Chapter 1. Introduction

1.1. Goal

Generative linguistics is an enterprise which aims to argue for the existence of Grammar—an autonomous mechanism which generates a sentence—by demonstrating that the core facts of language can be accounted for in conceptually simple manners. Being an autonomous system, Grammar should be a mechanism independent of our cognition of the world, but virtually no piece of observation of language comes completely dissociated from the world: whenever we use language, we either describe or create the world by means of it. This means that the output of Grammar goes into other modules where it gets related with our understanding of the world. Thus, we have to consider not only the internal mechanism of Grammar, but also its interaction with other modules in our mind, so that we can understand how language is to be related with our knowledge of the world.

The main topic of this thesis is *anaphoric relations*, which is meant to be a descriptive cover term that refers to whatever relation between the two linguistic expressions that appear to be related to the same individual.[1] We

[1] In this work I do not discuss the so-called paycheck sentence, which is often represented by the example in (i).

(i) The man who gave his paycheck to his wife was wiser than the man who gave it to his mistress.

I suspect that the relation between *his paycheck* and *it* in (i) would be radically different in nature from the anaphoric relations to be discussed in this thesis. The main reason for this conjecture is because the anaphoric expressions in Japanese seem to be incompatible with a relation such as in (i) in principle.

For example, (iii) is a more or less literal translation of (ii), but (iii) can only mean that the president next year is the same individual with the president this year, unlike the English example in (ii).

(ii) This year the president is a republican. Next year he will be a Democrat. (Cooper 1979:73 (35))

(iii) Kotosi-wa daitooryoo-wa kyoowa-too-in da.
this:year-TOP president-TOP republic-party-member COPULA
Rainen-wa {kare / so-itu / so-no hito}-wa minsyu-too-
next:year-TOP he that-guy that-GEN person-TOP democratic-party-
in daroo.
member COPULA
'This year the president is a republican. Next year {he / that person} will be a Democrat.'

As far as I know, *sore* 'that thing/it' is the only exception to this generalization; thus, the relation in (i) can be expressed in Japanese as in (iv).

(iv) Zibun-no kyuuryoo-o okusan-ni watasita hito-wa
self-GEN salary-ACC wife-DAT gave person-TOP
so-re-o aizin-ni watasita hito-yori kasikokatta.
that-thing-ACC mistress-DAT gave person-than was:wise
'The man who gave his paycheck to his wife was wiser than the man who gave it to his mistress.'

Notice that not every anaphoric expressions can be used in a paycheck sentence in English, too. For example, a demonstrative phrase can enter into an anaphoric relation in the so-called donkey sentence as shown in (v).

(v) a. [Every farmer who owns a donkey] beats it.
b. [Every farmer who owns a donkey] beats that donkey.

Nevertheless, a demonstrative phrase cannot replace the pronoun in a paycheck sentence as in (vi).

(vi) The man who gave his paycheck to his wife was wiser than the man who gave that paycheck to his mistress.

His paycheck and *that paycheck* in (vi) must refer to the identical object.

Note that the relevant relation in a paycheck sentence is not an 'anaphoric relation' according to the informal characterization given above, since the two expressions do not "refer" to the same individual. Mainly based on the fact that most of the Japanese expressions which can enter into an anaphoric relation cannot be used for the relation in a paycheck sentence, I consider that the English pronouns in paycheck sentences are interpreted in a way distinct from the cases of anaphoric relations, leaving open the questions such as in (vii):

(vii) a. How is *so-re* in (iv) interpreted?
b. How are the English pronouns in (i) and (ii) interpreted?
c. Is (vii-a) the same mechanism with (vii-b)?

can recognize several types of anaphoric relations by a preliminary rough examination.

Consider first the sentences in (1). Throughout this work, I mark the two NPs in an anaphoric relation by underline as in (1), when I would like to present an example in an analysis-neutral manner.

(1) a. Every student likes his camera.
b. Even John likes his camera.
c. Which student likes his camera?

In the literature, anaphoric relations such as in (1) are often called *bound variable anaphora*. However, in order to keep this term for the technical use (to refer to the relation between the two instances of the same bound variable), let us use the term BVA (in capital) purely descriptively in this thesis to refer to any anaphoric relation between a distributive/quantificational expression (QP) and a singular-denoting anaphoric expression such that the value of the latter is not fixed to a certain individual.

On the other hand, the anaphoric relations in (2) do not involve a QP.

(2) a. John likes his camera.
b. John's mother likes his camera.

In (2) both underlined expressions seem to refer to a certain individual. Reinhart 1983ab has shown that such anaphoric relations are less constrained than the cases of BVA.[2]

(3) "Coreference":
 a. [The secretary who works for him] despises Siegfried.
 b. [The fact that she has already climbed this mountain before] encouraged Rosa to try again.
 c. [In his flat], I saw Bill washing the dishes.
 (Reinhart 1983a:113 (3))

(4) BVA:
 a. *[The secretary who worked for him] despised each of the managers.
 b. *[The fact that he has already climbed this mountain before] encouraged someone to try again.
 c. *[In his apartment], I saw nobody washing the dishes.
 (Reinhart 1983a:113 (4))

Let us call anaphoric relations which do not involve a QP (as in (2) and (3)) "coreference," again purely descriptively.

Now the anaphoric relation in (5) appears different from both BVA and "coreference," and I shall call such an anaphoric relation as an *E-type link*.

(5) Most student came. They are diligent.

An E-type link in (5) involves a distributive/quantificational expression (*i.e.*, *most student*) and a plural-denoting anaphoric expression (*i.e.*, *they*). Although one may consider that this should be some kind of "coreference," it is not straightforward whether an expression such as *most student* can ever "refer" to some individuals.

The aim of this work is to examine various types of anaphoric relations (including BVA, "coreference," and E-type links) from the syntactic and semantic point of view, and to present a theory of Grammar which generates the output representations based on which the relevant two linguistic expressions can be related to the same individual(s). In other words, the goal of this thesis is to answer the questions in (6).

(6) a. What are the linguistic bases of anaphoric relations?
 b. How are they generated by Grammar?
 c. How are the relevant output representations interpreted?

[2] We will briefly discuss on Reinhart's theory of anaphora in section 4.5.

We have tentatively distinguished three kinds of anaphoric relations above. However, it is completely another issue whether they are distinguished as such in the linguistic representations. Since distinct linguistic representations may yield similar interpretations, we should examine carefully how each instance is constrained linguistically. For example, consider a case in which a linguistic expression A and another linguistic expression B are in an anaphoric relation: *i.e.*, both A and B appear to be related to the same individual X. One possible representation would be such that both A and B independently refer to X. Another possibility would be such that B does not have an independent connection to an individual X, but that B has a linguistic relation with A, and hence, B appears to refer to X through that relation. These two representations are completely distinctive, but yet they yield somewhat similar interpretation.

In the following discussion, I will call an NP which needs a linguistic "antecedent" as a *dependent term*, as opposed to an independently "referential" NP. In addition, I use the term *dependency* to refer to an anaphoric relation involving a dependent term. Although it is not easy in English to separate dependent terms from independently "referential" NPs, they are morphologically distinguished in Japanese, as will be illustrated in section 4.2. It is for this reason that I will mainly use Japanese examples in the following discussion.

1.2. Outline

The main discussion on anaphoric relations begins at chapter 3; some background discussion will be provided in chapter 2 and the rest of this chapter. The rest of this chapter will lay out the background assumptions regarding the framework of this research and the general structure of Japanese. Chapter 2 discusses the structure of the so-called scrambling construction in Japanese (which is called the *OS-type construction* in this work) that will be crucially used in the arguments of the proposals in this thesis. While chapter 2 includes some extensive discussion on the properties of this construction, it will be sufficient for the subsequent discussion on anaphoric relations if it is understood (i) that there are two kinds of OS-type construction as in (7) and (8), and (ii) that there are some syntactic environments in which (7) is not available.

(7) Deep OS-type:
 PF: NP-ACC/DAT (=DL) ... NP-NOM ... V
 LF: NP-ACC/DAT (=DL) ... NP-NOM ... V

(8) Surface OS-type:
 PF: NP-ACC/DAT (=DL) ... NP-NOM ... V

LF: NP-NOM ... NP-ACC/DAT (=DL) ... V

Chapter 3 will examine the syntactic conditions under which a BVA reading is available. I will show that the two structural considerations in (9) and the two lexical considerations in (10) are relevant to the availability of a BVA reading.

(9) Structural considerations:
  a. Does the QR-trace of α c-commands β at LF?
  b. Does α precede β at PF?

(10) Lexical considerations:
  a. Is α one of the A-type QPs, which are listed in (11a) in contrast to (11b)?
  b. Is β a ^{large}NP, as exemplified in (12a) in contrast to (12b)?

(11) a. A-type QPs:
  NP-*sae* 'even NP'
  kanarinokazu-no NP 'most of the NPs'
  10 *izyoo-no* NP 'ten or more NPs'
  55%-*no* NP '55% of the NPs'
  NP1 *to* NP2 (*to*) 'NP1 and NP2'
  NP1 *ka* NP2 (*ka*) 'either NP1 or NP2'

  b. B-type QPs:
  do-no NP 'which NP'
  do-no NP-*mo* 'every NP'
  (*subete-no* NP 'every NP')

(12) a. ^{large}NPs:
  so-no zidoosya-gaisya 'that automobile company'
  so-no daigaku-insei 'that graduate student'

  b. ^{small}NPs
  so-ko 'it/that institution'
  so-re 'it/that thing'
  (*so-itu* 'he/that guy')

The result of the observation is summarized in (13):

(13)

	LF c-command	PF pre-cedence	α	β	BVA ok?
SO-type configuration I	yes	yes	A-type	^{large}NP	*
			A-type		ok
				^{large}NP	ok
					ok
SO-type configuration II	no	no	A-type	^{large}NP	*
			A-type		*
				^{large}NP	*
					*
OS-type configuration I	no	yes	A-type	^{large}NP	*
			A-type		*
				^{large}NP	ok
					ok
OS-type configuration II	yes	no	A-type	^{large}NP	*
			A-type		ok
				^{large}NP	*
					ok

I will propose that there are two and only two sources for a BVA reading: *i.e.* FD and ID, which are characterized as in (14) and (15), respectively.

(14) a. Structural condition on FD:
  *FD(α,β) if α does not c-command β at LF.
  b. Lexical condition on FD:
  *FD(α,β) if β is a ^{large}NP.

(15) a. Structural condition on ID:
  *ID(α,β) if α does not precede β at PF.
  b. Lexical condition on ID:
  *ID(α,β) if α is an A-type QP.

I will argue that the observations summarized in (13) can be predicted straightforwardly by postulating FD and ID, as shown in (16).

(16)

LF c-command	PF pre-cedence	α	β	FD ok?	ID ok?	BVA ok?
yes	yes	A-type	^{large}NP	*	*	*
		A-type		FD	*	ok
			^{large}NP	*	ID	ok
				FD	ID	ok
yes	no	A-type	^{large}NP	*	*	*
		A-type		FD	*	ok
			^{large}NP	*	*	*
				FD	*	ok
no	yes	A-type	^{large}NP	*	*	*
		A-type		*	*	*
			^{large}NP	*	ID	ok
				*	ID	ok
no	no	A-type	^{large}NP	*	*	*
		A-type		*	*	*
			^{large}NP	*	*	*
				*	*	*

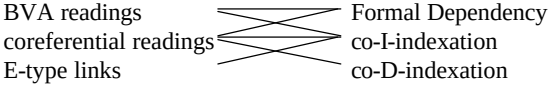
Chapter 4 will examine the syntactic conditions on the availability of a coreferential reading, and claim that either FD, ID, or *co-D-indexation* can be the source of a coreferential reading. I assume that only an independently "referential" NP can carry a D-index. Although it is hard to determine in English whether a given NP is independently "referential" or not, I will demonstrate based on the works by Takubo & Kinsui 1996 and Kuroda 1979 that the contrast between *a*-demonstratives and *so*-demonstratives in Japanese can be best described by assuming that the former must be D-indexed while the latter cannot be D-indexed (except for the deictic use, in which they are used in the presence of the target individual). Thus, in Japanese, the instances of co-D-indexation can be separated from those of FD and ID by simply looking at the form. The observations summarized in (17) shows that we should consider that FD, ID, and co-D-indexation are the only sources of a coreferential reading.

(17)

LF c-com-mand	PF prece-dence	β	FD	ID	co-D-index-ation	coreferential reading
yes	yes	^{small}*so-*	FD	ID	*	ok
		^{large}*so-*	*	ID	*	ok
		a-	*	*	co-D	ok
no	no	^{small}*so-*	*	*	*	*
		^{large}*so-*	*	*	*	*
		a-	*	*	co-D	ok
no	yes	^{small}*so-*	*	ID	*	ok
		^{large}*so-*	*	ID	*	ok
		a-	*	*	co-D	ok
yes	no	^{small}*so-*	FD	*	*	ok
		^{large}*so-*	*	*	*	*
		a-	*	*	co-D	ok

Chapter 5 will first examine E-type links, and propose that they should be regarded as an instance of *co-I-indexation*. Then it will be argued that an ID is also based on co-I-indexation. Thus, the observations so far can be summarized as in (18).[3]

(18)



Recall that we have to answer the following questions in order to present a theory of anaphoric relations:

(6) a. What are the linguistic bases of anaphoric relations?
b. How are they generated by Grammar?
c. How are the relevant output representations interpreted?

(18) can be regarded as an answer to the question in (6a). We must further consider the questions in (6b) and (6c), which are mainly discussed in the remainder of chapter 5.

As for (6b), I will claim that some dependent terms are generated without any index. Since it is impossible to interpret an individual-denoting item without an index, such an NP has to enter into a Formal Dependency in order to be interpreted. On the other hand, the other dependency terms are

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[3] I am grateful to Hajime Hoji for suggesting me to draw a diagram such as in (18).

generated with what we shall call an *I-index*. Carrying an index, it is fully *interpreted* syntactically, but it still requires a linguistic antecedent semantically. An anaphoric expression which is not a dependent term is generated with what we shall call a *D-index*, and a D-indexed NP is simply independently referential.

Regarding (6c), I will argue that Formal Dependency is basically mapped to bound variable anaphora, while co-I-indexation forms an E-type link, assuming the characterization of an E-type link in lines with Evans 1980.

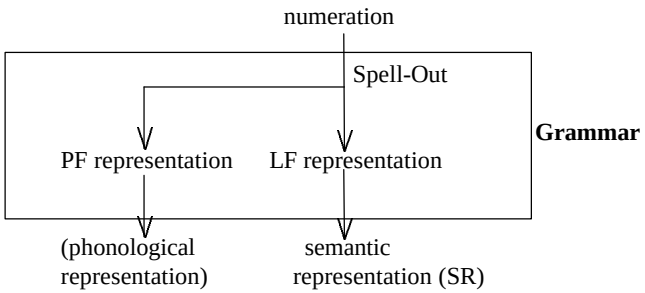
Chapter 6 will recapitulate the analysis of anaphoric relations proposed in this work, and summarize the claims regarding the organization of Grammar.

1.3. Assumptions on the Organization of Grammar

1.3.1. Overall picture

(19) schematizes the organization of Grammar which I assume throughout this work.

(19)



Since this model of Grammar follows the spirit of the Minimalist Program, proposed in Chomsky 1995, many notions are imported from Chomsky 1995 as they are. Some of the notions, however, are used in a way slightly different from Chomsky 1995. The aim of this section is to explain the important notions which will be assumed in the following discussion.

1.3.2. Input

The input to the generative procedure is called a *numeration*. Chomsky 1995:225 describes a numeration to be "a set of pairs (LI,*i*), where LI is an item of the lexicon and *i* is its index, understood to be the number of times that LI is selected." Based on the numeration, output representations (*i.e.*, a pair of a PF representation and an LF representation) are formed through the generative procedure. Stated in a little more specific way, the generative

procedure contains an operation Select, which "selects a lexical item LI from the numeration, reducing its index by 1, and introduces it into the derivation..." (Chomsky 1995:226). It is stated that all the lexical items included in the numeration must be used up: *i.e.*, Select must apply until every index in the numeration is reduced to zero. It is also claimed that ideally "no new objects are added in the course of computation" (Chomsky 1995:228), which is often referred to as the *inclusiveness condition*.[4]

A lexical item is characterized as a bundle of features, the exact internal composition of which is not particularly relevant to our discussion, except for the distinction between *intrinsic* features and *optional* features. Intrinsic features are "either listed explicitly in the lexical entry or strictly determined by properties so listed" (Chomsky 1995:231). In contrast, optional features, such as Case and -features according to Chomsky 1995, are considered to be added when a lexical item enters the numeration.[5]

It is assumed that Universal Grammar determines what features are available as optional features, but that it is no concern of Grammar which feature is chosen when a numeration is formed. This statement can be more general: it is not a linguistic issue how to make a numeration. As Chomsky 1995:237 says, this would be an issue of intentions of speakers, which is definitely independent of the mechanism of Grammar.

1.3.3. Operations

Grammar takes a numeration and applies some operations to it to form output representations. The generative procedure contains operations such as Select, Merge, Move, Spell-Out, and possibly others. *Select* has been introduced in section 1.3.2 above. This section briefly describes the other operations.

1.3.3.1. Merge

The lexical items in a numeration need to be concatenated in some way or other in order for a single object to be formed of them. *Merge* is an operation which forms a larger unit out of two objects, an *object* being either a lexical

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[4] Halle & Marantz 1993 proposes a model of Grammar in which phonological features are inserted in the derivation in the PF component. It may also be possible to construct a model of Grammar in which the computation starts with formal features only and then compatible words (bundles of phonological and semantic features) are inserted by an operation corresponding to Spell-Out. But we will not discuss the choice among these models in this work, since I do not consider that the choice would bear empirical consequences at least with respect to the issues addressed in this work.

[5] One of my proposals which will be made later is that indices (more specifically, D-indices and I-indices) are among the optional features in this sense. This means that $he_{D\text{-}2}$ and $he_{I\text{-}5}$ are regarded to be different 'words', so to speak, and hence, a numeration would include ($he_{D\text{-}2}$, 1) and ($he_{I\text{-}5}$, 1) separately, instead of (*he*, 2), under the proposal to be made.

item or a unit constructed by Merge. Since Merge is defined to apply to two objects, it follows that a resulting representation is constructed in a binary fashion by definition.

Not only concatenating two objects, Merge also determines the *label* of the larger unit, which "identifies the type to which [it] belongs, indicating its relevant properties." Chomsky 1995:244 states that it has to be the label of one of the two constituent objects. The constituent whose label is chosen to be the label of the larger unit is called its *head*, and the larger unit is called its *projection*. Thus, the operation Merge is characterized in Chomsky 1995 so that it does not lose the effects that used to be achieved by the X-bar theory, while keeping the inclusiveness condition (see section 1.3.2 above). Therefore, as far as empirical discussions are concerned, one can still make use of phrase structure diagrams based on the familiar X-bar theory, if one wishes so.

1.3.3.2. Move

There is a philosophical question why Grammar apparently has to be equipped with the operation *Move* (cf. discussions in section 4.7.1 in Chomsky 1995), but this operation has been postulated from the earliest researches in generative grammar in order to account for the fact that sometimes an item appears in a position different from "the position in which the interpretation they receive is otherwise represented at the LF interface" (Chomsky 1995:316). One of the aims of Chomsky 1995 is to characterize this operation with minimal specifications while keeping its descriptive coverage.

Last Resort is considered to be one of the most important "guiding assumptions" (Chomsky 1995:256) with respect to the operation Move, for the reason that this would make the relevant specifications minimal. This principle says that movement is permitted only if the operation is morphologically driven, by the need to check some feature. (20) is one of its versions.

(20) Last Resort (Chomsky 1995:280 (51))
Move F raises F to target K only if F enters into a checking relation with a sublabel of K.[6]

However, it is not as straightforward as it may look whether Grammar is virtually minimized if we assume that every movement has to be motivated by feature checking.[7] Suppose that we assume the characterization of Quantifier

[6] K is the category to which F is adjoined to, and 'a sublabel of K' refers to a feature of the zero-level projection of the head of K (cf. Chomsky 1995:268).

[7] See section B.2.1 below for the brief summary of the claim made in Kuroda 1988, which confronts with the approach that assumes Last Resort.

Raising (QR) which is suggested in Chomsky 1995:377 as one of the possibilities: "a quantificational feature [quant] raises to adjoin to some X^{0max} that is a potential host (presumably T or *v*, which, we might assume, have optional affix features allowing them to host [quant])." According to this characterization, a feature [quant] and the accompanying specifications has to be introduced. The long-standing issue of the possible landing sites of QR will then be restated as a question of which X^0 can optionally 'host' this feature. Considering the fact that a clause may contain more than one quantifiers, there have to be as many possible 'hosts' in a clause, since most likely the feature [quant] on T or *v* should be non-interpretable and hence cannot enter into checking relation more than once.[8] In addition, the observation that QR is clause-bounded has to be derived in some other fashion. This also has to be done by referring to the relevant features.

It is true that to regard QR as not being constrained by Last Resort will add another operation to the mechanism of Grammar, thus complicating it; but to assume QR as a feature-driven movement would also add a considerable complication to the feature system. If it is true that the latter type of complication is more *elegant* than the former, one should keep Last Resort as a guiding assumption, but that is not very obvious to me unfortunately. At any rate, it seems that the empirical research of linguistics need not worry too much about Last Resort, since the current feature system is so powerful that any type of movement could be expressed in terms of feature checking (by introducing new features and assigning to them properties such as +/-Interpretable, +/-strong, and so forth). In other words, as long as the empirical facts demand it, we can informally state the properties of the movement, since there will surely be a way to express it in terms of features, if one desires to keep to Last Resort.

I thus informally assume that QR is a type of movement which is not motivated by feature checking:

(21) Quantifier Raising (*to be elaborated in section 5.1.2*):
a. QR applies to a nominal phrase with a certain property, including the so-called quantifiers.
b. QR adjoins the nominal phrase to the minimal complete functional complex containing it.[9]

[8] See section 4.5.1 of Chomsky 1995 for the feature +/-Interpretable.

[9] *Complete functional complex* (CFC) is characterized as "a projection containing all grammatical functions compatible with its head" in Chomsky 1995:102. Although this is not a rigorous definition unless we know what 'grammatical functions' exactly means, this characterization is enough at this stage, since we will not address the cases which hinges on the issue of the precise landing site of QR in the following discussion.

In addition, it will be claimed in section 2.5 that Grammar should have PF movement, which is also assumed not feature-driven in the sense discussed above.

1.3.3.3. Spell-Out

Chomsky 1995:229 claims that the operation Spell-Out applies to the structure formed by Merge and Move, and strips away from it those elements that are relevant only to a PF representation: thus, assuming the distinction among phonological, formal, and semantic features, the operation Spell-Out "eliminates formal and semantic features" (Chomsky 1995:230). The subsystem of Grammar which applies to numeration and carries out the pre-Spell-Out computation is called *overt component*. The one which maps one of the outputs of Spell-Out to a PF representation is called *phonological component*, and the one which applies to the other output and derives an LF representation is called *covert component*.

It is more or less straightforward that an LF representation would not require any phonological features, but it is not so obvious if a PF representation does not need formal features at all. In fact, Chomsky 1995:230-231 states that "[w]ithin the phonological component, non-phonological features are eliminated in the course of the computation, though they may be relevant to its operation —at least its earlier parts, within the morphological subcomponent." Since at least categorial information seems required both in the phonological component and the covert component, we should informally characterize the operation Spell-Out as follows:[10]

(22) Spell-Out:
- a. Take a structure .
- b. Make a copy of , *i.e.*, L
- c. Eliminate all the semantic features and some of the formal features from and put the resulting structure into the phonological component.[11]
- d. Eliminate all the phonological features from L and put the resulting structure into the covert component.

Note also that it is unnecessary to stipulate explicitly that Spell-Out has to apply after the numeration is exhausted (*i.e.*, after all the indices in the numeration have been reduced to 0), as discussed in Chomsky 1995:231-232. In this way we can keep a "guiding intuition of the Minimalist Program" "that operations apply anywhere."

[10] The procedure (22b) is not stated in Chomsky 1995:229.

[11] I assume in (22c) that Grammar lists the formal features to be eliminated. It is also possible that it lists the features not to be eliminated, of course.

1.3.4. Output representations

The generative procedure yields two representations, *i.e.*, an *LF representation* and a *PF representation*. If either of the representations turns out to be ill-formed, the derivation *crashes* and Grammar would not yield any output in that case. The rest of this section adds a few more remarks regarding each representation.

1.3.4.1. PF representations

As stated in (22), the input to the phonological component, *i.e.*, , is a structured object. I assume that a PF representation is also a structured object. One reason is that the phrasal phonology will require structural information, and another reason is that PF movement which I will introduce in section 2.5 appears to exhibit the so-called subjacency effects, and the relevant condition is likely to be characterized in structural terms. (23) is a rough and informal characterization of the PF movement which is assumed in this work.

(23) PF movement:
- a. Adjoin to some constituent
- b. The movement is subject to the subjacency condition.[12]

Presumably, a PF representation assumed here is too abstract to "produce instructions for sensorimotor systems" (Chomsky 1995:229). If that is the case, a PF representation may have to be mapped to a more concrete representation, say *phonological representation*, by some algorithm, which I am not going to spell out in this work.[13]

1.3.4.2. LF representations and SRs

As stated in footnote 149 of Chomsky 1995:ch.4, the LF representations "differ from standard logical notation, though a simple algorithm Φ will convert them to these notations." In order to present the following discussion explicitly, I will often provide a representation which results from Φ, which I call a *semantic representation* (SR).

I assume that an SR and an LF representation (normally) share the hierarchical structure, but that the corresponding nodes are occupied with distinct objects in an SR and an LF representation (see section 5.1.1). Thus, I consider that there is a set of legitimate objects at SR as well as a set of

[12] Section A.4 discusses some phenomena which seem to be relevant to the subjacency condition on the PF movement.

[13] I also leave open whether the subcomponent Morphology is situated before or after the PF-representation in this sense.

legitimate objects at LF. I will list some of the legitimate objects at SR and spell out some of the mapping rules in Φ in chapter 5.

1.4. Assumptions on the Structure of Japanese

Let us describe the properties of Japanese, which I consider are generally agreed upon among Japanese linguists.

1.4.1. Basic observational properties of Japanese

Japanese is a predicate-final language, where *predicate* is used as a cover term which refers to a verb, an adjective, or a nominal form followed by a copula.[14] Observationally there can be a clause which consists of a predicate only, since

[14] In a colloquial style, a nominal phrase may appear after a predicate, which is sometimes called as a Right Dislocation construction.

(i) Unmarked word order:
Watasi biiru sukina ndayone.
I beer like PARTICLE
'I (really) like beer, (as you see).'

(ii) Right Dislocation construction:
a. Biiru sukina ndayone, watasi.
beer like PARTICLE I
'I (really) like beer, (as you see).'
b. Watasi sukina ndayone, biiru.
I like PARTICLE beer
'I (really) like beer, (as you see).'
c. Sukina ndayone, biiru watasi.
like PARTICLE beer I
'I (really) like beer, (as you see).'

Kuroda 1980:26 points out that this word order is never observed within an embedded context (leaving aside direct quotations, obviously).

(iii) a. *[Taroo-ga hatumeisita utidenokozuti-o no]-wa seireki 2032-
Taro-NOM invented magic:mallet-ACC COMP-TOP AD 2032-
nen-no koto dearu.
year-GEN fact COPULA
'It was in AD 2032 [that Taro invented a magic mallet].'
b. *[Mosi Taroo-ga hatumeisuru utidenokozuti-o ba], nihon-no
if Taro-NOM invent magic:mallet-ACC if Japan-GEN
enerugii-mondai-wa ikkyoni kaiketusuru.
energy:problem-TOP once:and:for:all solve
'[If Taro invents a magic mallet], it will solve the energy problems of Japan once and for all.'

He concludes based on this observation that Japanese is in principle a predicate-final language, and that the word order in (ii) should be derived by a 'supplementary' transformation which only applies to a matrix sentence. I will not address this construction in the following discussion.

so-called arguments are not required to appear overtly in this language.[15]

(24) Yomi-masi-ta ka?
read-POLITE-PAST Q
'Have you read it?'

When a nominal phrase appears in a clause not as a predicate, it is usually followed by some particle in (25)-(27).[16] (25) lists so-called *case-markers*, (26) so-called *postpositions*, and (27) some of the other particles.[17,18]

(25) *-ga* (NOMinative), *-o* (ACCusative), *-ni* (DATive), *-no* (GENitive)

(26) *-ni* 'in, at', *-kara* 'from', *-to* 'with', *-de* 'with, for', *-e* 'to', *-made* 'till', *-yori* 'than, from'

(27) *-wa* (TOPic), *-mo* 'also', *-sae* 'even', *-sura* 'even', *-dake* 'only', *-sika* 'only', etc.

[15] At least two analyses can be conceived of regarding the question why sentences such as (24) are allowed in Japanese: (i) because Japanese has an empty nominal and the argument positions in (24) are in fact filled with it, (which is assumed in most of the generative works so far, including Kuroda 1965, Saito 1985, and Hoji 1985, to mention a few), or (ii) because there is no syntactic distinction between arguments and adjuncts in this language (more specifically, there is no Case feature in this language), and hence, no nominal phrase is required to occur in a structure for the derivation to be well-formed. I leave open this issue in this work.

[16] In a colloquial style, a nominal phrase may appear without any particle (*i.e.*, the so-called "case-marker drop" phenomenon). Such a 'bare' nominal phrase is sometimes used in the following examples for the sake of naturalness of the sentence, but this phenomenon itself will not be discussed in this work.

[17] Traditional grammarians of Japanese usually do not distinguish (25) and (26), which might be related to the issue of 'empty arguments' mentioned in footnote 15 above.

[18] Since the complete distributional restrictions of these particles are rather complicated, I am not going to lay them out here, except for the rough statements in (i).

(i) a. A case-marker (especially the nominative and the accusative) may not appear when a particle in (27) is used.
b. A case-marker (especially the dative) can sometimes cooccur with a particle in (27).

As implied in (i), a "subject" or an "object" may not bear any overt case-marker even in a sentence of a formal style, if one of the particles in (27) is used. Although a sentence may become a little awkward by adding an overt case-marker (even when it is possible), such an example is sometimes used intentionally in the following discussion. This is because it has been revealed through researches such as Kuroda 1969/1970, Saito 1985, Hoji 1985 and Hoji 1990b among others that certain syntactic properties are only observable with a nominal phrase with an overt case-marker. This consideration is also relevant to the analysis of the scrambling construction to be proposed in section 2.5.

(28) illustrates an 'unmarked word order', but a 'marked word order' such as in (29) is also possible.[19]

(28) a. NP-NOM ... NP-ACC ... V
b. NP-NOM ... NP-DAT ... V

(29) a. NP-ACC ... NP-NOM ... V
b. NP-DAT ... NP-NOM ... V

The construction in (29) is often referred to as *scrambling (construction)*.[20,21] Chapter 2 will examine the scrambling construction and argue that the LF representation of this construction is in principle ambiguous between (30a) and (30b).

(30) Possible LF representations of the scrambling construction:
a. NP-NOM ... NP-ACC/DAT ... V
b. NP-ACC/DAT ... NP-NOM ... V

Some syntactic environments will be described there under which only (30a) is available for a scrambling construction.

1.4.2. On demonstratives

The main purpose of this work is to examine the anaphoric relations in Japanese. Since most of the anaphoric relations in Japanese involve a

[19] (i) is an unmarked word order for some predicates (cf. Mikami 1960:17-18, Takezawa 1987:ch.2).
(i) NP-DAT ... NP-NOM ... V
I do not deal with this configuration in this work, except for illustrating the perceptual report construction, in which a verb *mieta* 'could see' is used.

[20] Ross 1967 has given the name *scrambling* to the transformation rule which yields the free word order phenomena, such as in Latin. Judging from the statements in Harada 1977 and Saito 1985, Muraki 1974:50 and McCawley 1976:59 (25) seem to be among the earliest applications of Ross' idea to Japanese.

[21] Hoji 1985 argues that (ii) is derived from (i), based on the observations mainly with respect to the weak crossover effects and reconstruction effects.
(i) NP-NOM NP-DAT NP-ACC V
(ii) NP-NOM NP-ACC NP-DAT V
However, it seems that both (i) and (ii) can be an 'unmarked word order' for me, considering the fact that my judgment of the relevant examples provided in Hoji 1985 systematically differ from his. (ii) is sometimes called *VP-internal scrambling (construction)*, assuming that the relation between (i) and (ii) parallels with the one between (28) and (29), but I will not discuss this construction in this work, since there is no detectable contrasts between (i) and (ii) for me, unlike between (28) and (29). See discussions in Kitagawa 1994 and Takano 1995 regarding the VP-internal scrambling construction.

demonstrative NP, I introduce the descriptive properties of demonstrative NPs in Japanese in this section.[22]

A demonstrative NP in Japanese is formed with one of the demonstrative prefixes (listed in (31)) followed by (i) a bound morpheme of a certain type or (ii) *-no* (GENitive) and an NP.[23] Some of the bound morphemes which can follow them are given in (32).[24]

(31) a. ko-
b. so-
c. a-

(32) a. -ko 'place/institution' [25]
b. -re 'thing'
c. -itu 'guy'

The terms such as *deictic use* and *anaphoric use* are often referred to in describing the function/meaning of demonstrative NPs.[26] A demonstrative NP is said to be in a deictic use when the target individual is visible to the speaker and the addressee, sometimes accompanied by ostension/pointing. The deictic use is not much of our concern here: when used deictically, *ko-* is used for something close to the speaker, *so-* for something close to the addressee, and *a-* for something away from both the speaker and the addressee, generally speaking.

A demonstrative NP is said to be in an anaphoric use when the target

[22] *He* in English is also often translated as *kare* in Japanese. But as often pointed out, *kare* does not share many properties with *he* in English. One of the properties of *kare* that is crucial to the present discussion is that *kare* cannot be construed as a bound variable at least as easily as *he* in English or *so-ko* 'that-place/it' and *so-re* 'that-thing/it' in Japanese. (Cf. Saito & Hoji 1983, Hoji 1990a,1991a among others. Hoji forthcoming cites Nakai 1976:34a which is referred to in Kitagawa 1981:71.) It is also pointed out in Hoji 1991a and Takubo 1996 that it is not totally impossible for *kare* to be used as a bound variable. I will not provide further discussion on *kare* in this work. More discussion is found in Hoji forthcoming, and Takubo 1996.

[23] *Do-* 'which' is often listed together with these demonstrative prefixes in reference grammar books, since they share the morphological distribution.

[24] The demonstrative prefixes also appear in non-nominal words such as *so-o* 'in that way/so', *ko-nna* 'like this', and so on. I do not discuss these cases in this work, since I focus on the anaphoric relation with respect to an individual.

[25] When this morpheme follows the demonstrative *a-*, the resulting word becomes *a-soko* instead of **a-ko*. According to Satoshi Kinsui (personal communication; summer 1997), *a-soko* comes from the form *a-si-ko*. While the etymology of this *si* is not clear, it seems unrelated to the demonstrative *so-* in *so-ko, so-re,* or *so-itu*.

[26] See Kuno 1973a:ch.24, for example.

individual is not visible to the speaker but is mentioned in the discourse. According to these characterizations of deictic and anaphoric use, however, a demonstrative NP would be neither deictic nor anaphoric if (i) the target individual is not visible to the speaker and (ii) it is not mentioned in the discourse. Instead of using the term 'anaphoric use', therefore, I will use the term *non-deictic use* in the following discussion to refer to a case in which the target individual is not visible to the speaker.

As exemplified in (33), all of the three demonstrative forms have a non-deictic use, since the sentence in (33) can be felicitously uttered in the absence of the person under discussion.

(33) So-no toki kyuuni {a-itu / so-itu / ko-itu}-ga sakenda n da.
that-GEN time suddenly {that-guy/that-guy/this-guy}-NOM screamed COMP COPULA

'And then suddenly he screamed.'

However, as has been pointed out in Hoji 1991a among others, an *a*-word can never be a bound variable. For example, (34a) can never be interpreted as in (34b), unlike (34c):

(34) a. *do-no kaisya-mo a-soko-no bengosi-o uttaeta
which-GEN company-also that-place-GEN attorney-ACC sued

'every company sued its attorney'

b. $\forall x$[*x* sued *x*'s attorney]

c. do-no kaisya-mo so-ko-no bengosi-o uttaeta
which-GEN company-also that-place-GEN attorney-ACC sued

'every company sued its attorney'

One may suspect that *so-ko* in (34c) might simply stand in a coreferential relation with the whole group of companies under discussion. However, as repeatedly shown in the series of works by Hoji (cf. Hoji 1995a, 1997a, forthcoming: chapter 2), *so-ko* is strictly singular-denoting and hence cannot be coreferential with a plural-denoting NP. This generalization is demonstrated by the fact that *so-ko* cannot have 'split antecedents' unlike plural-denoting elements such as *karera* 'they'.

(35) a. Tom$_1$-ga Nick$_2$-ni [$_{CP}$ CIA-ga karera$_{1+2}$-o sirabeteiru to]
Tom-NOM Nick-DAT CIA-NOM them-ACC is:investigating COMP

tugeta.
told

'Tom$_1$ told Nick$_2$ [that the CIA was investigating them$_{1+2}$].'

b. *Toyota$_1$-ga Nissan$_2$-ni [$_{CP}$ CIA-ga soko$_{1+2}$-o sirabeteiru
Toyota-NOM Nissan-DAT CIA-NOM it-ACC is:investigating

to] tugeta.
COMP told

'Toyota$_1$ told Nissan$_2$ [that the CIA was investigating it$_{1+2}$].'

Although it is possible that the "meaning" in a deictic use affects the "meaning" in a non-deictic use in some way, it is not straightforward how a concept such as 'distance from the speaker/addressee' can successfully describe the contrasts between *a*-words and *so*-words. We will return to the discussion of non-deictic use of demonstratives in Japanese in section 4.2.

1.4.3. On functional categories

Remarks are in order as to the assumptions in this work regarding functional categories in Japanese.[27]

1.4.3.1. D^0

I will use the label 'NP' for a nominal phrase instead of 'DP' in the following discussion. I do so because the effects of the features which are often related to D^0 seem not detectable in Japanese. For example, a feature [+/-definite] is usually considered to be carried by D^0, but it is at least not apparent if this feature ever plays a role in Japanese. Formal agreement features such as Case are also often assumed to be on D^0, but Fukui 1986 proposes that the differences between English and Japanese will be best captured by assuming that Japanese lacks formal agreement features altogether.[28] It seems to me that the general direction pointed at by these considerations is that Japanese nominal phrases are simply NP, rather than DP. One may argue, however, that the postulation of a category D is independent of these considerations. Since it is not the purpose of this work to discuss this problem and the choice between 'NP' and 'DP' will not substantially affect the claims to be made below, all the occurrences of 'NP' can be replaced by 'DP', if one wishes to do so: the conclusions in this work will still hold.

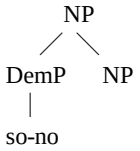
Hoji 1995a claims that the demonstratives in Japanese which we have discussed above are of the following structures:

---

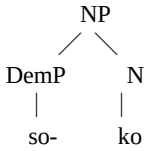
[27] See Fukui 1986 among others for discussions regarding the issue of functional categories in Japanese.

[28] Kuroda 1988 basically pursues the same lines. See the brief discussion on Kuroda 1988 in section B.2.1 below.

(36) a.



b.



Although some formal properties of a nominal phrase is determined by the choice of a demonstrative prefix (*i.e.*, *a-*, *so-*, or *ko-*) as introduced in section 1.4.2 above, it is not likely that a demonstrative prefix is the head of a nominal phrase. First, considering the fact that Japanese is a predicate-final language, we expect that the head of a nominal phrase is also situated at its right edge.[29] In addition, almost all the modifiers within a nominal phrase is followed by *-no* (GENitive) in Japanese: the fact that the demonstrative prefixes can be followed by *-no* as shown in (36a) strongly suggests that it is also one of the modifiers.[30]

1.4.3.2. I^0

Predicates in Japanese does not inflect according to the -features of the subject. But since they conjugate with respect to tense/aspect, the tense/aspect morphemes are often considered to be related with I^0.

(37) a. -ru (non-past morpheme following a verb)
b. -ta (past morpheme following a verb)
c. -i (non-past morpheme following an adjective)
d. -katta (past morpheme following an adjective)
e. da (non-past form of a copula)
f. datta (past form of a copula)

Just as in the case of D briefly mentioned above, it will have to be discussed separately whether Japanese has I^0 as a syntactic category or not.[31] Since this work concentrates on the relation between two NPs, not the relation between an X^0 and an XP, nothing hinges on this issue. Also, in most of the examples to be provided below, a tense/aspect morpheme is not shown separated from the predicate.

[29] Tateishi 1989 claims that a case-marker is the head (*i.e.*, D^0) of a nominal phrase, considering this point.

[30] As shown in (36b), *-no* (GENitive) does not appear when the following N is a bound form, as in *so-ko* and *so-re*. I would say that *-no* does not occur here because *so-* and the N form a compound.

[31] In addition, it is another question whether the morphemes in (37) are listed as a part of a predicate in the numeration or they are listed as an independent term.

1.4.3.3. C^0

When a clause is embedded in a sentence, usually one of the markers in (38) follows it, except for a relative clause, which apparently does not have any marker.

(38) a. to
b. no
c. (toyuu) koto
d. ka

Roughly speaking, *ka* is used for an interrogative clause while *to*, *no* and *(toyuu) koto* may be used for a non-interrogative clause. The choice among *to*, *no* and *(toyuu) koto* largely depends on the choice of the higher predicate; *no* and *(toyuu) koto* are often said to show more nominal properties than *to*; *to* is traditionally called a quotation marker.[32]

I will sometimes use the label 'CP' in order to mark a clausal boundary in examples. However, this is for the sake of presentation, and I will leave open the issue of the existence of functional categories in Japanese.

[32] Being a 'quotation marker', it can also follow *ka*, as in (i):

(i) John-wa dare-ga paatii-ni kuru no ka to tazuneteita.
John-TOP who-NOM party-to come COMP Q COMP asked
'John has asked who will come to the party.'