embedding, constituents other than the subject and the auxiliary do not undergo any change. We will not specify in exact terms what we mean by the auxiliary. For our discussion it suffices to note that the auxiliary is a tense marker, present or past, or some other particles attached to the end of the verb phrase, e.g., _yoo_. The auxiliary system does not change in the embedded sentences in relativizations or nominalization. Thus:

(9a)   John-ga ka-u hon ..

         buy   book

     book which John (will) buy ..

(9b)   John-ga kat-ta hon ...

         buy   book

     book which John bought ...

(10a)   John-wa Bill-ga hon-o ka-u-to omot-ta.

                   book   buy   think

John thought that Bill would buy books.

(10b)   John-wa Bill-ga hon-o kat-ta-to omot-ta.

                   book   buy   think

John thought that Bill had bought books.

Some verbs require a special auxiliary, as in:

(11)   John-wa Bill-ni hon-o ka-u-yoo-ni tanon-da.

                  book buy

John asked Bill to buy books.

Let us call cases like the above, in which the tense marker is preserved after embedding, clausal embedding. There are other verbs which require the embedded sentence to lose its tense marker:

(12)   John-wa Bill-ni hon-o kaw-ase-ta.

                  book   buy-make

John made Bill buy books.

(13)   John-wa Bill-ni hon-o kat-te morat-ta.

                  book   buy   get

John got Bill to buy books.

We will call this type of embedding nonclausal. The behavior of the subject in embedding will be of more interest to us here than the behavior of the auxiliary.

3.   Let us discuss in this section the subject of clausal embedding. Consider the following sentences:

(14)   John-wa Bill-ga hon-o ka-u-koto-o kitai-si-ta.

                           book   buy   expect

         John expected that Bill would buy books.

This is a typical nominalized embedding and no change has

taken place inside the embedded sentence.   The English trans-

lation may be said to represent faithfully the embedding structure

in the Japanese sentence, except for the sequence of tense

modification.   Alonside (14) we may have:

(15)   John-wa Bill-ni hon-o ka-u-koto-o kitai-si-ta.

Here the embedded subject appears in the ni-phrase.   The

ni-phrase used in a simple sentence generally denotes the

indirect object, as in:

(16)   John-wa Bill-ni hon-o atae-ta.

                           book   give

         John gave books to Bill.

(17)   John-wa Bill-ni hon-o morat-ta.

                           book   get

         John got books from Bill.

Thus the following may be given as a formally faithful trans-

lation of (15):

(18)   John expected of Bill that he would buy books.

One might consider the ni-phrase in (15) to have been originally

contained in the matrix sentence.   But if it were a matrix

constituent, it would always be identical with the embedded

subject.   In other words, we do not accept such forms as:

(19)　　　*John-wa Bill-ni Tom-ga hon-o ka-u-koto-o kitai-si-ta.

　　　　　　　　　　　　　　　　　　book　　buy　　　　　expect

　　　　　*John expected of Bill that Tom would buy books.

There does not seem to be any need to introduce the ni-phrase

in the matrix sentence with the verb kitai-su-ru ("expect").

Hence, we assume, rather, that (15) is derived directly from

(14) by a transformation. However, the ni-phrase thus derived

from the constituent subject will be treated as if it were

a constituent of the matrix sentence. Thus the most natural

readings of (14) and (15) would have a pause before Bill-ga

and after Bill-ni, and another pause after koto-o. The

transformation will be formulated as follows:

(20)　　　Constituent Subject Extraction

　　　　　(NP-ga X)$_{Comp}$　→　NP-ni (X)$_{Comp}$

Note that the English sentence given in (14) is similarly trans-

formed into:[2]

(21)　　　John expected Bill to buy books.

In some sense one may say that (21) is semantically as well as

formally a faithful translation of (15): however, the verb

phrase becomes infinitival in English but remains clausal in

Japanese.

　　　One might object to our analysis of (15) by pointing to

sentences like

(22)　　　John-wa Bill-ni seikoo-o kitai-si-ta.

　　　　　　　　　　　　success　expect

　　　　　John expected success from Bill.

where apparently Bill and seikoo are, respectively, matrix in-

direct and direct objects of the verb <u>kitai-si</u>. But the Sino-Japanese word <u>seikoo</u>, though morphologically a noun, is notionally verbal, and we can paraphrase (22), using the verbalized form <u>seikoo-si</u>, with the following sentence which has the same structure as (14):

(23)   John-wa Bill-ga seikoo-su-ru-koto-o kitai-si-ta.

                            succeed   expect

     John expected that Bill would succeed.

Constituent Subject Extraction can also be applied to (23) to get:

(24)   John-wa Bill-ni seikoo-su-ru-koto-o kitai-si-ta.

                            succeed   expect

     John expected Bill to succeed.

We will then suppose that (22) is further derived from (24) by deleting the carrier verb <u>si</u> ("do") with the nominalization marker <u>koto</u>. We will now introduce the rule:

(25)   si-Deletion

        $(N\text{-}si)_V$ -ru-koto $\longrightarrow$ N

But there are certainly cases in which the <u>ni</u>-phrase should be assumed to originate in the matrix sentence. For instance in:

(26)   John-wa kamisama-ni Bill-ga hon-o ka-u-yoo-ni

                God   (or ka-u-koto-o)

                                        book   buy

                                        o-inori-si-ta

                                        pray

     John prayed to God that Bill would buy books.

the matrix indirect object <u>kamisama</u> and the constituent subject <u>Bill</u> are different: but they may coincide, as in:

(27)   John-wa kamisama-ni hon-o kudasa-ru-yoo-ni o-inori-si-ta.

             God   book give   pray

       John prayed to God that He (God) give him books.

In (27) we assume that the constituent subject is deleted. In (26) Constituent Subject Extraction cannot be applied to get:

(28)   *John-wa kamisama-ni Bill-ni hon-o ka-u-yoo-ni

                                     o-inori-si-ta.

Some other cases are located between these two extremes, and different people may judge them differently. We shall suppose that the verbs <u>yurus</u> ("permit") and <u>meizu</u> ("order") belong to the former group and that sentences like the following are ill-formed:

(29)   *John-wa Bill-ni Tom-ga hon-o-ka-u-koto-o yurusi-ta.

                             book buy   permit

      *John permitted Bill that Tom would buy books.

But one may disagree with this, in which case these verbs will have to be treated like <u>inor</u> ("pray").[3]

In comparing Japanese with English, the following point should be noted. In English to decide whether the superficial object is derived from the matrix sentence or solely from inside the constituent sentence, it is not sufficient to consider whether the verb can choose the matrix object and the constituent subject independently. Thus, with the verb <u>persuade</u> the constituent subject is always identical with the matrix object, and yet one assumes the underlying form:

(30)   John persuaded Bill (Bill would buy books).

for the sentence:

(31)   John persuaded Bill to buy books.

A reason for giving different basic structures to sentences

(21) and (31) in spite of their superficial resemblance is

that (21) can be paraphrased by:

(32)   John expected books to be bought by Bill.

but (31) cannot be paraphrased by:

(33)   John persuaded books to be bought by Bill.

In other words, infinitivalization of the complement of the

English sentence given in (14) can take place either before

or after passivization is applied to the constituent sentence.

But a (superficially) similar argument does not hold

in Japanese. Although we assumed that (14) was the underlying

form of (15), it is not claimed that (15) can be paraphrased by

(34)   *John-wa hon-ni Bill-ni kaw-are-ru-koto-o kitai-si-ta.

John expected books to be bought by Bill.

Recall, however, as noted in chapter V and to be noted again

below, that the Japanese so-called passive is a generalized

transformation, so that the basic form of (34):

(35)   John-wa hon-ga Bill-ni kaw-are-ru-koto-o kitai-si-ta.

is already different from the basic form (14).

On the whole, the passive sentence in Japanese does not

occur with nonhuman (derived) subjects as freely as it does

in English. But it will certainly be agreed that (34) is more

highly ungrammatical than (35). This is, however, due to the

additional condition on Constituent Subject Extraction, (20),

that it may apply in principle only to a human subject. Thus,

Thus, it is also true that the form:

(36)   *John-wa ame-ni huru-koto-o kitai-si-ta.

                rain   fall   expect

        John expected rain to fall.

sounds strange, although its supposed source:

(37)   John-wa ame-ga hur-u-koto-o kitai-si-ta.

        John expected that rain would fall.

is quite all right.

4.   Let us continue discussing the ni-phrase derived from the embedded subject. This section will deal with nonclausal embedding.

     The Japanese so-called passive sentence involves a matrix and a constituent sentence, which are in principle independent of each other. Thus, we have:

(38)   John-wa ame-ni hur-are-ta.

                rain   fall

(39)   John-wa Bill-ni hon-o kaw-are-ta.

                        book   buy

The constituent sentences of these passive sentences are, respectively,

(40)   ame-ga hut-ta.

        rain   fall

        Rain fell. (It rained.)

(41)   Bill-ga hon-o kat-ta.

                book   buy

        Bill bought books.

As noted in Chapter V. the passive sentence implies not only the fact expressed by its constituent sentence but also

some disadvantage suffered by the matrix subject as a result
of that fact. Thus, in (38) and (39) it is implied that John
somehow suffered from the facts expressed by (40) and (41).
When the matrix subject is identical to the constituent object,
the latter is deleted in the actual speech form, and we have,
for example:

(42)   John-wa Bill-ni mi-rare-ta.

see

John was seen by Bill.

This is the case in which the Japanese passive appears to be
like the English passive. But, as suggested in Chapter V,
the deletion of the constituent object is to be understood within
the general scheme of Pronominalization (the constituent object
may even be Reflexivized in certain special cases), and there
is essentially nothing special involved here.

As the above examples show, the constituent subject of
the passive sentence appears in the ni-phrase in the actual
speech form. We have no reason to assume that this ni-phrase
originated in the matrix sentence. Thus, we will assume that
the matrix sentence for passivization is:[4]

(43)   NP-ga (Comp-rare)$_V$- Tense.

When the constituent sentence is inserted into Comp in this
formula, it loses its auxiliary (tense), and Constituent Subject
Extraction (20) obligatorily applies, whether or not the con-
stituent subject is human. Thus, for example, we have:

(44)   John-ga (ame-ga hur)$_{Comp}$-rare-ta.

$\longrightarrow$ John-ga ame-ni hur-are-ta.

Another typical kind of nonclausal complementation takes

place with the causative verb <u>sase</u>. There are two different

causativizations using the verb <u>sase</u>, <u>ni</u>-causativization and

<u>o</u>-causativization. The reader is referred to Kuroda (1965)

for a more detailed explanation of their formal and semantic

differences. Here, however, we will give a different formal

explanation of causativization from the one given in the paper

cited above, because we are now looking at it in a more general

perspective. (The essential point of the argument in that

paper remains completely valid.) First let us consider the

intransitive constituent sentence:

>　(45)　　Bill-ga hatarak-u.
>
>　　　　　　　　　work
>
>　　　Bill worked.

The <u>ni</u>- and <u>o</u>-causativizations of this sentence with the causa-

tive agent <u>John</u> appear, respectively, as:

>　(46)　　John-ga Bill-ni hatarak-ase-ta.
>
>　　　John made Bill work.
>
>　(47)　　John-ga Bill-o hatarak-ase-ta.
>
>　　　John made Bill work.

To account for (46), we have only to assume that it has the

underlying form:

>　(48)　　John-ga (Bill-ga hatarak)$_{Comp}$-sase-ta.

from which Bill-<u>ni</u> in (46) is derived by Constituent Subject

Extraction (40). In other words, as the matrix sentence for

the <u>ni</u>-causativization, we will assume the form:

>　(49)　　NP-ga (Comp-sase)$_V$ -Tense

On the other hand, we will assume that the <u>o</u>-phrase in the

causativization originates in the matrix sentence, which will
be of the form:

(50)   NP-ga NP-o (Comp-sase)$_V$ - Tense

Then (47) will have the underlying form:

(51)   John-ga Bill-o (Bill-ga hatarak)$_{Comp}$-sase-ta.

The ga-phrase in the complement here has to be deleted. Before
trying to give a formal account of this deletion, let us consider
the causative sentence with the transitive constituent sentence.
On the phonetic level there is no distinction between the
ni- and o-causative forms. From the constituent sentence:

(52)   Bill-ga hon-o kat-ta.

only one causative (phonetic) form is derived:

(53)   John-ga Bill-ni hon-o kaw-ase-ta.

To achieve semantic parallelism with the intransitive case,
however, the form (53) is assumed to be ambiguous; that is,
it is either the ni- or o-causativization of (52). To account
for the ni-causative reading of (53), we only have to insert
(52) in the Comp of (49), the ni-phrase in (53) then being
automatically derived by Constituent Subject Extraction (20).
On the other hand, if we insert (52) into the Comp of (50)
to get the o-causative reading of (53), we will get the form:

(54)   John-ga Bill-o (Bill-ga hon-o kaw)$_{Comp}$-sase-ta.

From this, the ni-phrase in (53) may be explained by Constituent
Subject Extraction applied to the ga-phrase in the constituent
of (54). Then the o-phrase in (54) must be deleted. Thus,
in o-causativization, the matrix object is deleted if the con-
stituent sentence is transitive and the constituent subject is

deleted if the constituent sentence is intransitive. This asymmetry is not desirable, but it seems that the above is the most natural way of explaining the appearance of the o-phrase and the ni-phrase in the actual speech forms of the various causative forms. Admitting this, we will introduce the following rule:

(55)   o-Phrase Deletion:

NP-o $\longrightarrow$ $\emptyset$ _in env._ ___ (XNP-oV)$_{Comp}$-sase.

It will be seen later that this rule is more general than it now appears to be. The deletion of the ga-phrase in the constituent sentence of the o-causativization with the intransitive constituent sentence can be handed over to the general process of pronominalization; that is, we will assume that Pronominalization, referring back to the main object, is applied to the subject of the complement attached to the main verb. Note that o-Phrase Deletion should then be applied before Pronominalization.

In Kuroda (1965) some semantic and syntactic similarities are indicated between the ni-causativization and the construction with the verb moraw. Some aspects of the moraw are also discussed in Chapter V. In accordance with our interpretation of the ni-causative form, the moraw form is assumed to have the matrix:

(56)   NP-ga (Comp-te moraw)$_V$-tense.

The constituent sentence, either transitive or intransitive, will be inserted into the Comp and then Constituent Subject Extraction (20) will apply. For example:

(57)   John-wa (Bill-ga hatarak)$_{Comp}$-te moraw-ta.

    → John-wa Bill-ni hatarai-te morat-ta.

(58)   John-wa (Bill-ga hon-o kaw)$_{Comp}$-te moraw-ta.

    → John-wa Bill-ni hon-o kat-te morat-ta.

Note that Constituent Subject Extraction (20) is obligatorily applied in the above cases of nonclausal embedding. On the other hand, moraw sentences like (57) and (58) and ni-causativization like (46) can result only from constituent sentences with a human subject. It was noted earlier that Constituent Subject Extraction (20) is applicable only to human nouns in the case of the clausal embedding treated in section 2. Let us suppose that Constituent Subject Extraction is subject to this condition in general. Then if a sentence with a nonhuman subject is inserted into the Comp of (49) or (56), this condition will conflict with the obligatory application of the rule in nonclausal complements, and we may suppose that this will lead to blocking, accounting for the nonexistence of the moraw and ni-causative sentences with non-human subject. However, it must be admitted that this conflict is reasolved in favor of Constituent Subject Extraction in the case of passivization. There certainly exist passive sentences with nonhuman constituent subjects, e.g., (38).

5.   Thus far we have dealt with complements dominated by the node VerbPhrase of the matrix sentence. Let us now turn to some of the sentence embeddings under the matrix subject. The English sentence

(59)   John can buy books.

is most naturally translated into Japanese as

(60)   John-wa hon-o ka-u-koto-ga deki-ru.

        book   buy   can

The existence of an underlying particle _ni_ after John in (60)

can be indicated by a variant form of (60):

(61)   John-ni-wa hon-o ka-u-koto-ga deki-ru.

and also by the nominalization:

(62)   John-ni hon-o ka-u-koto-ga deki-ru-koto

        that John can buy books

Probably the form:

(63)   John-ni hon-o ka-u-koto-ga deki--ru.

is rather rare as an actual speech form, but the particle _ga_

may appear:

(64)   John-ga hon-o ka-u-koto-ga deki-ru.

        John can buy books.

Also, _ni_ may be replaced in the nominalization by _ga_:

(65)   John-ga hon-o ka-u-koto-ga deki-ru-koto

        that John can buy books

We will suppose that we have the basic form:

(66)   ((John-ga hon-o ka-u)$_{Comp}$-koto)$_{NP}$ -ga (deki)$_{VP}$-ru

The _ni_-phrase in (61) and (63) is then explained by Constituent

Subject Extraction (20).

The verb _deki_ may be directly preceded by a noun. For

example one may say:

(67)   John-wa doicugo-ga deki-ru.

        German   can

But, in this case again, it is understood that John is the

subject of some action which is in a natural way implied by the

noun <u>doicugo</u>, probably the action of speaking (but possibly
the action of reading, writing etc.) Thus we may assume that
(67) is derived from:

    (68)   John-wa doicugo-o hanas-u-koto-ga deki-ru.

                   German   speak   can

        John can speak German.

Actually, in this context the verb <u>hanas</u> does not add much
information to the sentence. On the other hand when a noun is
such that it is not particularly associated with a certain action,
the verb before <u>deki-ru</u> cannot be deleted. We cannot say some-
thing like:

    (69)   *John-wa hon-ga deki-ru.

The particle <u>ni</u> may also appear in such forms as (67):[5]

    (70)   John-ni doicugo-ga deki-ru koto

        that John can (speak) German

An exact generative account of the particle <u>ga</u> following
<u>doicugo</u> in (67) and (70) will be given later.

    There is a group of adjectives which show a complete
parallelism with the verb <u>deki</u> in their sentence making. Thus,
we have, for example:

    (71)   John-(ni-)wa doicugo-o hanas-u-koto-ga muzukasi-i.

                   German   speak   difficult

        It is difficult for John to speak German.

    (72)   John-ni doicu-go-o hanas-u-koto-ga muzukasi-i-koto

        that it is difficult for John to speak German

    (73)   John-ga doicugo-o hanas-u-koto-ga muzukasi-i (koto)

        (that) it is difficult for John to speak German

It will be assumed that we have the basic form:

(74) ((John-ga doicugo-o hanas-u)$_{Comp}$-koto)$_{NP}$-ga

(muzukasi)$_{VP}$-i

The noun doicugo may directly precede the adjective muzukasi:

(75) John-(ni-)wa doicugo-ga muzukasi-i.

(76) John-ni doicugo-ga muzukasi-i koto.

In this case the deleted verbal notion should probably be
assumed to be naraw ("learn"). The underlying form is then:

(77) ((John-ga doicugo-o nara-u)$_{Comp}$-koto)$_{NP}$-ga

(muzukasi)$_{VP}$-i

6.   Another group of adjectives occur in a construction
superficially identical to that in (75) and (76). Thus:

(78) watasi-ni-wa ongaku-ga tanosi-i.

I   music   amusing

Music is amusing to me.

(79) watasi-ni ongaku-ga tanosi-i-koto

that music is amusing to me

or:

(80) watasi-ni-wa zisin-ga kowa-i.

I   earthquake fearful

I am afraid of earthquakes.

(81) watasi-ni zisin-ga kowa-i koto.

that I am afraid of earthquakes

One may expect these forms to be explained like (75) and (76);
in the case of (78) and (79) it can be supposed that the verb
kik ("listen") is missing. Indeed, one can say:

(82) watasi-ni-wa ongaku-o kik-u-koto-ga tanosi-i.

(83) watasi-ni ongaku-o kik-u-koto-ga tanosi-i-koto.

which parallel the sentences (71) and (72), respectively.
However, the form which parallels (73) is not possible:

(84)   *watasi-ga ongaku-o kik-u-koto-ga tanosi-i.

In the case of (80) and (81) it may be difficult to find a
suitable verb to be restored.

The adjectives of this group possess a corresponding
verbal form having the suffix gar, mentioned in chapter V.
Moreover, as was also noted there, the adjectival forms can
usually be used only with the first person. Examples of
sentences with gar-verbs are:

(85) $\begin{Bmatrix} \text{watasi} \\ \text{John} \end{Bmatrix}$-ga   ongaku-o tanosi-gar-u.

                          music   be amused

(86) $\begin{Bmatrix} \text{I am} \\ \text{John is} \end{Bmatrix}$ amused by music.

          $\begin{Bmatrix} \text{watasi} \\ \text{John} \end{Bmatrix}$-ga   zisin-o kowa-gar-u.

                          earthquake fear

          $\begin{Bmatrix} \text{I am} \\ \text{John is} \end{Bmatrix}$ afraid of earthquakes.

One may also say:

(87) $\begin{Bmatrix} \text{watasi} \\ \text{John} \end{Bmatrix}$-ga   ongaku-o kik-u-koto-o tanosi-gar-u.

                          music   listen   be amused

          $\begin{Bmatrix} \text{I am} \\ \text{John is} \end{Bmatrix}$ amused by listening to music.

Sentences like (85) - (87) will obviously be treated as ordinary
transitive sentences. In (87) the object is the nominalized
complement:

(88) $\begin{Bmatrix} \text{watasi} \\ \text{John} \end{Bmatrix}$-ga   ongaku-o kik-u-koto.

          that $\begin{Bmatrix} \text{I listen} \\ \text{John listens} \end{Bmatrix}$ to music

from which the subject will be deleted in the actual speech
form. Returning now to sentences (78), (80), and (82), our first
suspicion is that they involve sentence embedding and that the
ni-phrase at the head of each sentence is the embedded subject.
On the other hand, it is legitimate to say that the ideas expressed
by sentences (85) - (87) are contained in sentences (78), (80),
and (81), respectively. Then it would seem natural to think
that the former are really embedded in the latter. But then
what would the matrix sentence of the latter be?

The particle ga before the adjectives in those sentences
may suggest that ongaku, zisin, and ongaku-o kik-u-koto are
the matrix subjects (and at the same time the constituent objects).
On the other hand, one may prefer to consider watasi the matrix
subject in view of the clear semantic parallelism between, say:[6]

(89)   watasi-wa zisin-ga kowakat-ta.

        I was afraid of earthquakes.

(90)   John-wa zisin-o kowagat-ta.

        John was afraid of earthquakes.

Formal support can, in fact, be given to this semantic argument.
Note that we have the following sentences:

(91)   watasi-wa tanosi-i.

                amused

        I am amused (or cheerful, happy, etc.)

(92)   watasi-wa kowa-i.

        I   fearful

        I am frightened.

Compared with (78) and (80), these sentences lack not only

the ga-phrase that specifies the object of the human feeling

represented by the adjectives tanosi-i and kowa-i, but also the

particle ni after watasi. The absence of a ga-phrase does not

mean that it has been pronominalized and disappears on the

surface level. We will assume, that it never appears in the

basic forms. Compare (91) and (92) with:

(93)   watasi-ni-wa tanosi-i.

and

(94)   watasi-ni-wa kowa-i.

In these sentences, some definite thing is clearly implied, and

they should be translated as:

(95)   I am amused with it.

and

(96)   I am afraid of it.

On the other hand, sentences (91) and (92) describe the present

state of mind of the subject without specifying any particular

object. Now, to give a formal argument, the fact that ni cannot

appear in (91) and (92) will suggest that the noun phrase watasi

is not an embedded subject but rather the real matrix subject.

But if (78) and (80) on the one hand and (91) and (92) on the

other are to be considered different only in the existence or

absence of the ga-phrase before the adjective, then the above

argument will lead us to recognize that all of these sentences

contain identical matrix and constituent objects, namely watasi,

in their basic forms, but in the actual speech forms, the matrix

subject has been deleted in the former pair and the constituent subject in the latter.

Let us formulate in more exact terms what is suggested above. We will assume one dictionary entry for each adjective and verb pair such as <u>tanosi-i</u> and <u>tanosi-gar-u</u>. This entry can be used either transitively or intransitively, and we may have, in a straightforward way:

(97)   John-ga kowa-gat-ta.

        John was afraid.

(98)   John-ga zisin-o kowa-gat-ta.

        John was afraid of earthquakes.

(99)   John-ga tanosi-gat-ta.

        John was happy.

(100)   John-ga ongaku-o tanosi-gat-ta.

        John was amused by music.

In addition, we will assume an abstract adjective denoted by F. This adjective, in the ordinary style, can take only the first person noun as its subject and requires a complement which has the same subject as the matrix (hence the first person noun) and which includes a verb like <u>tanosi-i</u> or <u>kowa-i</u>. Thus, we may have the following underlying forms:

(101)   watasi-ga (watasi-ga tanosi)$_{Comp}$-F - past

(102)   watasi-ga (watasi-ga ongaku-o tanosi)$_{Comp}$ - F - past

(103)   watasi-ga (watasi-ga kowa)$_{Comp}$- F - past

(104)   watasi-ga (watasi-ga zisin-o kowa)$_{Comp}$- F - past

In (101) and (103), where the verbs <u>tanosi</u> and <u>kowa</u> are used intransitively, the constituent subject (i.e.. the second

watasi) must be deleted, while in (102) and (104), where the verbs
are used transitively, it is the matrix subject (i.e., the
first watasi) that must be deleted. Note that this deletion
condition parallels the deletion condition in o-causativization
formulated in the o-Phrase Deletion Rule (55): the matrix
object is deleted just in case the complement is a transitive
sentence. Thus, we can generalize rule (55) as follows:

(105)   ga/o-Phrase Deletion

$$\text{NP} \begin{Bmatrix} \text{ga} \\ \text{o} \end{Bmatrix} \longrightarrow \emptyset \quad \underline{\text{in env.}} \quad \underline{\quad\quad} (\text{X--NP--o--V})_{\text{Comp}} \begin{Bmatrix} \text{--sase} \\ F \end{Bmatrix}$$

The formulation of this rule is still provisional and it will
be shown later in (133) that it is not necessary to mention the
particles ga and o. The deletion of the constituent subject in
the intransitive case will be taken care of by the general
procedure of Pronominalization, though we will have to specify
that Pronominalization, but not Reflexivization, is to be applied
to the constituent subject in this particular case. The
constituent subject in (102) or (104), which survives rule (105),
will be converted into the ni-phrase by Constituent Subject
Extraction (20). Thus, from (101) and (102), we will generate
actual speech forms in the following way:

(101)   watasi-ga (watasi-ga tanosi)$_{\text{Comp}}$-F-past

(106)   by Pronominalization:

watasi-ga tanosi-F-past

(107)   by morphophonemic rules:

watasi-ga tanosikat-ta.

(102)   watasi-ga (watasi-ga ongaku-o tanosi)$_{Comp}$-F - past

(108)   by ga/o-Phrase Deletion (105):

(watasi-ga ongaku-o tanosi)$_{Comp}$-F - past

(109)   by Constituent Subject Extraction (20):

watasi-ni ongaku-o tanosi-F-past

(110)   by morphophonemic rules:

watasi-ni ongaku-ga tanosi kat-ta.

We have not yet explained why the particle <u>ga</u> appears after <u>ongaku</u> in (110). The explanation will be given in the following section, which will be devoted to the general problem of how to generate the particles <u>ga</u> and <u>o</u>.

As the last example of sentence embedding, we will take up a construction that is semantically similar to the <u>deki</u> ("can") sentence treated in section 5 but which structurally belongs here, that is, the so-called potential form with the suffix (<u>rar</u>)e.[7]

(111)   John-wa hon-ga ka-e-ru.

book   buy

John can buy books.

(112)   John-wa hatarak-e-ru.

work

John can work.

It is clear that these sentences are somehow related to the simple sentences:

(113)   John-ga hon-o ka-u.

John buys books.

(114)   John-ga hatarak-u.

John works.

Note that here again the object hon-o of the verb kaw appears
in the ga-phrase in (111). But our present concern is, rather,
the fact that the particle ni underlies the wa-phrase in (111)
but not in (112). It is possible to say:

    (115)   John-ni-wa hon-ga ka-e-ru.

              John can buy books.

but not:

    (116)   *John-ni-wa hatarak-e-ru.

              John can work.

Following the same argument as above, we will assume that (111)
and (112) (disregarding the attached wa) have the following
basic forms:

    (117)   John-ga (John-ga hon-o kaw)$_{Comp}$-e-ru

    (118)   John-ga (John-ga hatarak)$_{Comp}$-e-ru

Ga/o-Phrase Deletion (105) should then be revised to include
the potential verb (rar)e in the specification of the environment.
We will incorporate this revision when the rule is rewritten
in the following section.

7.   After the above observations on sentence embedding, we
will now return to the problem posed at the beginning of this
chapter: how to generate the particles ga and o. We know
that in simple sentences, the particles ga and o are found,
respectively, in subject and object noun phrases. However, it
has been observed that the ga-phrase does not necessarily
represent either the matrix subject or the constituent subject
in the actual speech form of the complex sentence; often the

constituent object appears in the ga-phrase. To cite examples

from the preceding discussion:

(119)   John-ni doicugo-ga deki-ru.

         John can speak German.

(120)   John-ni doicugo-ga muzukasi-i.

         German is difficult for John.

(121)   watasi-ni zisin-ga kowa-i.

         I am afraid of earthquakes.

(122)   John-ni hon-ga ka-e-ru.

         John can buy books.

Note that in these cases the matrix subject is in some sense

lost. Indeed, in (119) and (120) the matrix subject is the

nominalized sentence:

(123)   John-ga doicugo-o hanas-u (or nara-u)-koto

         that John speak (or learn) German

from which the final part hanas-u (or nara-u) koto is deleted.

In (121) and (122) the matrix subject is deleted by ga/o-Phrase

Deletion. But this deletion of the matrix subject is, so to

speak, compensated for by the attachment of ga to the consti-

tuent object, so that on the surface level there still appears

to be a subject.

In section 1 we noted that in the simple sentence the

particle ga can be formally interpreted by saying that it is

attached to the first noun phrase in the sentence, and this

formal interpretation is equivalent to the substantial inter-

pretation that ga is the subject marker. We have now seen

that the latter interpretation of ga is not generalizable to

cover the case of the complex sentence. But the formal interpretation can be generalized, as we will see below.

The sentence may contain noun phrases other than the subject and object. But, as mentioned in section 1, we assume that appropriate particles have already been attached to those other noun phrases. We call a noun phrase with a particle attached to it marked. It is now assumed that the subject and object are not marked in the basic form of the sentence. The formal interpretation of ga and o in the simple sentence may be restated as follows: attach ga to the first unmarked noun phrase in the sentence; if the sentence still contains an unmarked noun phrase, attach o to that noun phrase. Let us assume that this rule is now applied cyclically, first to the embedded simple sentence and then to the matrix sentence. If no deletion is involved in sentence embedding, this cyclic application will immediately give the correct speech form.

For example, let us generate (15) and (39), which we repeat as (124) and (125), respectively:

(124)   John-ga Bill-ni hon-o ka-u-koto-o kitai-si-ta.

John expected Bill to buy books.

(125)   John-ga Bill-ni hon-o kaw-are-ta.

Bill bought books, to the disadvantage of John.
The basic form of (124) will now be assumed to be:

(126) $(\text{John})_{\text{NP}}(((\text{Bill})_{\text{NP}}(\text{hon})_{\text{NP}}(\text{kaw})_{\text{VP}}\text{-u})_{\text{Comp}}\text{-koto})_{\text{NP}}$

$(\text{kitai-si})_{\text{VP}}\text{-ta}$

In the first cycle, _ga_ is attached to **Bill** and then _o_ is attached to _hon_. Constituent Subject Extraction (20) will then yield the string:

(127) $(John)_{np}(Bill)_{NP}-ni(hon-o\ ka-u-koto)_{NP}(kitai-si)_{VP}-ta.$

In the second cycle _ga_ and _o_ will be attached to **John** and _hon-o ka-u-koto_, respectively, and the actual speech form (124) will result. On the other hand the basic form of (125) will be:

(128) $(John)_{NP}(((Bill)_{NP}(hon)_{NP}(kaw)_{VP})_{Comp}-rare)_{VP}-ta$

After the first cycle we will have

(129) $(John)_{NP}(((Bill)_{NP}-ga\ (hon)_{NP}-o\ kaw)_{Comp}-rare)_{VP}-ta$

Constituent subject Extraction will then produce:

(130) $(John)_{NP}(Bill)_{NP}-ni(hon)_{NP}\emptyset\ kaw-are-ta$

In the second cycle _ga_ will be attached to John, yielding (125).

When deletion is involved, as in the case of (119) - (122), the cyclic application of the rule introduced above does not seem to work well, since, for example, in (119) _ga_ is attached to the noun phrase _dɔicugo_ to which the particle _o_ should have been attached in the first cycle. But this suggests that the noun phrase with _o_ attached should be treated as unmarked. We will thus formulate the rule as follows:

(131)   ga/o-Insertion

$$\emptyset \longrightarrow \left\{ \begin{array}{l} ga \\ o \end{array} \right\} \quad \text{in env.} \quad \overline{\quad \left\{ \begin{array}{l} \neq \\ NP-ga \end{array} \right\}} \ \#X\#NP(o)\_\#$$

where X does not contain $\neq NP(o)\neq$

This rule may produce a string of the form NP-_o_-_ga_, from which the particle _o_ will have to be deleted. But this deletion can

be understood in a more general scheme. We are familiar with
the fact that the particles <u>ga</u> and <u>o</u> are deleted if any of the
particles <u>wa</u>, <u>mo</u>, <u>demo</u>, or, in general, any one of the so-called
<u>hukuzyosi</u> is attached after them. Thus we may have the rule:

(132)   ga/o-Deletion

$$\begin{Bmatrix} ga \\ o \end{Bmatrix} \longrightarrow \emptyset \qquad \underline{in\ env.}\ \underline{\quad}\text{-particle.}$$

With these two rules, we can now generate the particles <u>ga</u>
and <u>o</u> in (119) - (122). Before giving examples, we will
reformulate the <u>ga/o</u>-Phrase Deletion Rule (105) as follows
without mentioning the particles <u>ga</u> or <u>o</u>:

(133)   Matrix Subject/Object Deletion

$$\#NP\# \longrightarrow \emptyset \qquad \underline{in\ env.}\ \underline{\quad}(X(Y\#NP\#Z)_{VP}\text{-}W)_{Comp}$$
$$-\begin{Bmatrix} sase \\ F \\ (rar)e \end{Bmatrix}$$

Now let us generate (119) and (121) as examples.

(134)   basic form of (119):

$(((John)_{NP}((doicugo)_{NP}\ hanas)_{VP}\text{-}^u)_{Comp}\text{-}koto)_{NP}$

$(deki)_{VP}\text{-}ru$

(135)   by ga/o-Insertion (131) applied inside Comp:

$(((John)_{NP}\text{-}ga((doicugo)_{NP}\text{-}o\ hanas)_{VP}\text{-}ru)_{Comp}$

$\text{-}koto)_{NP}\ (deki)_{VP}\text{-}ru$

(136)   by Constituent Subject Extraction (20):

$(John)_{NP}\text{-}ni((((doicuga)_{NP}\text{-}o\ hanas)_{VP}\text{-}ru)_{Comp}$

$\text{-}koto)_{NP}\ (deki)_{VP}\text{-}ru$

(137)   by si-Deletion (25):

$(John)_{NP}\text{-}ni\ (doicugo)_{NP}\text{-}o\ (deki)_{VP}\text{-}ru$

(138)   by ga/o-Insertion (131) applied to the matrix:

$(John)_{NP}$-ni $(doicugo)_{NP}$-o-ga $(deki)_{VP}$-ru

(139)   by ga/o-Deletion (132):

John-ni doicugo-ga deki-ru.   (=119)

(140)   basic form of (121):

$(watasi)_{NP}(((watasi)_{NP}(zisin)_{NP}(kowa)_{VP})_{Comp}$-$F)_{VP}$-i

(141)   by ga/o-Insertion (131) applied inside Comp:

$(watasi)_{NP}(((watasi)_{NP}$-ga$((zisin)_{NP}$-o kowa$)_{VP})_{Comp}$

$$-F)_{VP}\text{-i}$$

(142)   by Matrix Subject/Object Deletion (133):

$(((watasi)_{NP}$-ga$((zisin)_{NP}$-o kowa$)_{VP}$

$$)_{Comp}\text{-}F)_{VP}\text{-i}$$

(143)   by Constituent Subject Extraction (20):

$(watasi)_{NP}$-ni$(((zisin)_{NP}$-o kowa$)_{VP}$

$$)_{Comp}\text{-}F)_{VP}\text{-i}$$

(144)   by ga/o-Insertion (131) applied to the matrix:

$(watasi)_{NP}$-ni $(((zisin)_{NP}$-o-ga kowa$)_{Comp}$

$$-F)_{VP}\text{-i}$$

(145)   by ga/o-Deletion (132):

$(watasi)_{NP}$-ni $(((zisin)_{NP}$-ga kowa$)_{Comp}$

$$-F)_{VP}\text{-i}$$

(146)   by morphophonemic rules:

watasi-ni zisin-ga kowa-i.   (=121)

The formal interpretation of the particles ga and o by rule (131)
thus succeeds in explaining the occurrence of ga in such sentences
as (119) - (122), which seems difficult to explain under the
substantial interpretation.

The effectiveness of rule (131) does not end with the explana-
tion of ga-phrases of accusative origin, however. In Japanese many
verbs are made from a Sino-Japanese compound word and the verb si
("do"), e.g., kitai-si ("expect"), seikoo-si ("succeed"). These
Sino-Japanese words are morphologically nouns, and we may assume
that the resulting verbs are compound verbs with the inner
structure $(NP\text{-}si)_V$. For convenience we will refer to these
verbs as Sino-Japanese verbs. Now, when a Sino-Japanese verb
is used intransitively, the particle o may appear, in principle,
between the Sino-Japanese noun and the verb si. Thus, alonside:

> (147)   John-ga seikoo-su-ru.
>
> John will succeed.

we may have:

> (148)   John-ga seikoo-o su-ru.

Instead of supposing that one of these is an intransitive sentence
with the intransitive verb seikoo-su-ru and the other is a transitive
sentence with the object seikoo, it seems reasonable to suppose that
the two sentences are generatively related. In fart it is seen that
ga/o-Insertion (131) applied to (147) will insert o in the right
place to yield (148), although then we have to assume that the appli-
cation of the rule is not obligatory in this case. Further-

more, in conformity with rule (131), this insertion of o inside
the Sino-Japanese verb does not take place when it is used
transitively. We have:

(149)   John-ga bucurigaku-o kenkyuu-su-ru.

                 physics   research

         John does research in physics.

but not:

(150)   *John-ga bucurigaku-o kenkyuu-o su-ru.

Sometimes, however, the object may be put in an adnominal form,
and it then appears to modify the Sino-Japanese nominal part
of the Sino-Japanese verb. In that case the particle o
necessarily appears inside the Sino-Japanese verb:

(151)   John-ga bucurigaku-no kenkyuu-o su-ru.

but not:

(152)   *John-ga bucurigaku-no kenkyuu su-ru.

Again it seems reasonable to suppose that (149) and (151) share
the same basic form:

(153) $(John)_{NP}((bucurigaku)_{NP}((kenkyuu)_{NP}-su)_{VP}-ru$

Sentence (149) will be obtained from this by ga/o-Insertion (131)
in a straightforward way. (Note that the rule is so formulated
that it will insert o after the second unmarked noun phrase.)
To obtain (151), it will be assumed that a special transformation
will put the object phrase into the noun phrase kenkyuu:

(154) $(John)_{NP}(((bucurigaku)_{NP}-no(kenkyuu)_{N})_{NP}$

$-si)_{V})_{VP}-ru$

Ga/o-Insertion (131) will then apply to this string and will
yield (151).

After the above remarks on the Sino-Japanese verb, let us turn our attention to our previous example (22), which will be repeated here as (155), and see how it will be generated within our present scheme.

(155)   John-ga Bill-ni seikoo-o kitai-si-ta.

John expected success from Bill.

The basic form of this sentence will be assumed to be:

(156) $(John)_{NP}((((Bill)_{NP}((seikoo)_{NP}\text{-}su)_{V}\text{-}ru)_{Comp}$

$\text{-}koto)_{NP}(kitai\text{-}si)_{V})_{VP}$ -ta

Ga/o-Insertion applied inside the Comp will insert <u>ga</u> after <u>Bill</u>. It may or may not insert <u>o</u> after <u>seikoo</u>, as remarked above. Let us assume it does not. Constituent Subject Extraction (20) will take <u>Bill-ga</u> out of the Comp and change it into the <u>ni</u>-phrase. <u>Si</u>-Deletion (25) will optionally delete the string <u>su-ru-koto</u>. We thus get

(157) $(John)_{NP}((Bill)_{NP}\text{-}ni((((seikoo)_{NP})_{V})_{Comp})_{NP}$

$(kitai\text{-}si)_{V})_{VP}\text{-}ta.$

Ga/o-Insertion (131) will again be applied to this string to yield:

(158)   John-ga Bill-ni seikoo-o kitai-si-ta.   (=142)

If <u>o</u> is inserted after <u>seikoo</u> in the first cycle, it will be deleted by <u>ga/o</u>-Deletion (132) and we will arrive at the same result.

The argument in this section shows that the nature of the particles <u>ga</u> and <u>o</u> is formal rather than substantial when sentence embedding is involved. This fact is naturally brought

into comparison with the distinction between the nominative and
accusative cases in English, which is also formal in nature.
An important consequence of ga/o-Insertion (131) is that it
ensures that the sentence always possesses a surface subject:
indeed we call the ga-phrase introduced into a sentence by
ga/o-Insertion (131) the surface subject. If after the surface
subject is generated there still remain unmarked noun phrases
in the sentence, those noun phrases will, in most cases, be
made into surface objects. Let us note that the ni-phrase
introduced by Constituent Subject Extraction is to be regarded
as marked; that rule can be conceived of as making the constitu-
ent subject a marked noun phrase of the matrix sentence. No
corresponding process is provided for the constituent object,
so that it remains unmarked in the matrix sentence when ga/o-
Insertion is applied to the matrix.

FOOTNOTES

[1]It is a characteristic of the present-day formal style
of Japanese (which is the object of our description) that
every noun phrase is followed by some particle; in the classi-
cal, as well as the informal, colloquial, language, the
particles ga and o (but not others) are often, if not always,
optional.

[2]It would be more exact to say that (14) and (21) are both
derived from the basic representation:

      John expected (Bill will buy books)$_S$.

But what is essential for our discussion is the fact that (14)
and (21) have the same basic form without a matrix object.
Hence, for the sake of convenience, we may simply say that
(21) is derived from (14).

[3]Instead of (28) one may say:

      John-wa Bill-ni Tom-ni hon-o kaw-ase-ru-koto-o

                        yurusi-ta.

      John permitted Bill to make (get) Tom (to) buy books.

[4]At this stage the particle ga is written in the basic
form (43), but actually it may not appear in the basic repre-
sentation, as the discussion in this chapter will show. Thus,
(43) must be revised finally as:

      NP (Comp-rare)$_V$ - Tense

The same remark holds for the basic representations given below.

[5]However, it seems that the sentence

    John-ni-wa doicugo-ga deki-ru.

is not used.

[6]Kat in kowakat-ta is an infix attached to the past form of the adjective and has nothing to do with the suffix gar, which happens to appear in a phonetically similar form, gat, before the past marker ta.

[7]The forms rare and e are attached to vocalic and consonantal verbs, respectively.

CHAPTER VII.   Consonant morae

1.   As has often been said, Japanese is a mora-counting
language.   Each utterance is a succession of more or less
equally timed fractions, called morae.   Each mora is of the
form C(y)V, V, or C.   We shall be primarily concerned with the
third type, the consonant morae, and the particular consonants
of which they consist.

A mora consonant may or may not be nasalized.   Nonnasalized
mora consonants (or, equivalently, nonnasalized consonant morae)
cannot occur in word-final position.   Thus, a nonnasalized mora
consonant is always followed by a consonant, and, moreover,
these two consonants are the same and together make a consonant
geminate.

The phonetic realization of the nasalized consonantal mora
may best be described as a nasalized continuous transition from
the preceding segment to the following one.   When the following
segment is a consonant,[1] the nasalized mora consonant has the
same point and manner of articulation as that consonant; for
example, before p, b, or m, the nasalized mora consonant is m,

but before s̲ it becomes a nasalized (and voiced) s̲, which we
shall denote by s̃. If the following segment is not a (true)
consonant, the nasalized consonant can be phonetically des-
cribed as a nasalized vowel of varying degree of closure and
point of articulation. It is probably somewhat closer and
nearer-to-mid than the vowel preceding it. In word-final
position, the nasalized mora consonant is again a closer and
nearer-to-mid nasalized prolongation of the preceding vowel
or, possibly, n̲ with a very light closure. Disregarding minor
phonetic detail accounted for in late phonetic rules, we will
represent the phonetic realization of the nasalized mora con-
sonant before a vowel or a word boundary by Ṽ.

Let us now give some examples of consonantal morae.

(1)   totta   (took)

       gakkoo   (school)

       yatto   (at last)

       hottodoggu (hot dog)

       yonda   (read, past)

       tonda   (flew)

       kes̃sa   (inspection)

       keṼ   (sword)

       onna   (woman)

In Bloch's phonemic interpretation of mora consonants
(Bloch 1950), nasalized mora consonants are represented by
one separate phoneme, /n̄/, while nonnasalized mora consonants are
regarded as the first member of consonant geminates. Thus the

above examples are phonemically represented as:

(2)   /totta , /gakkoo/, /yatto/, /hottodoggu/, /yōnda/,

/tonda., /kensa/, /ken̄/, /onna/

Hattori (1955), on the other hand, maintained that the nonnasalized

mora consonants should also be represented by a separate phoneme,

/q/. The above examples would then have the following phonemic

representation:

(3)   /toqta/, /gaqkoo/, /yaqto/, /hoqtodoqgu/, /yonda/,

/tonda/, /kensa/, /ken/, /onna/.

Hattori's phonemic representation is, at this point, faithful

to the traditional syllabary writing system. A nasalized conson-

ant mora is represented by $\mathcal{L}$, while nonnasalized consonant

morae are represented by a smaller version of the letter cu, ⊃ .

In sections 2 and 3 we will discuss consonantal morae

in terms of generative phonology. It will be shown that purely

synchronic generative consideration can lead one to consider

three different solutions which are almost equally economical.

Their difference lies in the formulation of a nasalization rule.

In section 4 this Nasalization Rule will be discussed in historical

and dialectological perspective. In section 5 it will be main-

tained that the traditional syllabary writing system and Hattori's

phonemicization reflect a native intuition about the consonantal

morae, and that this intuition should be incorporated into the

theory of Japanese in some form. Although a representation

essentially equivalent to (3) will never be attained as a level

of representation within a purely generative scheme, it will be

shown that if one of the generative solutions arrived at in

section 3 is adopted a representation essentially equivalent to
(3) can be deduced not generatively but in some natural way.
We will maintain that this level is not a mere theoretical
fiction but something which is essential in the perception of
language. It is hoped that the implications involved here will
have some meaning for the general theory of language perception.

2.   Generatively there are five sources for mora consonants.
In this section we shall look at their phonetic forms in each
of these cases.

       (a) When a consonantal verb stem ending in t̲, n̲, p̲, m̲, r̲,
or b̲ is followed by one of the suffixes t̲a̲, t̲e̲, t̲e̲m̲o̲, or t̲a̲r̲i̲,
the consonant mora will result, as seen in the examples below.
(We represent these four suffixes by t̲a̲, the past tense marker.)

(4)	stem	past	meaning
	kat	katta	win
	sin	sinda	die
	kap	katta	buy
	kam	kanda	chew
	kar	katta	mow
	tob	tonda	fly

The consonantal verb stem may also end in k̲, s̲, or g̲. Here,
however, a consonantal mora does not obtain in the suffixed form:

(5)	kak	kaita	write
	kas	kasita	lend
	kag	kaida	smell

After the vocalic verb the past suffix appears as ta:

(6)   kake   kaketa   hang

        sugi   sugita   pass

We shall not concern ourselves with case (5); we shall not

formalize the mechanism that brings in i before t or d and

deletes the stem-final k and g, since it is not directly related

to our main interest here.[2] However, the following point should

be noted. The past suffix has d after the stem with g, and this

is to be considered a reflex from the same process that produces

d in the suffix after the verbs in (4) with n, m, and b.

(b) Certain adverbs ending in ri have a consonantal mora

as their second mora:

(7)   kakkiri

        bassari

        yuttari

        gennari

        suppori

        simmiri

        boŷyari

        yaw̃wari

        koŋgari > konŋŋri[3]

        manziri > mandziri[3]

        syombori

Let us call adverbs of this form intensified adverbs and sym-

bolically represent them by $C_1V_1C_0C_2V_2\text{-}ri$, C_0 being a mora

consonant. This does not mean that an intensified adverb

necessarily possesses a non-intensified form, though some actually
do; for example:

(8)　　basari　　(related to bassari)

Besides this nonintensified form, we sometimes find the morpheme
$C_1V_1C_2V_2$ contained in other words of more or less related meaning.
Thus, we have the adverbs:

(9)　　hakihaki

　　　　basabasa

　　　　boyaboya

Native intuition would probably relate yaw̃wari to the adjective
yawaraka ("soft"), and koŋgari to the verb koge ("scorch").

Not all of the intensified adverbs are related to words in
which a morpheme of the form $C_1V_1C_2V_2$ actually appears. Still,
it seems reasonable to assume that all intensified adverbs are
generated from the underlying form $C_1V_1C_2V_2$ by a certain morpho-
phonological process which inserts C_0 before C_2.

In (7) every consonant except d and r appears as C_0. The
lack of intensified adverbs with d as C_0 seems to be only
accidental. Thus, for example, zundori can quite reasonably
be considered a (phonologically) possible intensified adverb.
We can also note in this connection the word mondori ("somersault"),
although this is not really used as an adverb. On the other
hand, we will interpret the absence of intensified adverbs with
r as C_0 as having a structural basis.

(c)　　A Sino-Japanese morpheme may have the form $C_1V_1C_2V_2$.
C_2 will be k or t, and V_2 i or u. When such a morpheme is

followed within a word by another morpheme with an initial

obstruent (i.e. k, t, p, or s; note that p is assumed to be the

underlying form of the surface h), then a nonnasalized consonantal

mora may result. Appearance of a consonantal mora is partly con-

ditioned morpho-syntactically and partly phonologically. When,

for example, the second consonant of the first morpheme is k

and the initial consonant of the second morpheme is t, p, or s,

a consonantal mora never obtains:

    (10)   gaku-tyoo   (college president)

            gaku-pu > gaku-hu   (music score)

            gaku-si   (bachelor's degree)

In other combinations of obstruents, a consonantal mora may

obligatorily, optionally, or never obtain, depending on morpho-

syntactic contexts. It is not important for our present dis-

cussion to specify these contexts. Thus, we simply refer to

them as environment E and assume that in this environment the

last vowel of the first Sino-Japanese morpheme drops. Our prime

concern here is how the consonant just preceding the dropped

vowel will be phonetically realized. The most typical occurrences

are in bi-morphemic Sino-Japanese compound words and compound

verbs consisting of one Sino-Japanese morpheme and the verb si

("do"). Taking such examples, we can now see how a consonantal

mora will arise:

    (11)   gaku-koo   gakkoo   school

            kotu-kaku   kokkaku   frame

            ketu-tei   kettei   decision

            situ-pai   sippai   failure

            ritu-syoo   rissyoo   proof

            tatu-si-ta   tassita   reached

(d) A Sino-Japanese morpheme may end in a nasalized segment. In this position there is no opposition of different types of nasalized segments and the archiphoneme representing this nasalized segment will be denoted by N. Its exact definition in terms of feature specification will not be given just yet. The segment N of a Sino-Japanese morpheme always results in a consonantal mora, whether or not that morpheme ends a word. Examples of N in the word-final position are:

(12)　　keN > keṼ　　　　(sword)

　　　　ka-kaN > kakaṼ　　(daring)

Examples in which N appears in word-medial position are:

(13)　　kaN-ka > kan̩ka　　(influence)

　　　　kaN-sa > kas̃sa　　(inspection)

These forms exemplify the productive type when N is followed by a voiceless obstruent. However, in some compounds the voiceless obstruent becomes voiced, as in:

(14)　　kaN-sya > kandzya　(patient)

　　　　hoN-koku > hoŋŋoku　(native country)

When the segment N is followed by the verb si, the initial s always becomes voiced:

(15)　　kaN-si-ta > kandzita　(felt)

　　　　taN-si-ta > tandzita　(lamented)

In some compound words (especially in compound verbs with si), Sino-Japanese morphemes ending in u or i may also exceptionally cause the initial voiceless obstruent of the following morpheme to be voiced:

(16)　　syou-sin > syoodzin　　(devotion)

　　　　syou-si-ta > syoodzita　(arose)

(e) Some morphemes contain a mora consonant internally.

like yatto, hottodoggu, onna in (1). In the examples discussed

in (a) - (d), it was seen that a consonantal mora before a voiced

consonant is nasalized. This rule is violated by hottodoggu.

However, since this violation occurs only in modern loan words,

mainly from Indo-European languages, we will exclude such words

from consideration when we examine the fundamental phonological

processes involved in the consonantal morae. The remaining

examples add no new information; they neither allow us to simplify

or force us to complicate the rules we will formulate from the

data in the cases that occurred previously. In particular,

let us note that no consonantal mora obtains before r.

3.   We will now set up phonological rules to account for the

consonantal morae.[4] Let us first discuss case (a). From the

fact that the past morpheme appears as t after all voiceless

consants as well as after all vocalic segments (i.e., vowels

and r), we can assume that the underlying form of the suffix is

ta, and t is converted into d after a voiced nonvocalic segment.

We will formulate this Progressive Assimilation Rule as follows:

(17)   Progressive Assimilation

$$t \rightarrow [+\text{voiced}] \quad \underline{\text{in env.}} \quad \begin{bmatrix} -\text{vocalic} \\ +\text{voiced} \end{bmatrix} \underline{\qquad\qquad}$$

The full specification of the segment t on the left-hand side

of the rule is easily seen to be uneconomical and we will come

back to this in (26). This form will suffice in the meantime.

We see from (4) that t, p, and r become t, while b and m

become n̲, and n̲ stays n̲, before t̲ or d̲. These stem-final

consonants, whether or not they become nasalized, clearly

assimilate to the following t̲ or d̲ with regard to other features.

The assimilation cannot take place unconditionally, of course;

it will not apply, for example, before a vowel. As far as case

(a) is concerned, it applies only before t̲ and d̲. For now,

we will formulate Regressive Assimilation simply as follows:

(18)   Regressive Assimilation

$$[+consonantal] \longrightarrow \begin{bmatrix} \alpha feature\ A \\ \beta feature\ B \\ \overline{-\ -\ -\ -} \end{bmatrix}$$

$$in\ env. \underline{\quad\quad} \begin{bmatrix} \alpha feature\ A \\ \beta feature\ B \\ -\ -\ -\ - \\ (t,\ d) \end{bmatrix}$$

Since the stem-final b̲ is nasalized before d̲, some sort

of nasalization rule is required. Before trying to formulate

it, we will look at case (b).

In case (b), some segment is inserted after the initial

mora. How should this segment be specified? It is variously

realized as k̲, s̲, t̲, etc., but this variety clearly results

in part from assimilation to the following segment. The various

phonetic realizations have in common only one specification, i.e.,

nonvocalic. Furthermore, the segments to be assimilated can

be characterized as nonvocalic. Thus, one may assume that the

inserted segment is specified as nonvocalic and the other

features are specified by another assimilation rule:

(19) $$[-vocalic] \longrightarrow \begin{bmatrix} \alpha feature\ A' \\ \beta feature\ B' \\ \cdots\cdots\cdots \end{bmatrix}$$

$$in\ env. \underline{\quad} \begin{bmatrix} \alpha feature\ A' \\ \beta feature\ B' \\ \cdots\cdots\cdots \\ -vocalic \end{bmatrix}$$

What features A, B, ... and A', B', ... are involved in
(18) and (19)? Since r̲ is to be converted to t̲ by (18), not
only point-of-articulation features but also voicing and
vocalicity should be assimilated in (18). Since the inserted
segment takes consonanticity from the following segment, this
must be included in (19) in addition to point-of-articulation
features and voicing. Thus, if (18) and (19) are combined
into one rule, the right-hand side of the rule will be:

(20) $\longrightarrow$ $[\,\alpha \text{ feature A}]$ in env. ____ $\begin{bmatrix} -\text{vocalic} \\ \alpha\text{feature A} \end{bmatrix}$

        where A ranges over all features except
        nasality

With an assimilation rule of this form, there is no reason
to specify the inserted segment of case (b) as nonvocalic, since
this would result automatically from the assimilation rule.
It is still necessary that the inserted segment be specified
as distinct from vowels, to which the assimilation rule should
not apply. The specification consonantal suffices for this
purpose; and, moreover, the assimilation rule will convert
this into nonconsonantal whenever necessary. Thus there is
no extra cost in specifying the consonantal mora C_0 in case (b)
as consonantal instead of nonvocalic. We can now combine the
left-hand side of the two assimilation rules:

(21)   Regressive Assimilation

    $[+\text{consonantal}] \longrightarrow$ $[\,\alpha \text{ feature A}]$

        in env. ____ $\begin{bmatrix} -\text{vocalic} \\ \alpha\text{feature A} \end{bmatrix}$

        where A ranges over all features
        except nasality

The feature nasality remains to be taken care of. But in the consonantal morae of cases (a) and (b) this can easily be predicted: the consonantal mora is nasalized if it is voiced. This can be formalized in the following rule, which, it is important to note, applies after Regressive Assimilation:

(22)   Nasalization of Type 1

$$\begin{bmatrix} -\text{vocalic} \\ +\text{voiced} \end{bmatrix} \longrightarrow [+\text{nasalized}] \quad \underline{\text{in env.}} \quad \underline{} [-\text{vocalic}]$$

However, it is also possible to predict nasality in the consonantal mora from voicing in the following consonant: the consonantal mora is nasalized if the following consonant is voiced. This prediction can be made either before or after Regressive Assimilation, but the left-hand side of the rule will differ slightly according to the ordering. If it is to be applied before Regressive Assimilation, the rule would have the following form:

(23)   Nasalization of Type 2-a

$$[+\text{consonantal}] \longrightarrow [+\text{nasalized}] \quad \text{in env.} \quad \underline{} \begin{bmatrix} -\text{vocalic} \\ +\text{voiced} \end{bmatrix}$$

If applicable after Regressive Assimilation, the form would be:

(24)   Nasalization of Type 2-b

$$[-\text{vocalic}] \longrightarrow [+\text{nasalized}] \quad \underline{\text{in env.}} \quad \underline{} \begin{bmatrix} -\text{vocalic} \\ +\text{voiced} \end{bmatrix}$$

In terms of number of feature specifications, these three rules are equally economical. Thus the principle of economy will not tell us which to choose.

Next let us look at case (c). Here, when consonant clusters result from the dropping of the final vowel of certain Sino-Japanese morphemes in the environment E, the first voice-

less stop of the cluster is then assimilated to the following

consonant. No further consideration need be given to this

assimilation.

In case (d), when N is found in word-final position

as in (12), the manner and point of articulation are determined

by the preceding vowel. This assimilation to the preceding

vowel is probably not complete, as noted in section 1, but we

can formulate it simply as follows:

(25)   Vocalic Assimilation

[+consonantal] $\longrightarrow$ [α feature A]

in env.   [α feature A]___#

where A ranges over all features except

nasality

In any event, this rule is not relevant to our main discussion

and can be disregarded here.

When N is followed by a consonant, that consonant is some-

times voiced and sometimes not. (See (13) and (14).) This

can be accounted for by assuming that in some cases Progressive

Assimilation applies in case (d):

(26)   Progressive Assimilation

[+consonantal] $\longrightarrow$ [+voiced] in env. $\begin{bmatrix} -\text{vocalic} \\ +\text{voiced} \end{bmatrix}$___

The manner and point of articulation of N are then determined

by Regressive Assimilation. However, if Progressive Assimila-

tion has not applied, the application of Regressive Assimilation

will make N voiceless (e.g., kaN-sa > kaǧsa). We must then

either prevent the application of Regressive Assimilation in

this case (i.e., where Progressive Assimilation has not applied),

or introduce the following rule to adjust voicing:

(27)   Voicing Adjustment

[+nasalized] ⟶ [+voiced]

Whatever choice is made for the Nasalization Rule, Voicing
Adjustment can be the last of our rules. The matter of
whether the adjustment of voicing in case (13) is made by
an additional restraint on Regressive Assimilation or by an
additional rule of Voicing Adjustment is not essential to the
discussion that follows.

We can now define N as the segment $\begin{bmatrix} +\text{consonantal} \\ +\text{nasalized} \\ +\text{voiced} \end{bmatrix}$. On the

other hand, the segment to be inserted in the intensified adverb,
which we denote by Q, is specified as $\begin{bmatrix} +\text{consonantal} \\ -\text{nasalized} \\ -\text{voiced} \end{bmatrix}$.

We have at this point three uncomparable phonological systems
that will account for the facts given. Each is composed of
three rules to be applied in the order shown:

(28)   Phonological System I

            Progressive Assimilation

            Regressive Assimilation

            Nasalization of Type 1

(29)   Phonological System II

            Progressive Assimilation

            Nasalization of Type 2.a

            Regressive Assimilation

(30)   Phonological System III

            Progressive Assimilation

            Regressive Assimilation

            Nasalization of Type 2.b

4.　　　In the preceding section it was stated that three
different phonological systems could account for the consonantal
morae. Here we will consider the problem in a historical and
comparative framework.

It is generally believed that in old Japanese of about the
eighth century, all morae were open. In the oldest records
of the language, written in Chinese characters used logographi-
cally in part and syllabically in part, no trace has been found
of the consonantal morae. At that time the stem-final consonant
never directly preceded the suffix but was followed by an
intervening vowel. Accordingly, the consonantal morae of case
(a) could not exist. Adverbs of case (b) are, and probably
always have been, somewhat colloquial, and even they did exist
in the earlier language they would probably not have been re-
corded. Thus, it cannot be definitely stated that intensified
adverbs were not present in old Japanese. We shall, however,
assume that they did not exist in the earliest stage. Since
Chinese characters were used to record a language of an entirely
different phonetic structure, it can be seen that Chinese
influence on Japanese was already strong at that time; but
the number of Chinese morphemes found in old Japanese litera-
ture is relatively small. Therefore we shall say that con-
sonantal morae of types (c) and (d) did not exist then, at
least in any productive sense.

From middle Japanese of about the tenth century on, verb
forms with consonantal morae (the so-called onbin-kei) similar
to those in (4) gradually came into existence, and, furthermore,

Sino-Japanese words began occupying a larger and larger part
of the ordinary vocabulary of the Japanese language. Thus,
the consonantal morae of cases (a) to (d) were introduced and
left their traces in the records written in the syllabary system
that was invented early in the middle Japanese period.

The Nasalization Rules seem somewhat different from the
others in that their phonological nature is not directly obvious.
This is strengthened by the nonuniqueness of the generative
interpretation of the nasalization process. The fact underlying
the rule can be expressed on the phonetic level by saying that
before a voiced consonant (or, more exactly, before a nonvocalic
segment), only a nasalized consonant can appear. But generatively
this consonant nasalization can equally be predicted from either
its own voicing or that of the following consonant, depending
on the relative order of Nasalization and Regressive Assimilation.

Let us now look at the Nasalization Rule in a historical
and comparative perspective. In some present dialects of peri-
pheral areas, and even in the Kyoto dialect of an earlier time,
the vowel is nasalized before some voiced consonants. Thus,
in the Tohoku and Tosa dialects, spoken respectively, in the
northern part of the main island and in the southern part of
Sikoku island, the vowel is nasalized before a voiced obstruent.
Furthermore, a Portuguese priest, Rodriguez, who recorded
standard early seventeenth century Japanese (Kyoto dialect),
noted similar nazalization of the vowel. (Kokugo-gakkai
(1955)).

The rule to account for this nasalization of vowels would be:

(31)   [   ] $\longrightarrow$ [+nasalized]   <u>in env.</u> ___ $\begin{bmatrix} +\text{consonantal} \\ -\text{vocalic} \\ +\text{voiced} \end{bmatrix}$

That is, before a voiced real consonant (thus excluding <u>r</u> and <u>y</u>), every segment will be nasalized.

If every mora is open, every consonant is preceded by a vowel, and it follows that only the vowel can be affected by rule (31). But this same rule will account for nasalization of the consonant in <u>onbin</u> forms like (4), when they are introduced into the language, or, equivalently and more specifically, for nasalization of the stem-final <u>b</u> before the consonant <u>d</u>. In other words, given rule (31) in the grammar, nasalization of the stem-final <u>b</u> was simply an automatic consequence of the formation of consonant clusters.

However, the nasalization of <u>y</u> and <u>w</u> in case (b) cannot be accounted for in this way since they are not consonantal. It is not clear when adverbs like <u>boỹyari</u> and <u>yaw̃wari</u> were introduced. The latter type probably did not exist in the very early language since the word-medial <u>w</u> in modern Japanese is generally a reflex of middle or old Japanese <u>p</u>. It is possible that the former, however, was present quite early. We will discuss nasalization of these glides in two cases.

First let us assume that the nasalized glides were introduced before the vowel lost its nasalization before voiced real consonants. In this case it is supposed that when the nasalized glides were introduced nasalization rule (31) was modified in the following way:

(32)　　　[< -vocalic>] → [+nasalized]　<u>in env.</u> ___ $\begin{bmatrix} \ll\text{+consonantal}\gg \\ \text{-vocalic} \\ \text{+voiced} \end{bmatrix}$

where the following convention about the use of brackets

< > and << >> is assumed: the rule consists of two

subrules, the one obtained by <u>reading</u> and <u>not reading</u> the

contents of < > and << >>, respectively, and the other

by <u>not reading</u> and <u>reading</u> the contents of < > and << >>,

respectively. Thus, rule (32) means that the vowel can be

nasalized only before a real consonant, but the glide or real

consonant can be nasalized before glides as well as before

real consonants. Formally speaking, this innovation is a spe-

cialization of rule (31). Then afterward, when the vowel lost

its nasality before a voiced obstruent, application of (32)

was limited to consonants. This restriction is realized by

replacing the contents of the brackets on the left-hand side

of the rule with either +consonantal or -vocalic. Then a

conditional restriction in the environment <<+consonantal>>

becomes meaningless, and the revised rule will have the form:

(33)　　　[+consonantal] → [+nasalized]　<u>in env.</u> ___ $\begin{bmatrix} \text{-vocalic} \\ \text{+voiced} \end{bmatrix}$

or

(34)　　　[-vocalic] → [+nasalized]　<u>in env.</u> ___ $\begin{bmatrix} \text{-vocalic} \\ \text{+voiced} \end{bmatrix}$

But these rules are Nasalization Rules of Type 2.a and 2.b,

respectively.

Now let us assume that the nasalized glide was introduced

after the vowel lost its nasality before voiced consonants.

Then, when the vowel lost its nasality rule (31) may have been

revised as follows:

(35) $[-\text{vocalic}] \rightarrow [+\text{nasalized}]$ <u>in env.</u> ___ $\begin{bmatrix} -\text{vocalic} \\ +\text{voiced} \end{bmatrix}$

However, from our assumption that at this moment glides did not play a part in consonant cluster formation, replacement of -vocalic in (35) by $_+$consonantal (independently for the two occurrences) will yield another three equivalent rules:

(36) $[-\text{vocalic}] \rightarrow [+\text{nasalized}]$ <u>in env.</u> ___ $\begin{bmatrix} +\text{consonantal} \\ +\text{voiced} \end{bmatrix}$

(37) $[+\text{consonantal}] \rightarrow [+\text{nasalized}]$ <u>in env.</u> ___ $\begin{bmatrix} -\text{vocalic} \\ +\text{voiced} \end{bmatrix}$

(38) $[+\text{consonantal}] \rightarrow [+\text{nasalized}]$ <u>in env.</u> ___ $\begin{bmatrix} +\text{consonantal} \\ +\text{voiced} \end{bmatrix}$

Until the glide cluster is introduced, these four rules account for the facts equivalently. Only (35) and (37) can meet the new situation with the glide cluster, and these two rules are Nasalization Rules of Type 2.a and 2.b, respectively.

In the preceding section we arrived at three equivalent phonological systems. The above historical discussion shows that Nasalization Rule of Type 2.a and 2.b can be understood as a descendant of the nasalization rule that presumably existed in old Japanese. On the other hand, if Nasalization Rule of Type 1 is a rule in the grammar of present Japanese, it means that a discontinuous reformulation of a section of the phonological component occurred in some generation. It is possible, but not very probable, that if we try to incorporate the phonological systems we obtained above into a larger section of the phonological component of Japanese, one of them will turn out to be preferred. Or our understanding of the evaluation procedure of grammars may advance so that a particular type of ordering or rules may be deemed preferable. At present. however,

we cannot choose one system out of the three solely on the principle of economy. Consequently, we are not in a position to determine by generative arguments whether a discontinuous reformulation has taken place concerning nasalization. In the next section, however, we will present an argument that will assign some preference to phonological system II. Since our argument will refer to the perceptual mechanism, it will not be strictly generative but will remain synchronic.

5.   As mentioned previously, the Japanese syllabary writing system consistently represents the nasalized and nonnasalized consonantal morae by the same symbols, く and つ, respectively, and so does Hattori's phonemicization, by n̲ and q̲, respectively, (See (3).) It seems beyond doubt that the native intuition identifies the nasalized mora and the nonnasalized consonantal mora as definite entities. This identification <u>consonantal mora</u> is possible and natural, since for the speaker of Japanese the mora is definitely an independent phonological entity. Given an utterance, the speaker can divide it into morae; then, for any two of those morae, he can tell whether or not they are identical. Morae which do not contain any vowel are grouped into only two classes, nasalized or nonnasalized.

Neither the nasalized nor nonnasalized consonantal mora is identified on any generative level of representation, however, in the sense that it appears as an identical segment. In the phonetic representation, the consonantal mora appears variously as a sound assimilated to the following consonant. In the

underlying representation the segment to become a consonantal

mora takes various forms depending on its source. The nasalized

mora consonant appears as N in Sino-Japanese morphemes as in

(12) - (14), but it appears as b in tob-ta (cf.(4)) and as Q

in the underlying representations of intensified adverbs, such

as gennari, simmiri, boŷyari, yaw̃wari, koŋgari, manziri, and syom-

bori in (7). The nonnasalized mora consonant appears as Q in the

underlying forms of kakkiri, bassari, yuttari, suppori in (7),

but as t, p, r, in kat-ta, kap-ta, kar-ta in (4) and as k or t

in certain Sino-Japanese morphemes as in (11). Furthermore,

it can be seen that whichever of the phonological systems I, II,

and III is chosen, there can be no intermediate level of repre-

sentation in which the identification of nasalized or nonnasalized

consonantal morae is realized.

It is possible, to be sure, to have a procedure, given the

phonetic representation, that will characterize the nasalized

or nonnasalized morae by some means. For example, we can say

that consonantal segment is by definition a nonnasalized mora

segment if it is nonnasalized and directly followed by a conson-

antal segment. However, this characterization is completely

ad hoc. Indeed, we may as well define, say, stop mora segment

as a noncontinuant consonantal segment directly followed by a

consonantal segment. But the fact remains that the native spea-

ker identifies the former kind of segment as one entity but

not the latter.

The characterizations given above do not refer to any gen-

erative phonological concept. That is, they are propositions

completely independent from the theoretical scheme of generative phonology. Thus, if the above characterization of the nonnasalized mora consonant should be the correct one to explain the native intuition about the nonnasalized mora consonant, either one of the following might be said: (i) The native identification of the non-nasalized mora consonant is linguistically an arbitrary phenomenon, probably due to some convention outside the realm of linguistics. It could be the case that the native speaker identifies the stop mora consonant, as defined above, by some other convention. Accordingly the notion of nonnasalized consonantal mora is linguistically insignificant. (ii) There may be some linguistically relevant factors explaining the ability of the speaker to identify the non-nasalized consonantal mora but not the stop consonantal mora, but these are completely out of the theoretical scheme of generative phonology. Accordingly, viewed solely from the generative phonological standpoint, the native identification of the nonnasalized consonantal mora is as arbitrary as the possible identification of the stop consonantal mora. (In the above statements, one may of course replace nonnasalized consonantal mora by nasalized consonantal mora.)

However, one may hesitate to say that generative phonology embraces so restricted an area of the sound phase of language that as fundamental a problem as consonantal mora can exist totally outside that area, or, alternatively, that the identification of the consonantal mora is so marginal a problem that generative phonology has nothing to do with it. Thus worth investigating whether the native intuition about the

consantal mora has many significance for the generative structure
of phonology, and whether there is any justification, from the
gencrative point of view, for a transcription like Hattori's
which explicitly reflects this intuition.[5]

We know that there is no generative level that represents
the H representation, and it seems that we cannot decide by a
generative method what segments $\underline{\underline{n}}$ and $\underline{q}$ stand for. However,
the intuitive identification of various occurrences of $\underline{\underline{n}}$ and
$\underline{q}$ may have to be considered as a phenomenon belonging to the
perceptual sphere of language behavior. Is there any justifi-
cation for considering that the phonemic representation is sig-
nificantly involved in perceptual behavior?

Phonetic representation represents in some sense the
physical form of the sentence. The direct input to the per-
ceptual organ is the same physical sound as the output of
speech activity. In this sense the phonetic representation is
the input for the perceptual activity. However, it seems
that one can still ask whether this is to be considered a
significant input to the perceptual analytic mechanism. It
has been proposed that when an input is received, an analysis
by synthesis tries to generate the sentence that matches the
input. Let us call the input for perception the representation
which is temporarily stored by the perceptual mechanism during
this analytic procedure. It may be possible that this input for
perception is different from the direct physical input. That is,
the perceptual mechanism may preliminarily process the direct
physical input.

Let us take an example. In English voiceless stops
are aspirated in some positions. But distinction of aspirated
and nonaspirated stops is the result of a very late phonetic
rule, and in the dictionary forms there is no corresponding
opposition. Since aspiration is a universal phonetic feature,
the auditory organ of the native English speaker, like that of
any human being, can react to it. However, his built-in
perceptual mechanism does not generally react to aspiration.
One may explain this by saying that the native speaker knows
that the feature of aspiration is not relevant to the under-
lying forms and that it is brought in by a very late rule.
This explanation seems to be reasonable, though formally it
is not clearly stated. Then, we may speculate as follows.
For the procedure of analysis by synthesis to take place, it is
not necessary for the synthesis part to generate the exact
phonetic representation. For matching purposes, the specifica-
tion of aspiration, for example, is entirely redundant. Hence
the synthesis part of the analysis may finish its generative pro-
cesses some time before the rule to assign aspiration is reached.
It is also not necessary to record and store the specification
of aspiration contained in the direct phonetic input. Thus,
the perceptive mechanism may pre-process the direct input to
store it, during the analysis by synthesis procedure, in a
more economical form.[6]

The above example from English is brought in simply for
illustrative purposes. What we are interested in here is
seeing whether some explanation within the generative framework
can be given for the symbols n and q in Hattori's phonemicization.
But let us pursue our problem a bit further in general terms.

Let us assume that analysis by synthesis stops its generative operations at each trial at the level of rule R, that is, just after application of rule R, and matches the generated string with the stored input. We are now asking what a reasonable form would be for the input for perception under this assumption. It seems natural to impose the following condition on the stored input for perception of a sentence: it is nondistinct from the generative representation of that sentence at the level of rule R, and, if all the rules after rule R are applied to it, the phonetic representation of the sentence will be obtained (or, one may say, restored). In other words, it is assumed that the input of perception at the level of rule R, is an inverse, in a natural sense, of the phonetic representation of the given sentence. This condition ensures for analysis by synthesis the natural procedure of judging whether a synthesized sentence is identical with the perceived sentence.

However, an inverse of the phonetic representation at the level of rule R in the sense defined above is not determined uniquely, and in general a string which is not distinguished from the phonetic representation in an interesting way can be such an inverse. Indeed, if R is a late enough rule, the phonetic representation itself can be an inverse at the level of R. (For example, it is quite probable that if we reapply rules later than the one which assigns aspiration in English to the phonetic representation, it will remain unchanged and is an inverse of itself, at the level of the aspiration rule.)

Thus, let us further introduce a minimality condition and assume that the input for perception is a minimally specified inverse at the level of rule R.

It now becomes clear that if we adopt phonological system II, H representation can be interpreted as the input for perception at the level of Nasalization by understanding that $\underline{\underline{n}}$ and $\underline{q}$ stand for segments N_O and Q_O, where $N_O = \begin{bmatrix} +\text{consonantal} \\ +\text{nasal} \end{bmatrix}$ and $Q_O = \begin{bmatrix} +\text{consonantal} \\ -\text{nasal} \end{bmatrix}$. Indeed, at the level of Nasalization, all relevant specifications for a segment that will turn out to be a mora consonant are specifications of consonanticity and naslaity. If features other than nasality are left blank, they will be specified by Regressive Assimilation; but specification of consonanticity is needed because it is referred to on the left-hand side of Regressive Assimilation. Actually this representation is uniquely determined as a minimally specified inverse of the phonetic representation at the level of Nasalization.

In the phonological systems I and III, H representation cannot be formally characterized in this way. First, an inverse of the phonetic representation at the level of Regressive Assimilation or a later level cannot have the same symbol standing for the nasalized (or nonnasalized) mora consonant. For if Regressive Assimilation is not applied any more, the manner and point of articulation should be specified in the segment representing a consonantal mora in any inverse, differently depending on the context of the segment (for example, before grave consonant, grave, etc.) Secondly, at the level of Progressive Assimilation,

H representation cannot in general be nondistinct from the generative representation. Take, for instance, the words tonda in (4) and boȳyari in (7). Their H representations are tonda and bonvari, and their generative representations at the level of Progressive Assimilation are tob-da and boQyari, respectively. But b and n (with the understanding that n stands for the segment N), or Q and n are distinct.

The above discussion does not seem to be a simple manipulation of formalism. Rather, the fact that H representation, which is securely supported by the native intuition, is characterized within the conceptual scheme of generative phonology seems to be worth noting. This shows, first, that generative theory, keeping its rigorous formalism, can give interpretation to certain facts about speech sounds which are beyond the strictly generative sphere. Furthermore, if the interpretation of H representation by means of generative phonology should be significant, phonological system II has now acquired superiority over phonological systems I and III by a strictly synchronic argument.

If one accepts the above interpretation of H representation, a meaningful line is drawn between Nasalization and Regressive Assimilation in the ordered set of phonological rules of system II. This level does not give any interesting generative representation but it characterizes the input for perception as the minimally specified inverse of the phonetic representation.

At this moment we do not claim to have any general theoretic conclusion to draw from our investigation. We do not know

whether there is a significant level of perception above the phonetic level for every language. We do not know whether and how the perceptual level, if it exists, can be <u>internally</u> characterized within the generative phonological scheme. Thus, we cannot explain <u>in general terms</u> why phonological system II is adopted by the native speaker out of three generatively equivalent systems and why the level of perception is found between Nasalization and Regressive Assimilation (of course it may not be difficult to give some <u>ad hoc</u> explanation for this special case), and accordingly why H representation, and not possibly some other form of representation, obtains special status in the native intuition. What we have intended to do, given the fact that H representation is significant in the native intuition, is try to interpret this fact within the present framework of generative phonology, and since a natural interpretation can be given by system II, but not by the others, we conclude that system II is the most probable one adopted by the native speaker.

FOOTNOTES

[1]The preceding segment is necessarily a vowel.

[2]For a generative treatment of this mechanism, see McCawley (1965).

[3]Well-known later phonetic rules will change medial g to ŋ and z to dz. For a more precise description, see McCawley (1965).

[4]The first attempt to account for all phonetic forms of consonantal morae in a systematic and significant way is found in McCawley (1965). It is particularly important to note that the nasalization found in case (a) is related to that in case (b). Only by recognizing this relationship can the real significance of the alternation b - n in the verb be revealed. However, in our later discussion we will present a formulation of the nasalization rule that is different from that given by McCawley.

[5]We shall use the term H representation to refer to the representation in Hattori's phonemicization, as in (3).

[6]We assumed in the above argument that aspiration was not a cue in the perception of stops in English in any context. But the redundancy in perception in this sense does not follow immediately from the fact that a feature is redundant in the underlying representations. It is reported, for instance, that the cue in the perception of the contrast between voiced and voiceless consonants in certain intervocalic positions in English is length of closure (or length of silence), e.g., rupee vs. ruby.

(Lisker (1957)) Thus, the <u>pre-processing</u> of the perceptual mechanism may involve more than just disregarding certain features sensed by the auditory organ; there may have to be conversion of some features sensed by the auditory organ, in some contexts, into others in the built-in perceptual mechanism. For the purpose of our following discussion, however, it is sufficient to assume the simplest <u>disregarding</u> case.

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