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Complementation in Japanese: A lexicase analysis

Lee, Nagiko Iwata, Ph.D.
University of Hawaii, 1989

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COMPLEMENTATION IN JAPANESE: A LEXICASE ANALYSIS

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAI'I IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN LINGUISTICS

DECEMBER 1989

By

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ABSTRACT

This is an application of lexicase, an empirical lexicalist monostratal dependency variety of generative case grammar to the analysis of complement constructions in Japanese. Particular emphasis is placed on the following two aspects: (1) the examination of word boundaries involved in complementizer-less complement constructions, and (2) the subcategorization of complement-taking predicates as determined by their syntactic properties. The data used in this analysis consists of approximately 200 complement-taking predicates, which were initially collected from novels, essays, and scripts for drama, and then formed into sentences based on my intuition as a native speaker.

The results of the study are as follows:

(1) We can identify a word boundary (indicated by #) in the V-te # V construction and the Predicative Noun # da construction, and hence these constructions are confirmed to form complement constructions. In contrast, no word boundary is identified between V and -sase/-rare of the so-called complex predicates, between Vi and V of the Vi V construction and between Verbal Noun (VN) and suru of the
VN suru construction. These constructions are thus concluded to form simplex structures.

(2) Six major categories of complement-taking predicates have been identified in Japanese on the basis of their argument structure, i.e., the case relations implied in their case frames. The predicates in these major categories are further classified into 23 subcategories based on their choices and requirements for different types of cooccurring sister constituents.

These results of the investigation are formalized in terms of the lexical entries, the redundancy rules and subcategorization rules, which are needed to make the grammar formal and explicit.

The final part of this study formulates semantic interpretation rules to match the contextual features of the regent with those of its overt dependents which satisfy these features (linking rules) and to provide appropriate interpretations for non-overt subjects of complement clauses (chaing rules).
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LIST OF ABBREVIATIONS

Grammatical morphemes in general:

- CAUS: causative
- CmV: commitative
- Comp: complementizer
- DES: desiderative
- FRM: formal
- Gen: genitive
- GER: gerundive (conventionally referring to the V-te form in Japanese grammar)
- HON: honorific
- NEG: negative
- NMN: nominalizer
- PRS: present tense
- PST: past tense
- PSV: passive
- TOP: topic
- COP: copula

Feature names used in a lexicase analysis:

- Acc: Accusative
- actr: actor
- addn: addition
- adj: adjectival
- Adv: adverb
- AGT: Agent
- assn: association
- bstr: abstract
- cmpl: complementizable
- cnscp: conceptual
- COR: Correspondent
- cplr: copular
- crsp: correspondent
- Det: determiner
- drcn: direction
- drcv: directive
- fint: finite
- lctn: location
- Lcv: locative
- LOC: Locus
- mnnr: manner
- MNS: Means
- mode: mode
- modl: modal
mprs  impersonal
N    noun
Nom  Nominative
P    postposition
PAT  Patient
prdc  predicative
prps  propositional
root  root
sorc  source
Sprt  sentential particle
stnl  situational
styl  style
tmng  timing
trmn  terminus
trns  transitive
V    verb
xcls  exclusive
xtns  extension
CHAPTER 1
INTRODUCTION

1.1 Scope, objectives and outline of the study

This dissertation is a lexicase analysis of the complementation construction in Japanese. 'Complementation' here refers to the syntactic structure in which a sentence modifies a predicate or a complementizer noun. It should be distinguished, however, from the relative clause construction, in which a constituent sentence lacks an argument of the predicate, and the missing argument is coreferential with the regent of the clause, the noun on which the clause is directly dependent. In the following sentences, (1) is an example of a complementation construction, whereas (2) is an example of a relative clause construction in which the missing argument is indicated by △.

(1) John ga [kodomo ga nige-ru] no o mi-ta.
   Nom child run=away-PRS see-PST
   'John saw that a child was running away.'

(2) John ga [△ nige-ru] kodomo o mi-ta.
   Nom run=away-PRS child Acc see-PST
   'John saw a child who was running away.'
A large number of Japanese sentences involve complementation constructions as defined earlier: a syntactic structure where a sentence modifies a predicate or a complementizer noun. In this dissertation I will limit my scope to those sentences where the matrix predicate or its argument is subcategorized to take a dependent clause. Therefore, such sentences as (3) below will be excluded from the scope of the study because the matrix predicate in the example, muzukashii, is not subcategorized to take the complement clause (indicated by [ ]).

(3) Namae ga [jisuu ga oo-i] to name Nom number=of=characters Nom many-PRS if muzukashii.
difficult

'Names are difficult if the number of characters involved is large.'

However, both the definitions of 'subcategorization' and 'complementation construction' have been issues in syntactic theory. I will clarify the first issue below in the section 1.2. As for the second issue, I will discuss it in Chapter 2, in which the structures of complementation construction are to be carefully examined and defined.
The objective of the study is twofold: (1) to examine the complementation construction in Japanese, and to confirm or disconfirm previous findings made in this area, as well as to discover new generalizations involved in the process; and (2) to ascertain the validity of the lexicase grammatical framework by applying it to the facts of Japanese complementation constructions, and to explore possible revision of the theory if any problems are raised in the process. This dissertation will moreover be the first full-scale test of the linking and chaining machinery recently developed for accounting for movement and empty category phenomena in the lexicase model. To achieve these objectives, the following steps of the investigation will be taken, which consequently constitute the main topics of the respective chapters:

Chapter 1 will review the previous studies carried out in the area of Japanese complementation constructions, and will also introduce the outline of the lexicase framework and review the previous studies which have applied the framework to the study of Japanese.

Chapter 2 will identify the range of constructions which are to be defined as 'complementation constructions' in this study, mainly by examining word boundaries involved in complement-taking predicates. These are often unclear in
this agglutinative language, especially since the orthography does not indicate any boundaries below the phrase or clause level. After that, syntactic representations for the constructions will be established by the lexical status of complementizers and nominalizers involved in them.

Chapter 3 will present the lexicase subcategorization of complement-taking predicates after the difference between a lexicase and other approaches in classifying predicates are highlighted. This will be followed by formulation of lexical rules in order to make the grammar generative, that is, explicit and formal.

Chapter 4 will formulate semantic interpretation rules (1) to ascertain that all the contextual features assigned to the complement-taking predicates are satisfied and (2) to assign correct interpretations to so-called 'missing subjects', which are often involved in complement sentences.

Chapter 5 will summarize the study and assess the extent to which the initial objectives have been achieved. Implications of the study and remaining problems, if any, will be mentioned in this chapter.
1.2 Subcategorization issue

'Subcategorization' refers to the specification of what kind of items may represent a class or category in a particular environment (Dictionary of Language and Linguistics 1976). The domain of subcategorization, however, has been the source of arguments among different syntacticians with respect to two issues: (1) whether a subject should be in the subcategorization frame, and (2) the distinction between complements (items which subcategorize the predicate) and adjuncts (items which do not subcategorize any particular predicate, and thus fall outside the subcategorization frames). I will review the issues one by one and present my position.

1.2.1 Subject and subcategorization issue

Chomskyan linguistics (the term is quoted from Starosta 1988) has consistently advocated the existence of the VP node in the structure of a language, as illustrated in the following tree:
The theory at the same time claims that items are subcategorized with respect to the range of sister constituents they do or do not permit (Radford 1981:126). The consequence of this theory then is that the subject cannot subcategorize the verb, since it does not appear as sister to the head of the VP, as seen in the above tree (4).

In contrast, the equivalent sentence would be represented in lexicase as in (5) below, because of the one-bar constraint imposed by the theory: each and every construction (including the sentence) has at least one immediate lexical head, and every terminal node is the head of its own construction (Starosta 1988:14).

(5)
Thus, the subject is within the subcategorization frame of the verb in the lexicase representation. Starosta (1988:20) states that such a representation as the one above accounts for the grammatical relationship between subject and verb, which is the clearest case of the relationship between any two syntactic categories. For instance, verbs are marked for whether they take a subject at all (impersonal verbs do not), subject-verb agreement, the thematic relation of the subject, and selectional interpretations they impose on these subjects. Starosta then criticizes the Chomskyan approach as follows:

In GPSG (Gazdar, Klein, Pullum, and Sag 1985:34) as well as in Government and Binding theory, an attempt is made to limit the domain of subcategorization to the Comp of an X, but because of the insistence on maintaining a VP node, this has to be weakened and circumvented in order to allow the statement of selectional restrictions applying between X (the main verb) and its Specifier (the subject).

In this dissertation, I will adopt the lexicase view of subcategorization for two reasons: (i) lexicase is the framework chosen for this dissertation and I agree with Starosta's criticism of the other position, and (ii) the VP node is certainly not required in Japanese, as noted by Hinds (1974). Even Chomsky (1981:128) himself, at least in 1981, has mentioned that Japanese may be classified as a
non-configurational language, and generates the structure as follows: \([s \ NP_1 \ NP_2 \ ... \ V]\).

1.2.2 The complement vs. adjunct distinction issue

Subcategorization is supposed to include only those arguments that are obligatory with the verb, and not those optional elements such as time and reason. In terminology taken over from the European valency grammar tradition, the former are called 'complements' and the latter, 'adjuncts'. The distinction between the two, however, is difficult to establish, especially with a language such as Japanese, which tolerates ellipsis to a great degree. Hasegawa (1988) has noted this problem and pointed out the ineffectiveness of the earlier diagnostics suggested for the Japanese complement vs. adjunct distinction; (a) the do-so test suggested by Somers (1984), and (b) the referability test proposed by Kameyama (1985). Let me briefly introduce them, together with Hasegawa's critical review.

1.2.2.1 The do-so test

This test is based on the assumption that the minimum element that do so replaces is the predicate plus any complements, except the subject, which is also a complement. Somers (1984) claims that this test is applicable to
Japanese. Consider the following examples in which (6a) shows that the temporal adjunct, asita remains without affecting the grammaticality whereas (6b) illustrates that the direct object (DO) complement, zassi is not suru, which is the cause of ungrammaticality.

(6) (Somers' 49)

a. Keiko ga kinoo hon o kaimasita; watasi mo
   SUB yesterday book DO bought I too
   asita soo simasu.
   tomorrow so do

   'Keiko bought a book yesterday, and I will do so tomorrow.'

b. *Keiko ga kinoo hon o kaimasita; watasi mo
   SUB yesterday book DO bought I too
   zasshi o soo simasita.
   magazine Acc so did

   'Keiko bought a book yesterday, and I did so a magazine.'

Hasegawa (1988), however, points out that the test does not give consistent results as follows:
1. It does not apply to a sentence in which the subject is not an Agent. In the following example, the subject is an Experiencer according to Hasegawa.

(7) (Hasegawa's 2)

*Alice wa hon o nakusimasita; watasi mo soo simasita.
book lost I too so did

'Alice lost a book, and I did so too.'

On the other hand, when the verb suggests a high degree of intentionality of the Agent, even the direct object, which is clearly valency-bound, can be extracted as follows:

(8) (Hasegawa's 3)

Alice wa titi-oya o korosita-n datte;
father killed (hearsay)
watasi mo syuzin o soo si-ta-i.
I too husband so do-DES-PRS

'I heard that Alice killed (her) father; I want to do so (my) husband.'

2. The indirect object (IO), which is supposed to be a complement, can be extracted in many cases.
(9) (Hasegawa's 4)

Alice wa haha-oya ni seikatu-hi o okutteiru;

TOP mother IO living-expenses DO is-sending

Bob mo titi-oya ni soo siteiru.

too father IO so is-doing

'Alice sends her mother living expenses, and Bob does
so to his father.'

3. Elements whose adjunct status is not controversial
(e.g., Means) often cannot be extracted.

(10) (Hasegawa's 5)

*Alice wa geppu de kuruma o kaimasita;

TOP monthly installment by car DO bought

watasi mo/wa genkin de soo simasu.
I too cash by so will-do

'Alice bought a car by installment. I will do so in
cash.'

1.2.2.2 The referability test

Kameyama (1985) argues that there is a difference
between an unexpressed complement and the mere non-mention
of an adjunct phrase in discourse. A missing complement,
such as DO in (11b), can have an implicit reference to an
element which has already been introduced in discourse, i.e., 'Mary' in (11a), whereas a mere non-mentioned adjunct, such as 'with her' in (12b) cannot have such a reference.

(11) (Hasegawa's 7)

a. Mary ga Tokyo ni asobi ni kiteiru\(^1\).  
   \text{SUB} \quad \text{to play for has-come}  
   'Mary has come to Tokyo for a leisure visit.'

b. Kinoo wa Tom ga doobutuen ni turete-itta\(^2\).  
   yesterday \text{TOP} \quad \text{SUB} \text{zoo to took}  
   'Yesterday, Tom took [her] to the zoo.'

(12) (Kameyama's 74)

a. Mary ga Tokyo ni asobi ni kiteiru.  
   \text{SUB} \quad \text{to play for has-come}  
   'Mary has come to Tokyo for a leisure visit.'

b. Kinoo wa Tom ga doobutuen ni itta.  
   yesterday \text{TOP} \quad \text{SUB} \text{zoo to went}  
   'Yesterday, Tom went to the zoo [*with her].'  

Hasegawa again points out that there are examples which cannot be explained by Kameyama's criteria. In the following examples, the adjuncts such as Spatio-Temporal Location in (13) and (14), and Purpose/Cause or Beneficiary:
in (15) can have reference to an element in the previous sentence.

(13) (Hasegawa's 10)
   a. Tikaku ni ii kooen ga dekita.
       vicinity in nice park SUB be-made
       'A nice park was made in the neighborhood.'
   b. Watasi wa mai-asa sanpo-siteiru.
       I TOP every-morning take-a walk
       'I take a walk [there] every morning.'

(14) (Hasagawa's 11)
   a. Akegata wa kuuki ga sundeiru.
       dawn TOP air SUB clear
       'The air is fresh at dawn.'
   b. Watasi wa zyogingu o tuzuketeiru.
       I TOP jogging DO continue
       'I'm still jogging at dawn.'

(15) (Hasagawa's 12)
   a. Osima de zisin ga atta.
       in earthquake SUB there-was
       'There was an earthquake in Oshima.'
b. Watasi wa Seki-zyyzi ni okane o okutta.

'I sent money to the Red Cross [because of/for it].' 

Hasegawa correctly points out that the right context makes it possible for the addressee to link two pieces of information in one way or another.

1.2.2.3 Hasegawa's question pull test

As an alternative diagnostic test for the complement vs. adjunct distinction, Hasegawa (1988) proposes the "question pull test", which is based on the appropriateness of ellipsis-clarifying questions. Let me introduce it here.

In Japanese discourse the speaker may initiate conversation by saying only the predicate; e.g., mityatta 'have/has seen'. The cooperative addressee is expected to ask questions, such as 'who/what/when/why?', to carry on the conversation. Hasegawa calls this style "question pull". She states that in question pull the Predicate Argument Structure attached to the articulated predicate in the addressee's mental lexicon is evoked, and the addressee asks questions to identify the elements corresponding to each argument in the predicate-argument structure until
(s)he thinks that (s)he has understood the addressed sentence containing only a predicate. As a test procedure, we ascertain whether or not a question which asks for the entity corresponding to a clear adjunct (e.g., when) may come before the question asking for a given entity. All the entities that must be identified before asking 'when' are considered to be complements. Consider the following table which shows the test results for some Japanese verbs:

<table>
<thead>
<tr>
<th>Verb</th>
<th>Gloss</th>
<th>Must be asked before <em>itu</em> 'when'</th>
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<tbody>
<tr>
<td>aruku</td>
<td>'walk'</td>
<td>dare ga 'who' (1)</td>
</tr>
<tr>
<td>iku</td>
<td>'go'</td>
<td>dare ga 'who', doko e/ni 'where [GOAL]' (2)</td>
</tr>
<tr>
<td>kihu-</td>
<td>'donate'</td>
<td>dare ga 'who', dare/doko ni 'who/where [GOAL]', nani o 'what' (3)</td>
</tr>
<tr>
<td>suru</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hasegawa states that the result accurately reflects the native speaker's intuition about these predicates: *aruku* 'walk' is unary, *iku* 'go' is binary, *kihu-sur* 'donate' is ternary, and so on. She has further tested with derived causative and passive verbs. For causative verbs, the result agrees with the native speaker's intuition, viz.
'causativization' creates n+1-arity for n-ary verbs. For instance, the unary verb, aruku 'walk' becomes binary in its causative version, aruk-aseru for which two entities, 'who' and 'whom', were asked before 'when'. For passive verbs, however, the results vary from verb to verb. For instance, the Agent need not be identified with koros-areru 'be killed', nusum-areru 'be stolen', and kowas-areru 'be broken' etc.

Although Hasagawa admits that the overall accuracy of the question pull test is yet to be established, and this I agree with, I value her basic approach which enables us to test items empirically. I will adopt it in this dissertation when the complement vs. adjunct distinction, which determines the subcategorization frame of a predicate, becomes an issue.

1.3 Previous studies on complementation constructions in Japanese

Several works have examined complementation constructions in Japanese in the past. Two of them are attempts to present a complete picture of the construction, while the rest focus on certain phenomena found in the construction. Nakau (1973) and Inoue (1974) belong to the former type whereas Smith (1970), Kuno (1973), Josephs (1972),
and Terakura (1980) are of the latter type. I will now review them one-by-one briefly.

1.3.1 Nakau (1973)

Nakau's main concern is to posit and justify the underlying structure of Japanese complementation constructions with syntactic argumentation made in the framework of Transformational Grammar at the time. The following are some of the main claims and findings made by him:

1. The Japanese sentential complement construction includes two types: noun complements and predicate complements. They can be represented as follows:

(16)

Noun Complement

```
Noun Complement

NP
  /\ 
S  N
  |  |
S' COMP
  |  |
to-yuu
    |
  koto/no
tokoro/hanashi
```

Predicate Complement

```
Pred Phrase

Pred
  /\ 
S  COMP
  |  |
to/yoo-ni
```
2. There are three basic transformational rules required for the derivation of certain complementation constructions. They are (1) Complement Subject Deletion, (2) Complement Subject Raising, and (3) Complement Predicate Raising rules.

3. Predicates are subcategorized in terms of the following factors:

(i) Whether the predicate entails noun sentential complementation or predicate sentential complementation.

(ii) In case of predicate sentential complementation, whether or not it has the complementizer to.

(iii) Whether the complement sentence is in subject position or in object position.

(iv) Whether or not any transformational operation is required or not.

4. There is no semantic basis for the selection among the nominalizers no, koto or tokoro, or for the presence or absence of the complementizer, toyuu before no or koto. They are idiosyncratic properties of predicates.
1.3.2 M. Inoue (1974)

Like Nakau (1973), Inoue has examined both Noun and Predicate complementation constructions. Unlike Nakau, however, Inoue's approach is more semantic than syntactic. She has attempted to clarify (1) logical semantic relationships between the complementizable predicates and their complements, and (2) choice of complement types. For issue (1), Inoue has adopted Karttunen's classification of complementizable verbs and has discovered that Japanese has all the predicate classes introduced by Karttunen and much more. As for issue (2), Inoue concludes that logical classification of predicates does not help in finding out what complementizers can be used with a particular predicate, thus presenting a counterexample to Kiparsky and Kiparsky (1971), which claimed that there is a positive relationship between logical classes and their complement types. Instead, the factors which determine the complement types are found to be partially syntactic, but mainly semantic, features of the predicate. Then she further argues that complementizers need not be in deep structure, as their distribution is predictable from the syntactic and semantic features of the predicate, and can therefore be introduced transformationally. However, the actual choice of complementizers is a problem when there is more than one possible complementizer for a predicate. Inoue mentions
that the actual speech context determines the choice, but she does not clarify the nature of such 'speech context.'

1.3.3 Smith (1970)

Smith's work is not a complete description of the Japanese complementation construction. It is limited to the 'sentence complement construction' (almost equivalent to Nakau's term, 'predicate complement construction'), which consists of to complements as in (17), te complements as in (18), and suffixing complements as in (19).

(17) (Smith's 2.1)
    atui to i -i -mas -i -ta
    hot said
    'He said that it's hot.'
    'He said, "It's hot."'

(18) (Smith's 2.21)
    unagi o tabe -te mi -ta.
    eel eat try past
    'I tried eating eel.'

(19) (Smith's 2.34)
    kookisin wa ningen o tuki ni ik -ase -ta
    curiosity man moon go cause
    'Curiosity made man go to the moon.'
In the framework of Transformational Grammar at the time, Smith posits the following underlying structure (20) for all three types of sentence complement constructions and formulates transformational rules to generate surface structures.

(20)

For to complements, a transformation called Quote to Marking applies, which sister-adjoins the particle to to the right of $S_{n+1}$. If this transformation does not apply, then Tense Deletion does. For the suffixing complement constructions, Verb Raising applies, and for te complements, te Attachment applies instead of Verb Raising, after the application of Tense Deletion. Smith does not clearly indicate how applicability of these rules is specified, except for Tense Deletion, which is an obligatory rule. However, since his grammar utilizes rule features, it seems that applicability of Quote to Marking is marked on each predicate as [+ Quote to Marking].
1.3.4 Kuno (1973)

Kuno focuses only on the cooccurrence phenomena between predicates and the complementizers no, koto, and to, which he attempts to explain with the semantic notion of 'presupposition', following Kiparsky and Kiparsky (1971). Kuno also notes the semantic distinction between no and koto, which had been overlooked previously. His findings are summarized as follows:

1. The predicates which involve presupposition, namely, factive predicates, cooccur with koto and no but not with to.

2. The predicates which does not have a presupposition, namely, non-factive predicates, cooccur with to, but not with koto/no.

3. When no and koto occur with predicates which do not involve presuppositions, a significant semantic difference between the two nominalizers can be found; no represents a concrete action, state, or event, directly perceived by any of the five senses and thus cooccurs typically with verbs of perception such as miru 'see'. Koto, on the other hand, represents an abstract concept, hence cooccurs typically with verbs of mental activity such as kangae-ru 'think'.

22
4. The relation between koto and no is controlled not only by the semantic nature of the matrix predicates but also secondarily by the semantic content of the complement clause as a whole. Contrast the following examples, (21) and (22), in which the same predicate shira-nakat-ta is used but there is a difference as to the acceptability in the use of no.

(21) (Kuno's 29a)
Watakusi wa Columbus ga Amerika o hakkenshi-ta koto/no I discover-PST o siranakat-ta.
Acc know-PST
'I did not know that Columbus discovered America.'

(22) (Kuno's 29b)
Watakushi wa kuzira ga honyuudoobutsu de aru koto/*no I whale mammal COP o siranakat-ta.
Acc know-PST
'I did not know that a whale is a mammal.'

According to Kuno, this is because the complement of (21), Columbus ga Amerika o hakkenshi-ta can be taken as either an abstract concept or a concrete event, hence
allowing both koto and no, but the complement of (22),
kuzira ga honyuu-doobutsu de ary, cannot be a concrete
event, hence blocking the use of no.

1.3.5 Josephs (1976)

Inspired by Kuno (1973), Josephs' work is a thorough
study on the semantics of no and koto. He aims at the
discovery and formulation of essential principles underly­
ing the difference between koto and no as nominalizers.
Contrary to Nakau, who claims that there are no semantic
bases for distinguishing the two nominalizers, Josephs
demonstrates that there actually are such semantic bases.
Josephs was certainly inspired by Kuno (1973), but unlike
Kuno, who has observed the distinction of no and koto only
in non-presuppositional predicates, Josephs claims that the
distinction applies to presuppositional predicates as well.
His claims are summarized below:

1. Two nominalizers, no and koto, possess certain inherent
distinguishing features: no is regularly associated with
connotations of direct sense perception (of simultaneous
action), urgency or immediacy, or stronger conviction on
the speaker's part, whereas koto invariably involves less
direct means of perception (associated with various types
of mental activity, for example), a sense of delay or
remoteness rather than immediacy, or weaker conviction. They are thus two independent lexical items with their inherent semantic features represented by cover terms, <direct> for no and <indirect> for koto respectively.

2. Verbals which cooccur with koto and no can be specified as either <direct> or <indirect>. If a verb can cooccur with both no and koto, it is considered to be two lexical items, V₁ which takes no and V₂ which takes koto.

3. The semantic features <direct> and <indirect> are probably predictable by redundancy rules from certain other semantic features. For example, from the semantic feature <sense perception> which verbs like miru 'see' or kanjiru 'feel' have, the feature <direct> is predictable, and from the feature <mental activity> which is shared by verbs such as kangaeru 'think' and suiteisuru 'deduce', the feature <indirect> is also predictable.

4. Toyuu has the inherent meaning of nonfactiveness, and introduces a degree of doubt or a weakening of the speaker's conviction. Its function is to make the complement nonfactive, so that it becomes compatible with a nonfactive predicate.
1.3.6 Terakura (1980)

Terakura's work is unique in the sense that she has focused on the complementizer to yuu, which had been mentioned but hardly explained in earlier works. Terakura attempts to make semantic explanations for the use of the to yuu which precedes another complementizer no or koto, and makes the following points:

1. To yuu is used to designate a proposition. A proposition is conceptual, like facts, but unlike facts, it is subjective. When a spatio-temporal entity such as an event, action, process, or sensation is presented as Proposition, to yuu no is used whereas if a conceptual entity such as a fact or concept is presented as a Proposition, to yuu koto is used.

2. To yuu preceding no or koto as in (23) is distinct from to yuu in (24). The former is a syntactic unit whereas the latter consists of a quotative postposition, to and a verb, yu-u.

(23) (Terakura's 21b)

Nom get=angry-PST TOP unusual-PRS

'The it is unusual that Taro got angry.'
(24) (Terakura's 21a)

Taroo ga arigatoo to yuu no wa mezurasi-i.
Nom thank=you say TOP unusual
'It is unusual that Taro says, "Thank you".'

3. *To yuu* is difficult to analyze syntactically because the occurrence or non-occurrence of *to yuu* is determined by the speaker's attitude or judgment, viz., the speaker decides whether an event or a fact is to be presented as a proposition. Terakura presumes, in deep semantic structure, that there is a semantic marking like `<Event>`, `<Fact>`, or `<Proposition>`.

1.4 Grammatical framework

The grammatical framework to be used in this study is lexicase, which has been developed by Stanley Starosta and his students since 1970 mainly on the morphology, syntax and lexicon of more than forty-five different languages. Let me briefly introduce the framework below.

1.4.1 The outline of the lexicase framework

Lexicase (LXC) is described as a panlexicalist monosstratal dependency variety of generative localistic case grammar.
It is panlexicalist in the sense that all grammatical generalizations are to be handled in the lexicon. In other words, the rules of LXC proper are lexical rules. A lexicon contains words, each of which is marked with contextual features that ensure the right combination and order of words which appear in a sentence. Thus, we may say that LXC is a grammar of words.

Lexicase is monostratal in the sense that there is no distinction between deep and surface structures, levels, strata, functional descriptions, or other simultaneous levels of syntactic or semantic representations.

Lexicase is a type of dependency grammar in the sense that it views syntactic structures as systems of dependencies between heads and attributes. (Starosta and Nomura 1984:3)

Lexicase is generative grammar. It regards a grammar as a formal system which generates all and only the grammatical sentences of a language. It takes the term 'generative' literally, and thus actually requires grammatical rules and representations to be expressed formally and explicitly.

Lexicase is case grammar in the sense that it analyzes every nominal constituent (except for predicate nominals).
as bearing a syntactic-semantic relationship to its regent. It has evolved away from Fillmorean case grammar in the following main ways: (1) it places emphasis on syntactic over semantic criteria for the definition and identification of case relations, and (2) it requires that every verb have a Patient in its case frame.

Lexicase is localistic case grammar in the sense that all case forms, which roughly correspond to 'grammatical functions' in the Chomskyan framework, are localistically analysed. That is, except for the primitive features Nominative ([+Nom]) and Accusative ([+Acc]), case forms are analysed in terms of semantic distinctive features such as location ([+lctn]), source ([+sorc]), and so on.

1.4.2 Constraints in lexicase

Lexicase imposes several constraints to reduce the power of a grammatical framework. Starosta (1988:7) states as follows:

A constrained theory ... asserts that certain things are impossible, and can in principle be falsified by finding an instance of the supposedly impossible phenomenon. ... It has empirical content.

I will now introduce all the constraints imposed on LXC, which are quoted from Starosta (1988:9-36). They will be referred to now and then in the actual analysis of
Japanese complementation constructions to be made in this dissertation. The constraints 1 and 2 are constraints on grammatical representations. 3 - 11 are constraints on lexical representations, and 12 and 13 are constraints on rules. For detailed discussion of these constraints, see Starosta (1988:9-36).

1. Deep structure and strata constraint. There is no distinction between deep and surface structures, levels, strata, or other simultaneous levels of syntactic representations.

2. The "lexical leaf" constraint. All terminal nodes are words. This constraint, for instance, rules out familiar structures such as those with Tense and AGR being in terminal nodes.

3. The one-bar constraint. Each and every construction has at least one immediate lexical head, and every terminal node is the head of its own construction. In X-bar terms, this means that only single-bar phrase designations are possible node labels in a LXC tree. This constraint rules out such structures as (25) for Topic Comment construction and (26) which involves a VP node.
4. The sisterhead constraint: Lexical items are subcategorized only by their dependent sisters. Contextual features are marked only on the lexical heads of constructions, and refer only to lexical heads of dependent sister constructions. This constraint functions to place an empirically motivated limitation on possible grammatical representations. For instance, the VP-type binary structure is ruled out because it does not show that the verb and the head of the subject NP are in a regent-dependent relationship, despite the fact that they are found to be grammatically related in terms of subcategorization, agreement, government, and/or selection.

5. Features are marked only on lexical items, not on non-terminal nodes.

6. Abstract lexical entries: The lexicon contains only actually occurring words.
7. Feature inventory: Syntactic categories are limited and atomic. Every word in a grammar is a member of one and only one of a restricted set of syntactic word classes or 'parts of speech.' Each syntactic class is defined in terms of a single positive atomic feature drawn from this set of categories, such as [+N], [+Adj], etc., and no lexical item is marked positively for more than one of these features.

8. Lexical disjointness: As indicated by constraint 7, a word can be a member of only one syntactic category. A word is defined by three mutually unpredictable elements—sound, meaning, and distribution. Thus, if we find that 'run' appears as a noun and as a verb, we are dealing with two lexically distinct though homophous words, run₁ [+V] and run₂ [+N]. The regular relationship between such pairs of words is captured in LXC by means of derivation rules rather than by complex lexical entries.

9. Binary and implicational features only: All non-contextual features are binary, and contextual features are positive, negative, or implicational.

10. No double contextual features: No lexical entry may contain a double contextual feature such as follows:
11. No rule features: No lexical entry may contain a rule feature. This constraint rules out some otherwise possible but unnatural and ad hoc analyses.

12. No transformations. There are no grammatical rules that map one sequence or hierarchy onto another; that is, there are no rules that adjoin, delete, permute, relabel, or copy parts of one structure to produce another structure.

13. Phrase structure rules: There are no PS rules as separate from lexical rules. Given the constraints so far, PS rules are redundant and can be eliminated, and all rules of grammar proper can be reformulated as generalizations about relations among lexical entries or relations between features within lexical entries.

1.5 Application of lexicase to the analysis of Japanese: review and revision

Harvey Taylor's "Case in Japanese" was the first to apply lexicase to the analysis of Japanese in 1971. Lexicase has since undergone some limited revisions and Starosta and Nomura (1984) applied a later version of the
framework in a preliminary reanalysis of about 150 Japanese sentences. After that, Shin, Unetani, and Starosta (1986) and Unetani, Shin, and Starosta (1987) have presented a preliminary analysis of verb subcategorization, which is further refined and extended by Starosta (1987) in "Rules and Lexical items for demonstration of Lindsey's FLX parser with Japanese". I will briefly introduce and review them, especially with respect to the analysis of postpositions, which serve as case marking device in Japanese. After that, I will propose some revisions, which are to be adopted in the analysis of complementation constructions. As for the analysis of verb subcategorization, I will leave it till Chapter 3, because the findings of Chapter 2 must first be incorporated.

1.5.1 Case relations

Case relations represent syntactic-semantic association between NPs and the predicate of a sentence or any regent of a phrase containing NPs. They are established primarily on syntactic rather than semantic or situational criteria. Their meanings are extracted by comparing instances of case relations which have been identified by grammatical criteria. The number of case relations required in a universal grammar is limited in lexicase. They are the Patient, Agent, Locus, Correspondent, Means, and possibly Time case

1.5.2 Case forms and case markers

Case forms are categories which signal the presence of case relations and characterize the grammatical functions of NPs. They are universal in the sense that they exist in any human language, although grammatical or morphological devices by which they are realized in a given language are language-specific (Starosta 1978:504). Such grammatical or morphological devices are called 'case markers'. For Japanese, case markers are postpositions, verbs, and relator nouns. For instance, the postposition ga marks the NP to be Nominative in case form (equivalent to 'subject' in other frameworks,) and it consequently signals that the NP is an actor and Patient if the verb is intransitive, whereas it is an actor and Agent if the verb is transitive. This way of linking the Nominative case form and the Patient/Agent case relation, depending on whether the verb is intransitive or transitive, is universal among accusative languages such as Japanese—languages in which the actor is marked by the same case for both transitive and
intransitive clauses, whereas the 'transitive object' is marked by a different case.

1.5.3 Localistic semantic analysis of Postpositions

As stated in 1.4.1, case forms are localistically analyzed in LXC. What this means for Japanese is that the case markers (verbs, relator nouns, and postpositions in the case of Japanese) are analyzed in terms of semantic distinctive features such as location, source, and goal, and that these features are then used in the statement of the cooccurrence of, for example, case relations such as Locus with postpositions such as ni (Starosta and Nomura 1984:65). Localistic semantic analysis of Japanese postpositions has undergone some revisions to date. Let me introduce them and propose the analysis to be adopted in this dissertation.

1.5.3.1 The analysis in Starosta and Nomura (1984)

A tentative localistic semantic analysis of a set of Japanese postpositions, which was revised from Taylor (1972) and proposed in Starosta and Nomura (1984:65), is presented in (28) on the following page.
(28)

```
+P
+modl
+Nom
-Acc
+Acc
+Nom
-ctn
+ctn
-sorc
+goal
-kara
-trmn
-trrn
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1.5.3.2 The analysis in Shin, Unetani, and Starosta (1986)

The following sentence appears in Shin et al. (1986:8):

(29) (their 10)

\[\begin{array}{ccc}
\text{John} & \text{ga}_2 & \text{eigo}\ 
\text{ga} & \text{wakaru.} \\
+\text{Acc} & +\text{Nom} & -\text{trns} \\
+\text{COR} & +\text{PAT} & -\text{lctn} \\
& & +\text{crsp} \\
& & -\text{mtr1} \\
& & +\text{sttv}
\end{array}\]

"John understands English."

The number marking on the postposition, \(\text{ga}_2\) indicates that a second kind of \(\text{ga}\) has been noted here. This is an exhaustive listing marker \(\text{ga}\) (Kuno 1973:49), which happens to be homophonous with the nominative \(\text{ga}\). It should be noted that the exhaustive listing marker \(\text{ga}\) is [+modl], as are \text{wa} and \text{mo}. They all mark a kind of topic NP, and the case relation of the NP is outer Correspondent ([+COR(o)]).

1.5.3.3 The revision made in Unetani, Shin, and Starosta (1987)

The following rule appears in Unetani et al. (1987), suggesting that another kind of Postposition has been noted.

(30) \text{SR-15} \quad [+P] \rightarrow [±\text{cmpl}]
Only one lexical item which possesses the feature, [+P, +cmpl] has been identified. It is to. An example follows:

(31) (their 3)

Mary ga [Taroo ga kuru to] omo-u
+Nom +V +P
+PAT +cmpl

'Mary thinks that Taroo will come.'

1.5.3.4 The revision made in Starosta (1987)

Starosta (1987) is named "Rules and Lexical items for demonstration of Lindsey's FLX parser with Japanese," and is a refined and extended version of the rule set given in Unetani, Shin, and Starosta (1987). The following rules appear:

(32) SR-16 [+P] --> [+Nom]
SR-16A |+P| -->(±xtns)
|Nom|  --> [+xtns]
SR-17 |+P| -->(±locl)
|+xtns|     --> [±locl]
SR-18 |+P| -->(±drcn)
|locl|   --> [±drcn]
SR-19 |+P| -->(±sorc)
|drcn|   --> [±sorc]
SR-20 |+P| -->(±trmn)
|drcn|   --> [±trmn]

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Additions to the lexicon in Unetani et al. (1987):

- o [-locl]
- ni [-assn]
- to [+assn]
- de [+trmn]
- e [-sorc]
- kara [+sorc]
- ka [+ntrg]
- to [+xtns]

A subcategorization tree of [+P], which I have drawn based on the rules quoted above, is presented in (33) on the following page. Note that the revision was made in the following aspects:

1. The second to, which has been noted in Unetani et al. (1987), is renamed 'extension' ([+xtns]) here.

2. The following new features are introduced here: [+locl], [+drcn], and [+sorc]. However, the following features are discarded or left out for the reasons stated (personal communication, Starosta):

   a. [+modl] and [+addn] are left out because the analysis here does not cover wa and mo.

   b. [+lctn] is replaced by [+locl] so that the feature does not get confused with the feature used in verb classification.
c. [±goal] is replaced with [±sorc] because this distinction is cross-linguistically more basic, as in German for example.

The subcategorization of postpositions made in Starosta (1987) is still incomplete. For instance, *made* and *no*, which appeared in Starosta and Nomura (1984), are left out.

1.5.3.5 The revised localistic semantic analysis of postpositions

Based on his review on the earlier analyses, I will now attempt to provide a near-complete listing of Japanese postpositions. The following are the revised points:

1. [±mod1], which was proposed in Starosta and Nomura (1984), but left out in Starosta (1987), has been restored.

2. A new feature [±xcls] has been added to make a distinction between *wa* and *ga*. Both mark a topic NP, but the latter has connotation of exclusiveness, as noted by Kuno (1973). Therefore, *ga* is marked with [±xcls], while *wa* is [-xcls].

3. *O* was marked as [±Acc] in Starosta and Nomura (1984), but the feature has been replaced with a localistic feature, [-locl], in Starosta (1987). I have readopted the
feature [+Acc] for o here because [+Acc] is an unanalyzable primitive feature$^5$ (Starosta and Nomura 1984:65) and also provides a good indication that Japanese is an accusative language.

4. No [-Acc, -lctn], which appeared in Starosta and Nomura (1984) has been restored.

5. Made, which appeared in Starosta and Nomura (1984), but was left out in Starosta (1987), has been replaced under the branching of [-sorc] by a feature [+trmn].

6. To [+assn], which was listed in the lexicon in Starosta (1987), not in a rule, has been replaced here by to$_2$.

7. A new accusative postposition ga$_3$, which is homophonous with the Nominative ga$_1$ and the modal exclusive ga$_2$ identified earlier, is added here with localistic features [+Acc,+sorc$^6$] in contrast to o [+Acc,-sorc] (see 3.3 for the discussion and justification for positing the accusative ga). For the sake of simplicity of presentation, however, I will hereafter refer to this accusative ga as 'ga$_2$' and the modal exclusive ga as 'ga$_3$'.

The subcategorization tree (34), which is presented on the following page, provides an overview.
(34)
1.5.4 The mapping between case forms and case relations

Based on the analysis of postpositions above, the mapping between case forms (indicated here by postpositions) and case relations in Japanese can be presented as follows:

Table 1.2
The mapping of case forms and case relations

<table>
<thead>
<tr>
<th>ga₁</th>
<th>o</th>
<th>ga₂</th>
<th>no</th>
<th>ni</th>
<th>de</th>
<th>e</th>
</tr>
</thead>
<tbody>
<tr>
<td>+Nom</td>
<td>+Acc</td>
<td>+Acc</td>
<td>-lctn</td>
<td>-assn</td>
<td>-drcn</td>
<td>-trmn</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-sorc</td>
<td>+sorc</td>
<td>+trmn</td>
<td>+trmn</td>
</tr>
</tbody>
</table>

| PAT  | +  | +  | + AGT | +  |
| LOC  | +  | +  | +     |
| LOC(o)|    | +  | +     |
| COR  | +  | +  |
| COR(o)|    | +  |
| MNS  |    | +  |
| MNS(o)|    | +  |

made kara to₂ wa ga₃ mo

| +drcn| +sorc| +assn| -xcls| +xcls| +addn|

<table>
<thead>
<tr>
<th>PAT</th>
<th>AGT</th>
<th>LOC</th>
<th>LOC(o)</th>
<th>COR</th>
<th>COR(o)</th>
<th>MNS</th>
<th>MNS(o)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>+</td>
<td></td>
<td></td>
<td>+</td>
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</tr>
</tbody>
</table>
1.5.5 Subcategorization of verbs

Unetani, Shin, and Starosta (1987) presents a preliminary subcategorization of Japanese verbs. Starosta (1987) is a revised and extended version of the preceding, but I do not find any changes made there in so far as verb subcategorization is concerned. I repeat the verbal subcategorization rules of Unetani et al. below. A subcategorization tree is provided in Appendix A.

(35) SR-1 [+V] --> [±djct]
SR-2 [-djct] --> [±cplr]
SR-3 [-cplr] --> [±trns]
      [±lctn]
      [±crsp]
      [±mtrl]
SR-4 | [+crsp] -- [-trns] --> [±caus]
SR-5 [+trns] --> [±caus]
SR-6 [±caus] --> [±pssv]
SR-7 [-pssv] --> [±sttv]
SR-8 | [+trns] -- [-lctn]
      -crsp
      -mtrl
      -caus
      -pssv
      -sttv
SR-9 | [-trns] -- [-lctn]
      -mtrl
      ±pssv

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SR-10 [-trns] --> [+xtns]
[-lctn]
[-crsp]
[-mtri]


SR-12 [+P] --> [+root]

Revisions of this analysis are postponed until Chapter 3, in which a detailed verb subcategorization is examined in order to formalize the cooccurrence relations between predicates and their dependent complements in terms of lexical rules.

1.6 Data and orthography

The data of approximately 200 complement-taking predicates were initially collected from essays, novels, and scripts for some video dramas. Example sentences presented here, however, were formed by me based on my intuition as a native speaker of Japanese. Since the objective of Generative Grammars is to disclose a native speaker's competence, where 'competence' is to be defined as a person's internalized grammar of a language—their ability to create, understand, and judge the acceptability of sentences including those he has never heard before—data can be drawn from pre-existing sentences, or can be
created by native speaker's introspection (Newmeyer 1983, Starosta 1988, Stork and Widdowson 1974). Note that all the example sentences presented in this study are of the informal, but not casual, style of Japanese for the following two reasons: (i) it is a normal practice in Japanese syntax to present arguments based on examples from the informal style of Japanese, and (ii) each style level has its own system, and generalizations will be lost if levels are mixed in a syntactic analysis. The differences between formal and informal styles are manifested in the predicate as follows:

Table 1.3
Formal vs. informal predicate forms

<table>
<thead>
<tr>
<th></th>
<th>informal</th>
<th>formal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verb</td>
<td>mi-ru</td>
<td>mi-mas-u</td>
</tr>
<tr>
<td></td>
<td>see-PRS</td>
<td>see-FRM-PRS</td>
</tr>
<tr>
<td>Adjectival verb*</td>
<td>ooki-i</td>
<td>ooki-i desu</td>
</tr>
<tr>
<td></td>
<td>big-PRS</td>
<td>big-PRS COP**(FRM)</td>
</tr>
<tr>
<td>Adjectival noun*</td>
<td>kirei da</td>
<td>kirei desu</td>
</tr>
<tr>
<td></td>
<td>pretty COP</td>
<td>pretty COP(FRM)</td>
</tr>
<tr>
<td>Noun + copula</td>
<td>John da</td>
<td>John desu</td>
</tr>
<tr>
<td></td>
<td>COP</td>
<td>COP(FRM)</td>
</tr>
</tbody>
</table>

Notes: * 'Adjectival verb' and 'adjectival noun' in my analysis refer to 'keiyooshi' and 'keiyodooshi', respectively, in traditional Japanese grammar.

** I will follow the usual practice of Japanese syntax in referring to da or desu as 'copula' (COP) in this study.
Casual style is even more informal than the informal style, being characterized by the omission of postpositions (wa, o, and sometimes ga), and by contracted forms (e.g., itchau ~ contracted from it-te shima-u 'have gone') in addition to the use of informal forms of predicates.

The example sentences thus formed are presented in the more traditional Hepburn romanization orthography, unlike most previous studies of Japanese, which are presented in kunrei style romanization. I have chosen the Hepburn style because it is more widely used in non-linguistic contexts and is probably more familiar to linguists not specializing in Japanese linguistics. Note, however, that examples cited from other studies are copied exactly as they appear in the original except for the glosses of grammatical morphemes, which are standardized throughout this dissertation (see the list of abbreviations on page xiii).

The differences between the two styles are presented in Table 1.4 presented on the following page.
<table>
<thead>
<tr>
<th>IPA symbols</th>
<th>Hepburn style</th>
<th>kunrei style</th>
</tr>
</thead>
<tbody>
<tr>
<td>[tʃi]</td>
<td>chi</td>
<td>ti</td>
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<tr>
<td>[tsu]</td>
<td>tsu</td>
<td>tu</td>
</tr>
<tr>
<td>[ʃi]</td>
<td>shi</td>
<td>si</td>
</tr>
<tr>
<td>[ʂu]</td>
<td>fu</td>
<td>hu</td>
</tr>
<tr>
<td>[dʒi]</td>
<td>ji</td>
<td>zi</td>
</tr>
<tr>
<td>[ʃa]</td>
<td>sha</td>
<td>sya</td>
</tr>
<tr>
<td>[ʃu]</td>
<td>shu</td>
<td>syu</td>
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<tr>
<td>[ʃo]</td>
<td>sho</td>
<td>syo</td>
</tr>
<tr>
<td>[tʃa]</td>
<td>cha</td>
<td>tya</td>
</tr>
<tr>
<td>[tʃu]</td>
<td>chu</td>
<td>tyu</td>
</tr>
<tr>
<td>[tʃo]</td>
<td>cho</td>
<td>tyo</td>
</tr>
<tr>
<td>[ʒa]</td>
<td>ja</td>
<td>zya</td>
</tr>
<tr>
<td>[ʒu]</td>
<td>ju</td>
<td>zyu</td>
</tr>
<tr>
<td>[ʒo]</td>
<td>jo</td>
<td>zyo</td>
</tr>
</tbody>
</table>
NOTES

1 In my analysis to be presented in Chapter 2, V-te and iru are two separate words.

2 It is not clear to me why Hasegawa placed a hyphen here despite the fact that kiteiru in (11a) is not hyphenated.

3 This constraint needs to be revised, since all the contextual features are now to be indicated by ? rather than implicational symbols (see note 4 of Chapter 3).

4 It is not a complete listing because there are some more [+modl] postpositions such as sae 'even' and koso (emphatic). They are left out here because they do not appear in any of the example sentences in this dissertation.

5 It is, however, still an open question as to whether Acc is a universal primitive feature. It might turn out to be decomposable in a more detailed localistic analysis.

6 The feature name 'source' ([+src]) has been assigned here, based on the thinking that the ga marked NP, Mary in "John ga Mary ga suki da." 'John likes Mary', for instance, may be seen as a kind of source of the emotion. In another example, "John ga nihongo ga wakaru." 'John understands Japanese.', nihongo 'Japanese' may also be viewed as a source of the knowledge.

7 Only the minimum distinguishing localistic features are given in this table. See the tree (36) for the whole cluster of localistic features. Case relations are labeled (o) to indicate 'outer case relations'—case relations which occur freely with all predicates, in contrast to inner case relations (without (o) in the table), which subcategorize their regents.
CHAPTER 2

THE STRUCTURES OF COMPLEMENT CONSTRUCTIONS

2.1 Introduction

The aim of this chapter is to define the structures of complement constructions. The first part examines the range of complement constructions which have been presented in earlier works and determines which ones are to be called "complement constructions" in this lexicase dissertation. The second examines the lexical status of so-called "complementizers" and "nominalizers", and defines the structures of complement constructions to be covered in this dissertation.

2.1.1 What is a complement construction?

What constitutes a complement construction is a major issue. It varies among syntacticians and different frameworks. I will first review earlier studies and summarize what constructions have been called "complement constructions" in Japanese. I will then clarify the lexicase approach and determine which ones are to be defined as complement constructions, and hence are to be examined in this dissertation.
2.1.1.1 Review of the types of complement construction in earlier studies

Among the earlier studies on complement constructions in Japanese, Smith (1970), Nakau (1973), and Inoue (1974) are the only ones which list types of complement construction. I will introduce their classification in this section. The examples presented for illustrative purposes are mine, but I have ensured that they are within the same patterns used by the authors. Clause boundaries are also marked by me with square brackets, but again, I have ensured that they do not deviate from the claims, if any, made by the authors. When deep and surface structures are postulated, the marking is based on the deep structure. Hyphenation is also entered in such a way that it does not contradict the original sources. Some of them, thus, do not agree with my own judgment as to the position of the morpheme boundary.

2.1.1.2 Complement types in Smith (1970)

As stated in 1.3.3, the scope of Smith's work is limited to S complements, and it consists of to complements, -te complements, and suffixing complements. To complements refer to those which are marked with the use of the complementizer to, as in (1). -Te complements are
those marked with a -te ending on the complement verb, as in (2).

(1) John ga [Mary ga nige-ta] to it-ta.
       Nom     Nom                       run=away-PST     say-PST
       "John said that Mary ran away.'

(2) John ga [hon o yon-de] i-ru.
       Nom     book Acc                        read-GER exist-PRS
       "John is reading a book.'

The last type, the sufffixing complement, refers to a so-called "complex predicate" which consists of a complement verb and a suffix, such as -rare or -sase, which form passive and causative constructions, respectively, as in (3) and (4).

(3) John ga [ame ni fur-]are-ta.
       Nom     rain Ltv                        fall-PSV-PST
       "John was rained on (It rained on John).'

(4) John ga [Mary ni Bill o but-]ase-ta.
       Nom     Ltv     Acc                        hit-CAUS-PST
       "John made Mary hit Bill.'

In a traditional transformational grammar such as Smith's, these sufffixes are considered to behave as argument-taking predicates and to have complement constructions in deep
structure. For instance, the deep structure of (4) is posited as follows:

(5)

```
S
  NP  NP  S  V
  |    |  |  |
  John Mary  S  -ase
  |       |   CAUS
Mary Bill but-hit
```

The surface structure is then derived by transformational rules which raise the lower predicate and change (or attach, depending on the syntactician) the case markings.

2.1.1.3 Complement types in Nakau (1973)

As introduced in 1.3.1, Nakau claims that there are two major types of complement construction: Noun sentential complement and Predicate sentential complement. They are distinguished based on the evidence involving transformational processes such as Soo su Predicate Phrase Pro-formation, Topicalization, and Relative Clause Formation, among others. The examples of Noun sentential complement are presented below. Note that they involve the
use of nominalizers, no, koto, and tokoro, which are explicitly referred to as nouns by Nakau (1973:101).

(6) John ga [Mary ga nige-ru] no o mi-ta.
    Nom   Nom run=away-PRS Acc see-PST
    'John saw Mary running away.'

(7) John ga [Mary ga nige-ta] koto o bakuroshi-ta.
    Nom   Nom run=away-PST Acc disclose-PST
    'John disclosed that Mary ran away.'

    Nom   Nom run=away-PRS Acc catch-PST
    'John caught Mary when she was about to run away.'

Predicate sentential complement consists of two subtypes; those which are marked with the use of Complementizers, to and yoo-ni¹, as in (9) and (10), and those which do not involve any complementizers as in (11) - (18). Note that (15) and (16) are called "-te complements" and "sufffixing complements" respectively in Smith (1970).

(9) John ga [Mary ga nige-ta] to it-ta.
    Nom   Nom run=away-PST say-PST
    'John said that Mary ran away.'
(10) John ga Mary ni [nige-ru] [yoo-ni] susume-ta.
Nom Ltv run=away-PRS advise-PST
'John advised Mary to run away.'

(11) [Mary ga nige-ru] yotee-da².
Nom run=away-PRS plan
'Mary plans to run away.'

(12) [Mary ga amerika-jin] des-u.
Nom American COP-PRS
'Mary is an American.'

(13) [Mary ga amerika-jin] rasi-i.
Nom American seem-PRS
'Mary seems to be an American.'

(14) [Mary ga amerika-jin da] soo-da.
Nom American COP hear
'I hear that Mary is an American.'

(15) Mary ga [nihon ni it-te] mi-ru.
Nom Japan Ltv go-GER see-PRS
'Mary will go to Japan and see what it is like.'

(16) John ga [ame ni fur-jare-ta.
Nom rain Ltv fall-PSV-PST
'John was rained on (It rained on John).'
Nom meal Acc eat start-PST
'John started eating the meal.'

(18) John ga [nihon ni ika-] na-i.³
Nom Japan Ltv go NEG-PRS
'John does not go to Japan.'

2.1.1.4 Complement types in M. Inoue (1974)

Just like Nakau (1973), M. Inoue defines two major complement types: Type I and Type II in her terminology. Type I consists of three subtypes: Stem Complements, Gerundive Complements, and Infinitival Complements. Stem Complements are equivalent to Suffixing Complements in Smith's classification as in (3) and (4). Gerundive Complements are equivalent to -te complements in Smith's analysis as in (2). Infinitival Complements are those which are marked with the so-called conjunctive ending (it is either i or e such as in iki 'to go' and tabe 'to eat') of a complement verb as in one of Nakau's examples, (17).

Type II, on the other hand, consists of those constructions marked with the use of complementizers/nominalizers (Inoue is not clear about the distinction): no, koto, to, toyuuno, and toyuukoto. Inoue's Type II is thus almost
equivalent to Nakau's Noun Sentential Complement except for the following two aspects:

(i) Inoue has included the construction marked with to in this type, which by Nakau's arguments is rather a Predicate Sentential Complement.

(ii) Inoue regards toyuuno and toyuukoto as complementizers which define complement types as in (19) and (20). In contrast, Nakau considers them to comprise two syntactic units, toyuu and no, or toyuu and koto.

(19) [Mary ga nige-ta] toyuuno wa uso da.
    Nom run=away-PST TOP lie COP
    'It is a lie that Mary ran away.'

(20) [Mary ga nige-ta] toyuukoto ga wakat-ta.
    Nom run=away-PST Nom known-PST
    'It was known that Mary ran away.'

2.1.1.5 Summary

We have thus observed that there are differences among syntacticians in the terms used to refer to a given structure, which can be confusing to readers. Therefore, the following table is presented to capture the whole picture more clearly. The first column, "structure" contains a
common description of the construction as an attempt to neutralize the differences of terminology.
Table 2.1
The range of complement types in earlier studies

<table>
<thead>
<tr>
<th>Structure</th>
<th>Example number</th>
<th>Smith</th>
<th>Nakau</th>
<th>Inoue</th>
</tr>
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<tbody>
<tr>
<td>Complex predicate</td>
<td>3, 4</td>
<td>Suffixing</td>
<td>Predicate Sentential Complement (P.S.C.)</td>
<td>Type I: Stem Complement</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Complement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V-te V</td>
<td>2, 15</td>
<td>-te complement</td>
<td>P.S.C.</td>
<td>Type I: Gerundive complement</td>
</tr>
<tr>
<td>Vi V*</td>
<td>17</td>
<td>---</td>
<td>P.S.C.</td>
<td>Type I: Infinitival complement</td>
</tr>
<tr>
<td>Infinitival complement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[S] to</td>
<td>1, 9</td>
<td>to complement</td>
<td>P.S.C.</td>
<td>Type II</td>
</tr>
<tr>
<td>[S] yoo-ni</td>
<td>10</td>
<td>---</td>
<td>P.S.C.</td>
<td>---</td>
</tr>
<tr>
<td>[S] da</td>
<td>12</td>
<td>---</td>
<td>P.S.C.</td>
<td>---</td>
</tr>
<tr>
<td>rasi-i</td>
<td>13</td>
<td>---</td>
<td>P.S.C.</td>
<td>---</td>
</tr>
<tr>
<td>soo-da</td>
<td>14</td>
<td>---</td>
<td>P.S.C.</td>
<td>---</td>
</tr>
<tr>
<td>na-i</td>
<td>18</td>
<td>---</td>
<td>P.S.C.</td>
<td>---</td>
</tr>
<tr>
<td>[S] no</td>
<td>6</td>
<td>---</td>
<td>Noun sentential complement (N.S.C.)</td>
<td>Type II</td>
</tr>
<tr>
<td>koto</td>
<td>7</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[S] tokoro</td>
<td>8</td>
<td>---</td>
<td>N.S.C.</td>
<td>---</td>
</tr>
<tr>
<td>[S] toyuuno</td>
<td>19</td>
<td>---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>toyuu-</td>
<td>20</td>
<td>---</td>
<td></td>
<td>---</td>
</tr>
<tr>
<td>koto</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: * The Vi in this construction takes a conjunctive form which ends in either i or e, such as in yomi- 'read' and tabe- 'eat'. The construction, however, is named the "Vi Vconstruction," because the majority of verbs take the i ending rather than the e ending.
2.2 Complement constructions in lexicase

Most of the structures listed in the above table are clearly identified as complement constructions. Look at examples (1) and (6) (repeated below), for instance.

(1) John ga Mary ga nige-ta to it-ta.
    Nom    Nom run=away-PST say-PST
'John said that Mary ran away.'

(6) John ga Mary ga nige-ru no o mi-ta.
    Nom    Nom run=away-PRS Acc see-PST
'John saw Mary running away.'

In these examples, inflected forms of the verbs, nige-ta in (1) and nige-ru in (6), marked with tense-marking inflectional morphemes -ta and -ru, are found in a non-sentence-final position. This indicates that there is a clause boundary within the sentence, and it is right after the inflected verb, since Japanese is a verb-final language. This structure satisfies the definition of a complement construction spelled out in 1.1—a syntactic structure in which a clause modifies a predicate (it-ta in (1)) or a noun (no in (6)).

Some of the structures listed in Table 2.1, however, do not have such a clear marking of the clause boundary
within a sentence, and it needs to be determined whether they are considered as forming complement constructions in this dissertation. This section examines that issue. The structures to be examined are complex predicates, V-te V constructions, Vi V constructions, [S] da constructions, and VN (verbal noun) constructions.

2.2.1 Complex predicate issue

In traditional transformational grammars, the so-called 'complex predicate construction' (equivalent to Smith's Suffixing Complement, Inoue's Stem Complement, and some of Nakau's Predicate Sentential Complement), which consists of a verb root and a suffix such as -sase- and -rare-, has been considered to form a complement construction in a deep structure, as seen in (5) (repeated below).

(5)
Such an analysis is not permitted in lexicase. First of all, lexicase posits the constraint that there can be no distinction between deep and surface structures nor transformational rules to map two such levels. Therefore, it is impossible to postulate a deep structure such as the one seen in (5) for the construction and use transformational rules to derive the surface structure. Another constraint of lexicase—the Lexical Leaf Constraint—also blocks the structure (5) itself. This constraint states that all terminal nodes must be words. Thus, it is not permitted for a suffix to be placed in a terminal node, as in (5).

Instead, lexicase views the so-called complex predicate as one derived in the lexicon. For instance, the following two sentences are related via a lexical rule that derives the causative verb, nige-sase-ru in (22) from the corresponding item, nige-ru in (21).

(21) Mary ga nige-ru.

run=away-PRS
+N +V
PAT -trns

'Mary runs away.'

(22) John ga Mary o nige-sase-ru.

run=away-CAUS-PRS
+N +N +V
AGT PAT +trns +cstv

'John makes Mary run away.'
The rule of lexical derivation adds an Agent to the case frame of the verb nige-, and a morpheme -sase- to the phonological representation of the stem. A simplified version of the rule is presented below for purposes of illustration.

\[
\begin{align*}
\text{nige-} & \quad \text{nige-sase-} \\
\{+V \text{-trns} \} & \quad \{+V \text{ +trns} \} \\
\{1[+PAT]\} & \quad \{+cstv \text{ +trns} \} \\
& \quad \{1[+PAT]\} \\
?\{[+AGT]\} & \quad \{-sase-\}
\end{align*}
\]

Taylor (1972), which is the first work on Japanese carried out in lexicase, establishes such a rule for causative, passive, and potential formations, among others. As a matter of fact, this lexicalist approach has been gaining more and more support in recent developments of generative grammars in general. For instance, in Japanese grammar alone, the lexicalist approach has been advocated in recent dissertations such as Miyagawa (1980) and Ishikawa (1985). Let me cite the main arguments put forward by Miyagawa (1980) and Ishikawa (1985) for adopting a lexical analysis for the complex predicates.

The basic line of Miyagawa's argument follows Chomsky (1970), which presents English derived nominals with
idiosyncratic meanings such as 'revolution', 'marriage', and 'residence', etc., as evidence for a lexical rather than a transformational account of these words. Miyagawa's two Japanese examples follow:

1. **Hiki-aw-ase-** consists of three morphemes which can be translated as 'pull-meet-cause', as seen in the following sentence:

(24) (Miyagawa's 23)

*Taro caused Jiro and Hanako to meet.*

If the complex-structure hypothesis is to be adopted, the underlying structure looks like (25).

(25) (Miyagawa's 24)

```
  S_0
   /\  \\
  /   \ \\
 NP   S_1
   /\   /\  \\
  /   /   \\
 NP  NP  V
```

However, this structure results in a string with an unacceptable interpretation to (24). **Hiki-au** in the complement sentence means 'to pull (on each other)', but (24) cannot
be interpreted as 'Taro caused Jiro and Hanako to pull on each other'. To obtain the correct interpretation, we must regard the meaning associated with hiki-aw-ase as idiosyncratic. Based on the assumption that transformations are not supposed to change meanings, Miyagawa argues that hiki-aw-ase cannot be generated by a transformational rule. It must therefore be viewed as a word existing in the lexicon. If it is a single word, it forms a simplex structure as follows:

(26) (Miyagawa's 25)

\[
S \\
/ \ />
NP \quad NP \quad NP \quad V \\
\text{Taroo} \quad \text{Ziroo-to} \quad \text{Hanako} \quad \text{hiki-aw-ase} \\
\text{pull-meet-CAUS}
\]

2. The morpheme nio-u has the meaning 'to smell', and the verb niow-ase, in one of its uses, has the compositional meaning, 'cause to smell'. However, as shown below, this verb is also associated with an idiosyncratic meaning, 'to hint'.

(27) (Miyagawa's 26)

\[
\text{Taro-} \text{nom} \text{ resignation-acc -past} \\
\text{Taroo ga zisyoku-o niow-ase-ta.} \\
\text{'Taro hinted resignation.'}
\]
This meaning of 'hint' cannot be derived from the composition of 'smell' and 'cause', hence niow-ase- in (27) must be regarded as comprising a separate word formed in lexicon.

Ishikawa (1985) presents a different line of argument, using nominalization and compounding phenomena. He points out that a complex predicate participates in such operations as nominalization (as in (28)) and compounding (as in (29)).

(28) (Ishikawa's 46)

\[
\begin{align*}
\text{sir-ase `notice' } & \text{ < know-cause} \\
\text{yar-ase `faked scene' } & \text{ < perform-cause} \\
\text{kumiaw-ase `combination' } & \text{ < interwine-cause}
\end{align*}
\]

(29) (Ishikawa's 50)

\[
\begin{align*}
\text{musi-sas-are `insect's bite' } & \text{ < insect-bite-pass} \\
\text{oya-nak-ase `deplorable to parents' } & \text{ < parent-cry-cause}
\end{align*}
\]

Note, however, that nominalization and compounding cannot be done by transformation because they are not productive; there are lexical gaps and unpredicatable semantic changes that are characteristic rather of lexical derivation processes. Thus, nominalization and compounding must be viewed as lexical processes. If complex predicate formation is exclusively performed in syntax, as has been
assumed in earlier transformational grammar (Kuroda 1965, Kuno 1967, etc.), we have to allow lexicon to make reference to syntactic rules to account for the above-mentioned cases of complex predicates which have undergone the lexical processes of nominalization and compounding. Ishikawa's point is that the lexicalist approach does not face such a problem and is therefore more favorable.

2.2.2 V-te V construction

All three earlier works reviewed in 2.1.1 list the V-te V construction as a type of complementation. None of them, however, puts forward any arguments for this position. Therefore, in this section I will examine the construction and show that most of the examples can be considered as forming complement construction (although there are a few examples which behave differently).

2.2.2.1 V-te i-ru

When a te-form of a non-stative verb is combined with the verb i-ru 'exist', the latter functions as an aspectual marker to express either continuous state of the action or of the experience, as follows:
I will propose that yon-de and i-ru are two separate words for the following reasons:

1. Word insertability. If another word can be inserted into an item in question, we can assume that the item is not one word, provided that the inserted word is not also part of a new compound. It turns out that modal postpositions such as wa (topic/contrastive marker) and mo 'also' can be inserted between V-te and i-ru, in contrast to the fact that they cannot be inserted between a verb root and a passive/causative suffix, as follows:

(31) John ga sono hon o yon-de wa i-ru.
    Nom that book Acc read-GER TOP exist-PRS

'John has read that book (implying something in contrast, e.g., but he doesn't remember the contents.)'

(32) *John ga ame ni fur-wa-are-ta.
    Nom rain Ltv fall-TOP-PSV-PST

(33) *John ga Mary ni Bill o but-wa-ase-ta.
    Nom Ltv Acc hit-TOP-CAUS-PST

2. Chaining phenomena. If a part of the item in question can be separated and omitted in chaining constructions, we
can assume that the item is not one word. For instance, *is* in the following English sentence can be identified as one word because it can be omitted in coordination:

(34) John is singing and (is) dancing.

The same applies to a Japanese counterpart, suggesting that *i-ru* is a separate word from *V-te*. Note that the slot for the omitted item is shown by ellipsis in the following examples.

(35) John ga utat-te ..... odot-te i-ru.

Nom sing-GER dance-GER exist-PRS

'John is singing and dancing.'

The validity of this criterion can be proved again when contrasting (35) to (36), in which we can observe that the *-are-* of a complex predicate, which has been confirmed to be a derivational suffix rather than a word, cannot be separated and omitted in a chaining construction.

(36) *John ga kaze ni fuk- ... tobas-are-ta.

Nom wind Ltv blow- fly-PSV-PST

(An attempt to mean 'John was blown and flown by wind'.)

3. The scope of honorific formation. Japanese has a process of honorific formation, which is an *o*-prefixed
nominalization of the verb stem, with the derived noun occurring as the complement of *nar-u* as follows:

(37) Sensei ga o-uta-i ni nar-u.
    teacher Nom HON-sing-NMN Ltv become-PRS
    'The teacher sings.'

The fact that *v-te* and *i-ru* do not get nominalized together, as found in (38), suggests that they should be analyzed as two separate words.

(38) *Sensei ga o-utat-te-i ni na-ru.
    teacher Nom HON-sing-GER-exist Ltv become-PRS
    (An attempt to mean 'The teacher is singing.')

4. The absence of lexical operation. Unlike complex predicates, there are no lexical operations such as nominalization or compounding involved in this construction. This suggests that *v-te i-ru* should not be regarded as forming one word which could be an input for such lexical operations.

5. The absence of idiosyncratic meaning. Unlike complex predicates, there are no idiosyncratic meanings associated with the construction. This again suggests that *v-te i-ru* should not be regarded as forming one word existing in the lexicon.
6. Pitch pattern. Shibatani and Kageyama (1988) note that lexical compounds and the complex verbal forms involving verb roots and aspectual, causative, or passive formatives are pronounced with one accentual peak, and thus being characteristic of a word, as follows:

(39) a. ケンキ + 職員 --> ケンキ-クサイヤ (S & K's 12a) electricity company 'electric company'

b. よむ + 開める --> よみ-開める (S & K's 13a) read begin 'begin reading'

c. よま-させる 'cause to read' (S & K's 13b) read-CAUS

d. よま-させる 'to be read' (S & K's 13c) read-PSV

In V-te i-ru, however, there are two accentual peaks as illustrated in (40), suggesting that V-te and i-ru do not form words.

(40) a. よむ + i-ru --> よむ-de i-ru (S & K's 13c) read-PRS exist-PRS reading

b. ハナ-む + i-ru --> ハナシ-て i-ru speak-PRS exist-PRS speaking

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All the syntactic, morphological, semantic, and phonological evidence listed above are evidence that  \textit{V-te} and \textit{i-ru} are two separate words, and hence form a complement construction in which an auxiliary verb, \textit{i-ru} is a higher predicate\textsuperscript{11} subcategorized by a complement sentence which ends in \textit{V-te} as follows:

(41)

\[
\begin{array}{c}
\text{John ga}\text{12} \\
\text{hon o yon-de} \\
\text{book read-GER}
\end{array}
\]

Most of the \textit{V-te V} constructions such as those as found in (42) can be considered as forming complement constructions for the same reasons as those listed above for the \textit{V-te i-ru} construction\textsuperscript{13}.

(42)

\begin{tabular}{|l|l|}
\hline
\textbf{Pattern} & \textbf{Examples} \\
\hline
\textit{V-te age-ru} & \textit{ki-te age-ru} \textit{give favor of coming}' \\
\textit{give-PRS} & \textit{come-GER} \\
\hline
\textit{V-te ku-ru} & \textit{tabe-te ku-ru} \textit{eat and come}' \\
\textit{come-PRS} & \textit{eat-GER} \\
\hline
\textit{V-te mi-ru}\textsuperscript{15} & \textit{tabe-te mi-ru} \textit{eat and see (how it tastes)}' \\
\textit{see-PRS} & \textit{eat-GER} \\
\hline
\end{tabular}
In addition to the six pieces of evidence cited above, I have also examined the possibility of using soo su-substitution as a test to determine whether V-te V and Vi V constructions are forming complement constructions. The pro-form, soo su- 'do so' is supposed to substitute for a predicate phrase containing an action verb (Nakau 1973:45). The hypothesis then is that if the VI of the V-te V construction/Vi V construction and its argument NPs can be substituted with soo su-, they can be considered to form a complement, which consequently proves that the V-te V construction/Vi V construction as a whole forms a complement construction. The results of the test were, however, mixed. For instance, soo su-substitution is possible in two ways for the Vi V construction, thus providing no definite conclusion to the issue:

(43) John ga utai hajime-ta.
   Nom sing begin-PST
   'John started singing.'

   a) Mary mo soo shi-ta.
      also so do-PST
      'Mary did the same.'

   b) Mary mo soo shi hajime-ta.
      also so do start-PST
      'Mary started the same.'
(a) is an example of *soo su* substituting for a V1 (*utai*) and a V2 (*hajime-*) together, hence suggesting that they form one verb. (b) in contrast is an example of *soo su-* substituting only for a V1 (*utai*), hence suggesting that *utai* is a separate word from *hajime-*. We are thus faced with conflicting evidence. However, this situation could be due to the nature of pro-form substitution in general—that it works by meaning rather than by constituency. For instance, *that* in the following English example is not substituting for a syntactic constituent but rather everything except the past tense and negation in the preceding clause (Starosta 1985b).

(44) Tarzan was not then king of the great apes. That would come in later years.

For this reason, I have decided to avoid the use of *soo su-* substitution as a test to determine word boundaries in this study.

2.2.2.2 *V-te ar-u*

When a *te*-form of a non-stative transitive verb is combined with a verb, *ar-u* '(inanimate objects) exist', the latter functions as an aspectual marker to express a
continuous state as a result of someone causing the action indicated by V-te as follows:

(45) Terebi ga tsuke-te ar-u
    TV Nom switch=on-GER exist-PRS
    'The TV is on (as a result of someone switching it on).'

(46) Yu ga wakashi-te ar-u
    water Nom boil-GER exist-PRS
    'The water is boiled (as a result of someone boiling it).'

Note that in this construction, V1 must be a transitive verb as follows:

(47) a. Terebi ga tsuke-te ar-u
    TV Nom switch=on-GER exist-PRS
    <transitive verb>
    'The TV is switched on.'

b. *Terebi ga tsui-te ar-u.
   be=on-GER
   <intransitive verb>

(48) a. E ga kake-te ar-u
    painting Nom hung-GER exist-PRS
    <transitive verb>
    'A painting is hanging.'
b. *E ga kakat-te ar-u.

hung-GER

<intransitive verb>

This construction\(^{16}\) presents a problem in explaining the case marking phenomenon if we are to assume a complement construction. If we are to claim that ar-u of the V-te ar-u construction is a higher verb which requires a sentential complement, [NP ga Vl-te] as seen in (49), we cannot explain the fact that the complement sentence displays a case array which ill-matches its predicate, a transitive verb. For instance, in (49) the subcategorization frame of tsuke-te 'to switch on' should be [NP ga NP o] because it is a transitive verb. However, the complement sentence consists of only one NP, which is marked with ga. Note that this NP, terebi, which should be interpreted as the agent because of its case marking, ga, is actually the patient of the transitive verb, tsuke-te in the interpretation of the complement sentence.
We may be able to get out of this situation by positing the following structure (50) in which terebi is the subject of the higher predicate, ar-u:

(50)

Still, the problem remains as to where the agent and patient NPs of the complement predicate have gone.
Firstly, we will be forced to set up an ad-hoc interpretation rule to match the higher subject with the
lower object NP which could have been covert due to the identity with the higher subject. Secondly, we are left with nothing to match the lower subject NP with.

In contrast, if we assume that *V-te-ar-u* forms a single word and it is an intransitive verb, we can easily explain the case marking phenomenon. As an intransitive verb, it requires only an NP *ga* in the subcategorization frame, as follows:

\[(51) \quad \text{Terebi ga tsuke-te-ar-u.} \]
\[\text{TV Nom switch=on-GER-exist-PRS} \]
\[<\text{intransitive verb}> \]
\[\text{'The TV is switched on.'} \]

This solution, however, is not without problems either. *V-te ar-u* also exhibits the same behaviors as *V-te i-ru* with respect to all the criteria, suggesting that *V-te ar-u* should also be considered as forming a complement construction.

1. Word insertability. Modal postposition such as *wa* and *mo* can be inserted between *V-te* and *ar-u*, suggesting that *V-te* and *ar-u* should be considered to be two separate words.
(52) Terebi ga tsuke-te wa ar-u

  TV Nom switch=on-GER TOP exist-PRS

  'TV is on (implying something, but that something,
  e.g., a chair, is not in view).'

2. Omission in a chaining construction. A-ru can be
  separated and omitted in a chaining construction, suggest-
  ing that it is a word.

(53) Hana ga ike-te ... oi-te ar-u.

  flower Nom arrange-GER put-GER exist-PRS

  'Flowers are arranged and placed.'

3. The scope of honorific formation. The fact that V-te
  and ar-u do not get nominalized together, as found in (54),
  suggests that they should be analyzed as two separate
  words.

(54) *Tono ga o-tojikome-te-ar-i ni na-ru.

  lord Nom HON-confine-GER-exist-NMN Ltv become-PRS

  (An attempt to mean 'The lord is in the state of
  having been confined.')

Contrast this to (55), in which only V-te is nominalized,
  suggesting that V-te and ar-u are separate words.

(55) Tono ga tojikome-te o-ar-i ni na-ru.

  lord Nom confine-GER HON-exist-NMN Ltv become-PRS

  'The lord is in the state of having been confined.'
4. The absence of lexical operation. Unlike complex predicates, there are no lexical operations such as nominalization or compounding involved in this construction. This suggests that \textit{V-te ar-u} should not be regarded as forming one word which could be an input for such lexical operations.

5. The absence of idiosyncratic meaning. Unlike complex predicates, there is no idiosyncratic meaning associated with this construction. This also suggests that \textit{V-te a-ru} should not be regarded as forming one word in the lexicon.

6. Pitch pattern. There are two accentual peaks in \textit{V-te ar-u} as illustrated in (56), suggesting that \textit{V-te} and \textit{ar-u} do not form a word.

\begin{align} 
\text{(56) a. } \text{tsuke-ru } + \text{ ar-u } & \rightarrow \text{ tsuke-te ar-u} \\
\text{switch=on-PRS } \text{exist-PRS } \text{be switched on} \\
\text{b. } \text{kake-ru } + \text{ ar-u } & \rightarrow \text{ kake-te ar-u} \\
\text{hung-PRS } \text{exist-PRS } \text{be hung} 
\end{align}

All the evidence listed above suggests that \textit{V-te} and \textit{ar-u} are two separate words, and that they hence form a complement construction in which an auxiliary verb, \textit{ar-u} is a higher predicate subcategorized by a complement sentence.
How can we then reconcile the conflicting phenomena: the structure of a complement construction cannot explain the case marking phenomenon, as seen earlier, and yet we are faced with syntactic, morphological, semantic, and phonological evidence for a complement construction analysis? One possible explanation is to consider V-te in this construction to be a lexically derived middle participle, which can appear when the matrix verb is ar-y. In this analysis, the following structure could be posited for the V-te construction:

(57)

Although this analysis is unprecedented and may sound strange in Japanese linguistics, it is maintained in this dissertation until any counter-evidence is found, for the following reasons:
1. With this analysis, the V-te V constructions can be consistently regarded as forming complement constructions.

2. Note that this analysis presents a similarity to the English passive in requiring a participle under a special auxiliary verb. The analysis thus has a better chance of attaining explanatory adequacy in grammatical theory.

2.2.2.3 V-te as an infinitive

In the course of examining the V-te V construction, I have noticed that the complement clause with V-te can never have an overt subject, as follows:

(58) John ga [\{△  \} utat-te] i-ru.
    \{*jibun ga\}
    Nom self Nom sing-GER exist-PRS

'John is singing.'

This exhibits an interesting contrast to other typical complement constructions, which can have an overt subject in the form of the reflexive pronoun jibun, with an emphatic meaning as follows:
   Nom self Nom sing-PRS say-PST

   'John said that he would sing.'
   he himself

This phenomenon leads us to a situation in which we may need to revise the claim that Japanese lacks an infinitival clause (Teramura 1984:59, Starosta 1988a:217 Note 3). Example (58) provides a case of an infinitival clause, based on the definition that it is a subject-less clause.19

2.2.3 Vi V construction

The Vi V construction consists of a conjunctive form of V1 and another verb, V2, as follows:

(60) tabe-ru + kake-ru --> tabe kake-ru
    eat-PRS hung-PRS 'start-PRS eating'

    tats-u + yor-u --> tachi yor-u
    stand-PRS drop-PRS 'drop by-PRS'

I will propose that the Vi V construction forms one word for the following reasons:

1. Word insertability. A modal postposition cannot be inserted between Vi and V, thus suggesting that they form one word.
(61) *John ga tabe wa kake-ta.
   Nom eat TOP start-PST

*John ga tachi wa yot-ta.
   Nom stand TOP drop-PST

2. Omission in a chaining construction. V2 cannot be separated or omitted in a chaining construction, thus suggesting that it is not a separate word.

(62) *John ga nomi ..... tabe kake-ta.
   Nom drink eat start-PST
   (An attempt to mean 'John started drinking and eating'.)

3. Scope of Honorific formation. In most of the cases, V2 of the Vi V construction gets nominalized together with Vi in honorific formation as seen in (63), suggesting that they together should be regarded as one word.

(63) Sensei ga o-tachi-yor-i ni nat-ta.
    teacher Nom HON-stand-drop-NMN Ltv become-PST
    'The teacher dropped by.'

Contrast this to (64), which shows that Vi cannot be separated and nominalized without V2.

(64) *Sensei ga o-tachi-i ni nari-yot-ta.
    teacher Nom HON-stand-NMN Ltv become-drop-PST
4. The abundance of lexical operations. 

Vi V construction is very productive in nominalization, as seen in (65), suggesting that it should be regarded as forming a single word in the lexicon, which can then be input for nominalization.

(65)

<table>
<thead>
<tr>
<th>Verbs</th>
<th>Nouns</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. tabe-kake-ru --&gt; tabe-kake</td>
<td>start=eating-PRS half-way of eating/something half-eaten</td>
</tr>
<tr>
<td>b. yomi-owar-u --&gt; yomi-owari</td>
<td>finish=reading-PRS the end of reading</td>
</tr>
</tbody>
</table>

5. The existence of idiosyncratic meaning. Some of the Vi V formations present idiosyncratic meanings as seen in (66), suggesting that they should be formed in the lexicon.

(66) a. tabe-ru + kake-ru --> tabe-kake-ru

    eat-PRS hung-PRS start=eating-PRS

    b. tsuk-u + tome-ru --> tsuki-tome-ru

    push-PRS stop-PRS discover-PRS

6. Pitch pattern. Vi V exhibits the pitch pattern characteristic of a word, as there is only one accent peak, as
seen earlier in (39b) and also in other examples, as follows:

(67) a. \text{tabe-ru} + kake-ru --> tabe-kake-ru  
\text{eat-PRS} \quad \text{hung-PRS} \quad \text{start=eating-PRS}

\begin{align*}
\text{b. yom-u} & \quad + \quad \text{owar-u} \quad --> \quad \text{yomi-owar-u} \\
\text{read-PRS} & \quad \text{finish-PRS} \quad \text{finish=reading-PRS}
\end{align*}

7. The existence of other derivational processes. The Vi form can also enter into desiderative formation as follows:

(68) a. \text{tabe-ru} + -ta-i --> tabe-ta-i  
\text{eat-PRS} \quad \text{DES-PRS} \quad \text{want to eat}

\begin{align*}
\text{b. yom-u} & \quad + \quad -ta-i \quad --> \quad \text{yomi-ta-i} \\
\text{read-PRS} & \quad \text{DES-PRS} \quad \text{want to read}
\end{align*}

This formation is a derivational process, as the following evidence suggests:

1. It is a category-changing operation, from a verb to an adjective, which is characteristic of derivation.

2. Vi-ta-i as a whole behaves as one word with respect to the following criteria:

i) A modal postposition cannot be inserted between Vi and -ta-i.
ii) **-ta-** cannot be separated and omitted in a chaining construction.

(70) *John ga tabe- ... nomi-ta-i.

Nom eat- drink-DES-PRS

(An attempt to mean 'John wants to eat and drink'.)

Since **tabe-ta-i** has been established to be one derived word, it gives supporting evidence that the Vi form is a derivational base rather than some kind of independent complement form.

2.2.4 [S] **da** construction

**Da** is a so-called copula in Japanese and has been classified as an auxiliary verb in both traditional and generative grammars. Its complement predicate must be either a predicative noun or a predicative adjectival noun as seen in (71) and (72).

(71) [John ga isha] da.

doctor

<Predicative noun>

'John is a doctor.'
(72) [John ga kenkoo] da.
healthy
<Adjectival noun>
'John is healthy.'

Da behaves differently from other auxiliary verbs in the following aspects:

[i] It cannot take a verb, either non-adjectival verb as in (73) or adjectival verb as in (74), in its complement sentence.

(73) [John ga *nige-ta] da.
Nom run=away-PST COP

(74) [John ga *omoshiro-i] da.
Nom interesting-PRS COP

[ii] Its complement predicate cannot be inflected. Tense is indicated by inflecting da itself, as follows:

(75) [John ga isha] dat-ta.
Nom doctor COP-PST
'John was a doctor.'

(76) [John ga kenkoo] dat-ta.
Nom healthy COP-PST
'John was healthy.'
Nakau (1973) and Starosta and Nomura (1984) have analyzed *da* to be a complement-taking predicate. Others have not touched this issue. I agree with Nakau's and Starosta and Nomura's analyses. They have not, however, specifically stated their reasoning, but let me clarify my reasoning:

1. *Da* is one word. It can be replaced by more formal versions such as *desu* and *de gozaimasu*, or can even be omitted in casual style, as shown in (77).

   (77) John ga *isha* o. \[
   \text{da.} \quad \text{(casual style)} \\
   \text{desu.} \quad \text{(informal style)} \\
   \text{de gozaimasu.} \quad \text{(formal style)} \\
   \text{de gozaimasu.} \quad \text{(very formal style)}
   \]

2. *Da* is an auxiliary verb. It is inflected for tense, as seen in (75) and (76), suggesting that it behaves like a verb. It is, however, an auxiliary verb, as it must appear with a main predicate, i.e., a predicative noun or an adjective, as follows:

   (78) John ga *(isha) da.* \[\text{Nom doctor COP} \]
   'John is a doctor.'

   (79) John ga *(kenkoo) da.* \[\text{Nom healthy COP} \]
   'John is healthy.'
These characteristics exhibited by \textit{da} confirm its status as an auxiliary verb which requires a sentential complement.

2.2.5 VN$^{23}$ \texttt{suru} construction

The VN \texttt{suru} construction consists of a verbal noun (VN), which is usually a word of Chinese origin, and a verb \texttt{suru} `do' as follows:

(80) kenkyuu \texttt{suru} `to do research'  
research do  

kekkon \texttt{suru} `to get married'  
marrige do  

benkyoo \texttt{suru} `to study'  
study do  

The issue here is whether this VN \texttt{suru} construction is actually one word, or two separate words forming a complement construction in which \texttt{suru} is a higher verb that takes a verbal noun complement. Let me first apply the criteria which have been used to identify a word so far:

1. Word insertability. Modal postpositions cannot be inserted between VN and \texttt{suru}, suggesting that they form one word.
(81) *John ga nihongo o kenkyuu wa shi-ta.
   Nom Japanese Acc research TOP do-PST

Note, however, that some native speakers may accept the insertion of wa between VN and suru if they are given clear context. The following examples are provided by Ogihara (Starosta, personal communication):

(82) ? John wa eigo o benkyoo wa suru ga sappari
   TOP English Acc study TOP do but hardly
   seika ga agara-nai.
   result Nom raise-NEG

   'John studies English, but there is hardly a (good) result.'

The issue thus remains inconclusive when based on the word insertability criterion.

2. Omission in a chaining construction. Suru cannot be separated and omitted in a chaining construction, suggesting that it is not a separate word, as follows:

(83) *John ga nihon de konyaku ... kekkon shi-ta.
   Nom Japan Lcv engagement marriage do-PST

   (An attempt to mean 'John got engaged and married in Japan.')
Note, however, that if a VN, rather than suru, is a repeated item, it can be separated and omitted in a chaining construction, suggesting the contrary conclusion that VN and suru are two separate words. The following examples are provided by Hosaka (personal communication):

(84) Taro wa benkyoo shi-ta-i ga, urusaku-te
    TOP study do-DES-PRS but noisy-GER
    ... deki-nai. can-NEG
    'Taro wants to study but cannot, because it is noisy.'

(85) Taro wa jibun de wa benkyou si-nai ga, otooto
    TOP self Ins TOP study do-NEG but brother
    ni wa itsumo ... s-ase-ru.
    Lcv TOP always do-CAUS-PRS
    'Taro himself does not study, but he always makes his brother study.'

How can we explain this contradictory evidence? In an effort to make the issue clearer, I have examined whether the same phenomenon could be found using the VN, kekkon—the same word used in an earlier example (83), which indicated that kekkon and suru cannot be separated. Now, look at the following sentence, which shows that kekkon can be separated from suru and omitted in a chaining construction:
Thus we are faced with conflicting evidence--(83) suggests that VN and suru are forming one word, whereas (86) suggests that they are two separate words.

Since we get different results depending on which item (either Word 1 or Word 2) is repeated, it has occurred to me that this could be a factor influencing the omissibility. So I have re-examined the V-te i-ru construction and Vi V constructions, which were examined earlier, by repeating Word 1 this time, as follows:

V-te i-ru construction:

(87) *John wa utat-te i-ru ga Mary wa ... i-nai.

sing-GER exist-PRS but exist-NEG

(An attempt to mean 'John is singing but Mary is not.\')

cf. John wa utat-te i-ru ga Mary wa utat-te i-nai.

sing-GER exist-PRS but sing-GER exist-NEG

'John is singing but Mary is not.'

If Word 1 (utat-te) is a repeated item, it cannot be omitted, in contrast to Word 2 (i-ru), which can be separated
and omitted, as we have seen in (35). Again we have ended up with conflicting evidence.

**Vi V construction:**

(88) *John wa nomi kake-ta ga Mary wa ... kake-nakat-ta.

    drink start-PST but  start-NEG-PST

(An attempt to mean 'John started drinking but Mary didn't.')


    drink start-PST but  drink start-NEG-PST

'John started to drink but Mary did not.'

In the Vi V construction, neither Word 1 nor Word 2 can be omitted in a chaining construction, confirming that they actually form one word.

Let me now summarize the omission phenomena:

<table>
<thead>
<tr>
<th>Word 1</th>
<th>Word 2</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>VN suru</td>
<td>can be omitted</td>
<td>84, 83</td>
</tr>
<tr>
<td>V-te iru</td>
<td>cannot be omitted</td>
<td>87, 35</td>
</tr>
<tr>
<td>Vi V</td>
<td>cannot be omitted</td>
<td>88, 62</td>
</tr>
</tbody>
</table>
We can now observe that VN suru and V-te iru constructions behave in opposite ways. Thus, if we conclude that VN suru is two separate words based on the omissibility of Word 1, we would have to reach the opposite conclusion for V-te iru, that it is not made up of two words, countering our earlier conclusion. On the other hand, if we conclude that VN suru forms one word based on the omissibility of Word 2, we can retain the complementation analysis for V-te iru, but we will have to somehow explain the data of (84) and (85). I will take the second solution at this moment, because there is other evidence to conclude that V-te iru forms a complement construction (see 2.2.2.1). At any rate, omission phenomena alone cannot be strong evidence to support or disprove any analysis, because it can be influenced by meaning rather than strictly by constituency.

Look at the following English example (Starosta's lecture handout), in which even a part of a word is omitted:

(89) Harry would probably quit his job whatevr the in- or out-come.

Therefore, the following example of gapping by Kageyama (1976-77), which he has presented to argue that VN suru (benkyoo-suru) form a word, cannot be strong evidence either:
(90) (Kageyama's 42)

Taroo wa huransugo o, Hiromi wa doitugo o benkyoo-sita.

French German study-sita.
did

'Taro studies French, and Hiromi German.'

3. Scope of Honorific formation. This cannot be a good criterion to test whether VN suru forms one word, because there is no postposition ni involved here, as seen in (89), which could otherwise indicate a word boundary, as is the case with the honorific formation of other constructions.

(91) Sensei ga rekishi o go-kenkyuu nasat-ta.

teacher Nom history Acc HON-research do(HON)-PST

'The teacher did research on history.'

4. Absence of lexical operations. There is no lexical operation which could be based on VN suru. VN suru thus lacks positive evidence to suggest that it forms one word.

5. Absence of idiosyncratic meaning. There is no idiosyncratic meaning associated with VN suru. Thus, VN
suru again lacks positive evidence to suggest that it forms one word.

6. Pitch pattern. VN suru exhibits the pitch pattern characteristic of a single word, as there is only one accent peak, as follows:

(92) kenkyuu + suru --> kenkyuu-suru  
research    do    do research

kaiko + suru --> kaiko-suru
lay-off    do    lay-off

Thus, as far as the criteria which have been used to examine other constructions are concerned, we have little positive evidence to support VN suru as forming one word. Let me now introduce other independent evidence to support or reject a one-word analysis for VN suru.

Evidence to support a one-word analysis:

1. Recall one of the arguments in support of the analysis that the copula da should be viewed as one word--it can be omitted in informal speech. (See (77) for the example.) Note that the same phenomenon cannot be found in VN suru constructions, as seen in (93), suggesting that suru cannot be considered to be a separate word.
(93) John ga nihongo o kenkyuu *(suru).
Nom Japanesees Acc research

2. Note that the following examples are unacceptable or sound awkward when the VN itself is compounded with another noun:

(94) *? John wa shuushoku-katsudoo su-ru.
employment activity do-PRS
(An attempt to mean 'John will do job-hunting.')

cf. John wa shuushoku-katsudoo o su-ru.
employment-activity Acc do-PRS
'John will do job-hunting.'

(95) *? John wa nihon-isshuu-ryokoo suru.
Japan-round-trip do-PRS
(An attempt to mean 'John will go on a round-Japan-trip.')

cf. John wa nihon-isshuu-ryokoo o su-ru.
Japan-round-trip Acc do-PRS
'John will go on a round-Japan-trip.'

According to Kageyama and Shibatani (1988), it is a universal restriction that a verb can incorporate only one noun. If this is true, we can provide an explanation for the phenomenon observed in (94) and (95), that it is an instance of the universal restriction. Alternatively, even
if it is not universal,\textsuperscript{25} we can still claim that this kind of restriction to \textit{VN suru} is typical of lexical word-formation rules,\textsuperscript{26} and is thus evidence for a compounding analysis for \textit{VN suru}.

Evidence against a one-word analysis:

Kageyama (1976-77) presents the following phenomenon of verb reduplication:

(96) (Kageyama's 25d)

\begin{verbatim}
Makoto wa dokusyo-sii-sii\textsuperscript{28} aruita.
reading-do-do walked
'Makoto walked while he kept reading.'
\end{verbatim}

Contrast this with the following sentence, in which the whole \textit{VN suru} is reduplicated:

(97) (Kageyama's 25c)

\begin{verbatim}
*? Makoto wa dokusyo-si-dokusyo-si aruita.
reading-do-reading-do walked
\end{verbatim}

Based on these data, Kageyama claims that the lengthened \textit{sii-sii} in (96) must have been an independent verb at some stage of the derivation. Note, however, that the phenomenon found in (96) and Kageyama's statement about it do not contradict the compound analysis, because \textit{suru} is a verb before the compounding with an VN takes place in the
lexicon. The problem with the compound analysis, however, is that it cannot provide convincing explanation for the unacceptability of (97).

We have thus seen quite mixed evidence for the VN suru construction. The evidence for the compound (one-word) analysis, however, seems dominant at this moment, and I will tentatively adopt this analysis, although the issue remains open to further discussion and research in the future.

2.2.6 Summary

The examination has thus reached the conclusion that the V-te V construction and [S] da construction form complement constructions, whereas the complex predicate construction, the Vi V construction, and the VN suru construction do not. Let me now confirm all the complement constructions to be covered in this dissertation by repeating the examples below. They are classified into two types depending on whether the complement clause modifies a noun or a predicate.

Type A: A structure in which a complement clause modifies a noun (no, koto, tokoro, or yoo\textsuperscript{28}), which are all nouns and function as nominalizers):
(6) John ga [Mary ga nige-ru] no o mi-ta.
   Nom Nom run=away-PRS Acc see-PST
   'John saw Mary running away.'

(7) John ga [Mary ga nige-ta] koto o bakuroshi-ta.
    Nom Nom run=away-PST Acc disclose-PST
    'John disclosed that Mary ran away.'

    Nom Nom run=away-PRS Acc catch-PST
    'John caught Mary when she was about to run away.'

(10) John ga Mary ni [nige-ru] voo ni susume-ta.
    Nom Ltv run=away-PRS advise-PST
    'John advised Mary to run away.'

Type B: A structure in which a complement clause modifies a predicate:

(1) John ga [Mary ga nige-ta] to it-ta.
    Nom Nom run=away-PST say-PST
    'John said that Mary ran away.'

(2) John ga [hon o yon-de] i-ru.
    Nom book Acc read-GER exist-PRS
    'John is reading a book.'
(15) Mary ga [nihon ni it-te] mi-ru.
    Nom Japan Ltv go-GER see-PRS
    'Mary will go to Japan and see what it is like.'

(49) Terebi ga [tsuke-te] ar-u
    TV Nom switch=on-GER exist-PRS
    'The T.V. is on (as a result of someone switching it on).'

(12') [Mary ga amerika-jin] da.
    Nom American COP
    'Mary is an American.'

(13) [Mary ga amerika-jin] rasi-i.
    Nom American seem-PRS
    'Mary seems to be an American.'

(14) [Mary ga amerika-jin da] soo da.30
    Nom American COP hear
    'I hear that Mary is an American.'

2.3 The lexical status of 'complementizer' and 'nominalizer'

This section examines the lexical status of so-called 'complementizers' and 'nominalizers'. For instance, yoo ni is classified under the major category, 'Complementizer' by Nakau (1973) and Josephs (1972). I will try to prove here
that it is not necessary to posit a new category, 'complementizer' in a lexicase analysis of Japanese and that new generalizations are captured by fitting these items into preexisting categories. The so-called 'nominalizer', no has also been examined by syntacticians in many different ways. I will first review previous analyses and then advance my claim that no is a noun. The 'complementizers' and 'nominalizers' occurring in complement constructions to be examined in this chapter are yoo ni, to, no, koto, and tokoro.30

2.3.1 Examination of yoo ni

Yoo ni occurs in the following complement construction.


Nom Lcv run=away-PRS advise-PST

'John advised Mary to run away.'

Here, yoo ni is functioning as a complementizer, i.e., it is required between a complement sentence and a complement-taking predicate (susume-ta in the above example) and marks the complement status of the embedded sentence. (98) would thus be ungrammatical without it, as shown in (98'):
(98') *John ga Mary ni [ nige-ru ] ... susume-ta.

Nom Lcv run=away-PRS advise-PST

However, the fact that *yoo ni* has a complementizing function does itself not prove anything about its lexical status. As for the lexical status of *yoo ni*, there are two analyses. One of them is proposed by Nakau (1973), who claims that *yoo-ni* is a complementizer that is under the immediate domination of a Predicate Phrase (Nakau 1973:125). Nakau thus establishes a major class called "Complementizer" in his grammar. Another possible analysis, which is specifically rejected by Nakau, is the position that views *yoo ni* as a Postpositional Phrase (PP) that consists of a Noun, *yoo* plus a Postposition, *ni*. The latter approach will be called the 'PP Analysis'. Nakau's arguments for the Complementizer Analysis will be introduced first. I will then point out problems involved in his argumentation and present my reasons for supporting the PP Analysis.

First of all, note that Nakau's arguments are all based on the following assumptions:

<1> If an item can undergo transformational processes that involve the movement, deletion, or substitution of an NP, such as Topicalization, Cleft Formation, NP Deletion, Sore
pronominalization, and Subject-Object Inversion, the item
is an NP. (p. 101)

<2> If an item can undergo the transformational rules of
Soo Sentential Pro-formation and Complement Sentence Pre-
posing, the item is an instance of an S (p. 111, p. 113).

Nakau examined yoo-ni complements and gained the following
results:

[I] Yoo-ni sentential complements do not undergo the
following processes:

Topicalization:

(99a) (Nakau's 29bi)

Isya-ga Ziroo-ni [hayaku neru] yoo-ni susume-ta.
doctor early sleep advise
'The doctor advised Jiro to sleep early.'

==> (99b) (Nakau's 29bii)

early sleep TOP doctor advise
'(Literally) As for that he should go to bed early,
the doctor advised Jiro.'
Cleft Formation:

(100a) (Nakau's 29bi)

Isya-ga Ziroo-ni [hayaku neru] yoo-ni susume-ta.

doctor early sleep advise

'The doctor advised Jiro to sleep early.'

==> (100b) (Nakau's 31b)

?*Isya-ga Ziroo-ni susume-ta no-wa [hayaku neru]

docotor advise-PST NMN early sleep

yoo-ni da.

COP

'What the doctor advised Jiro was to go to bed early.'

Sore Pronominalization and NP Deletion:

(101) (Nakau's 34bii and iii)

Ryoosin-wa Taroo-ni [gakkoo-o yasuma-nai] yoo-ni

parents school absent NEG

settokusi-ta; sensee-mo (Taroo-ni){(ii) *sore-o³⁴}

(ii) *(iii) ?*0

persuade-PST

it

settokusi-ta.

persuade PST

'His parents persuaded Taro not to be absent from school, and his teacher also persuaded him of it/0.'
Subject-Object Inversion:

(102a) (Nakau's 29bi)

Isya-ga Ziroo-ni [hayaku neru] yoo-ni susume-ta.

doctor early sleep advise
'The doctor advised Jiro to sleep early.'

==>

(102b) (Nakau's 36b)

*[Hayaku ne-ru] yoo-ni -ga/wa, isya-ni (yotte)

early sleep-PRS doctor by

Ziroo ni susume-rare-ta.

advise-PSV-PST

[II] Yoo-ni sentential complements undergo the rules of Complement Sentence Preposing and Soo Sentential Pro-
formation as follows:

Complement Sentence Preposing:

(103a) (Nakau's 29bi)

Isya-ga Ziroo-ni [hayaku neru] yoo-ni susume-ta.

doctor early sleep advise
'The doctor advised Jiro to sleep early.'

109
To go to bed early, the doctor advised Jiro.

His parents persuaded Taro not to be absent from school, and his teacher also persuaded him so.

If we adopt the PP analysis, according to Nakau, we have to have ad hoc conditions that [i] all the NP-related transformations such as Topicalization, Cleft Formation and **Sore Pronominalization** must not apply to an NP consisting of a complement sentence and its head Noun **yoo** followed by the postposition **ni**, and [ii] **Complement Sentence Preposing** and **Soo Sentential Pro-formation** may apply to an NP consisting of a complement sentence and its head Noun **yoo**.
followed by the postposition *ni*. The Complementizer analysis, in contrast, does not need to include such ad hoc conditions. Therefore, Nakau concludes that *yoo-ni* must be viewed as a complementizer marking the existence of predicate complementation, viz., a construction in which an embedded sentence is a complement to the head Predicate under the immediate domination of a Predicate Phrase (p. 4) (see 1.3.1 for the tree representation).

Nakau, however, has noticed a phenomenon which can be a piece of evidence for the PP Analysis. Look at the following example (105), in which the rule of *Sono* Sentential Pro-formation, which Nakau claims is only applicable to Noun sentential complements, viz., an embedded sentence as a complement to the head Noun under the immediate domination of a Noun Phrase, actually applies to *yoo-ni* sentential complements:

(105) (Nakau's 23a)

Isya wa, Taroo ni [undoo o si-nai] yoo-ni susume-ta;
doctor exercise do-NEG advise-PST

sensee mo (Taroo ni) sono yoo-ni susume-ta.
teacher also that advise-PST

'The doctor advised Taro not to take exercise, and the teacher also advised Taro like that.'
Nakau, however, dismisses the PP Analysis as follows:

one gained advantage, namely that a straight explanation is available for sentences like (23), whose derivation involves the process of Sono Sentential Pro-formation, is counterbalanced by two kinds of disadvantages (many in token) which stem from the above-mentioned two kinds of ad hoc restrictions on exceptions to the pertinent transformations. (Nakau 1973:151)

As for the counter-example (105) (Nakau's 23a), Nakau proposes the following solution:

Sono Sentential Pro-formation is applicable only if the head Noun of the sentential complement to which the rule applies is lexically marked positively for the feature of a Noun, even if the sentential complement and its head Noun are not dominated by a Noun Phrase ... The only required extension is to add that the Predicate Complementizer yoo-ni be lexically specified positively for the feature of a Noun ... (Nakau 1972:152)

By this statement, Nakau seems to be saying that there is no necessary connection between the head of the construction and the node dominating it. This is much too powerful and empirically vacuous. One of the primary reasons for the introduction of Chomsky's X-bar notation was the avoidance of this sort of ad hoc analysis. In correct X-bar notation, a phrasal node must be a projection of its head, a requirement not satisfied by Nakau's proposal. In contrast to Nakau's approach, lexicase uses a stricter conception of Chomsky's X-bar analysis and imposes the
constraint that a construction whose lexical head is [+N] must be an NP.

Let me now examine Nakau's arguments and present my criticism under two headings: [I] Questions of fact and [II] Questions of argumentation.

[I] Questions of fact

Against Nakau's observation, Topicalization is possible with a *yoo-ni* complement, as shown in (106), which was collected from a real conversation between native speakers.

(106) [Koko ni ku-ru] yoo-ni wa watashi ga i-u.

here Lcv come-PRS TOP I Nom say-PRS

'As for (the message) to come here, I will tell (him).'</n

Nakau's argument, which is based on the ungrammaticality of the topicalized sentence in (99), thus faces this counter-example.

[II] Questions of argumentation

1. Nakau's basic assumption <1> presented earlier is not valid in two ways: (A) the NP deletion rule and the Subject-Object inversion rule do not apply to all kinds of NPs, and (B) the Cleft formation rule and *Sore* pronominalization rule are not exclusively NP related transformations. Therefore, these rules cannot be used as tests to identify...
an NP per se. Let me first present the cases applicable to
(A) below:

i) The NP deletion rule. This rule does not apply if the NP is
case-marked by postpositions such as ni, de, and kara.
The following examples will illustrate how the choice of a
postposition influences the deletability of an NP:

(107) a. (Nakau's 47b, p. 80)

Taro wa terebi o mi-ta; Ziroo mo 0 mi-ta.
T.V. see-PST also see-PST
'Taro watched television; Jiro watched it too.'

b. John wa gakkoo ni i-ru. Mary mo *0 i-ru.
TOP school Lcv exist-PRS also exist-PRS
'John is in school. (An attempt to mean 'Mary is
there too.')

c. John wa basu de ik-u. Mary mo *0 ik-u.
TOP bus by go-PRS also go-PRS
'John will go by bus. (An attempt to mean 'Mary
will go by bus too.')

d. John wa amerika kara ki-ta. Mary mo *0 ki-ta.
TOP America from come-PST also come-PST
'John came from America. (An attempt to mean 'Mary
came from America, too.')
Note that Nakau has provided the following example of NP Deletion in which NP de is supposed to have been deleted:

(108) (Nakau's 50)

Taroo-wa gakkoo-de terebi-o mi-ta; Ziroo-wa o eega-o
school in TV see-Pst movie
mi-ta.

see-Pst

'Taro watched television 0 and Jiro saw movies at
school'

However, I do not agree with the interpretation of the second sentence. According to my intuition, the sentence can simply mean 'Jiro saw movies.' without the connotation of 'at school.'

Thus, the fact that a yoo-ni complement does not work like an NP because of the inapplicability of the NP Deletion rule does not necessarily mean that it is not an NP; it can be an NP that is marked with postpositions other than o (and ga although examples involving ga are not given in Nakau). In the case of yoo-ni complement, the postposition ni.

ii) The Subject-Object Inversion rule. This rule does not apply unless the NP concerned is an 'object', which is marked with o ('direct object') or ni ('indirect object')

This is a rule which can identify an object NP rather than
an NP in general. Therefore, the fact that a *yoo-ni* complement cannot undergo this process only indicates that it is not an object complement.

I will now discuss case (B), in which rules are not exclusively NP-related transformations.

i) The Cleft formation rule. Pagotto and Starosta (1986) have pointed out that the antecedent in a cleft construction need not be an NP. It can be a PP where the preposition has a nominal sister as in (109) or a verbal sister as in (110):

(109) (Pagotto and Starosta's 75a)

It was with this blanket [that I covered him].

(110) (Pagotto and Starosta's 75b)

It was because he was ill [that John left].

The same phenomena can be found in the Japanese equivalents of these examples. The slot for the nominal predicate immediately preceding a copula can be occupied by a PP where the postposition has a nominal sister as in (111) or a verbal sister as in (112):

(111)

(112)
"It was with this blanket that I covered him.'

Now recall Nakau's reasoning to lead us to the conclusion that a yoo-ni complement is a predicate complement: the yoo-ni complement does not behave as an NP because it cannot appear in the position immediately preceding a copula in a cleft construction. It means that the yoo-ni complement is not a noun complement. The conclusion, then, is that it must be forming a predicate complement.

However, the above example (109), in which a PP with a sentential sister is occupying the position preceding a copula, proves that it is not the case that only NPs can undergo this rule. Thus Nakau would have to come up with a different explanation of why a yoo-ni complement, which also has a sentential sister just like the PP, cannot occupy the pre-copular position as found in his example (100b). I will repeat the example below:
Although I have pointed out a problem in Nakau's argumentation involving the Cleft formation rule, I myself have no explanation at the moment for why a yoo ni complement cannot occupy the pre-copula position in a cleft construction. In any event, this fact does not provide evidence for either analysis.

ii) The sore pronomin alization rule. This is another rule which turns out not to apply exclusively to NPs. For instance, look at the following example in which sore is serving as a pro-form to the whole preceding sentence.

ii) The sore pronomin alization rule. This is another rule which turns out not to apply exclusively to NPs. For instance, look at the following example in which sore is serving as a pro-form to the whole preceding sentence.
Let me again review Nakau's reasoning to lead us to the conclusion that a "yoo-ni" complement is a predicate complement: a "yoo-ni" complement does not behave as an NP because it cannot be an antecedent of sore. It means that it is not a noun complement. The conclusion, then, is that it must be forming a predicate complement.

Now, given example (113) above, in which sore can be a pro-form of a sentence, Nakau has to come up with an explanation why a "yoo-ni" complement, even being a sentence according to him, cannot be an antecedent of sore as seen in his own example (101) or its substitution formed by me in (101)' which was presented in Note 33 earlier. I will repeat both the examples below:
However, I have to concede again that I myself have no explanation at the moment why a yoo-ni complement cannot be an antecedent of sore despite the fact that yoo is a noun in my analysis.
2. Nakau's basic assumption <2> presented earlier does not reflect valid generalizations with respect to either the Soo sentential pro-formation rule or the Sentence proposing rule. Once again, this unexplained fact cannot be adduced in support of either of the analyses.

i) The Soo sentential pro-formation rule. This rule was used by Nakau to prove that a *yoo-ni* complement, which can undergo the rule, is a sentence. I will repeat his example below:

(104) (Nakau's 34bi)

Ryooisin-wa Taroo-ni [gakkoo-o yasuma-nei; yoo-ni parents school absent NEG

settokusi-ta; sensee-mo (Taroo-ni) soo persuade-PST so

settokusi-ta.

persuade PST

'His parents persuaded Taroo not to be absent from school, and his teacher also persuaded him so.'

However, look at the following example in which *sco* can be the pro-form of even a *koto* complement, which is clearly a noun complement, although by Nakau's criterion this should not be possible:
His parents advised Taro to go to a good school, and his teacher also advised him so.'

This counter-example to Nakau's argument suggests that the phenomenon of soo pro-formation needs to be re-examined. It is, however, not my intention to define the range of the applicability of this rule in this dissertation. At this moment, let me simply point out that the rule does not provide evidence that a yoo-ni complement is an instance of a sentence.

ii) The Sentence Preposing rule. Although Nakau has specifically called the rule of preposing an item to the sentence-initial position a "Sentence Preposing rule", note that the word order in Japanese is relatively free and any sister constituent of the main predicate can be preposed except for bare sentential complements. Look at the following examples which illustrate how free the word order can be in Japanese:
Thus, the fact that **yoo-ni** complement can be preposed to the sentence-initial position does not necessarily mean that it is an instance of a sentence. It can simply be a sister constituent of the main predicate. It is a noun complement in my analysis.

I have thus listed the problems involved in Nakau's Complementizer analysis for **yoo-ni**. Let me now present my reasons for supporting the PP analysis instead.
1. The PP analysis can explain the phenomena which has been observed in *yoo ni* complement without establishing a class called "Complementizer" as follows:

i) A *yoo ni* complement can be topicalized as seen in (106), which is consistent with the fact that any PP (NP + P) can be topicalized, as long as it is old information and a sister constituent to the main predicate, as shown below:

(116) A: Raigetsu Tookyoo ni iki-masu.
next month Tokyo Lcv go-FRM:PRS
'I am going to Tokyo next month.'

B: Tookyoo ni wa hajimete iki-masu ne.
Tokyo Lcv TOP for=the=first=time go-FRM:PRS TAG
'To Tokyo, you are going there for the first time, aren't you?'

ii) A *yoo ni* complement can be preposed as seen in (103), which is consistent with the fact that any PP can be preposed as long as it is a sister constituent to the main predicate, as illustrated in (115).

2. The PP analysis can explain the fact that *yoo* can be modified by a demonstrative like *sono*, as seen in (105), since *yoo* is claimed to be a noun in this analysis. Thus, it is not necessary to postulate an ad hoc device to add an
otherwise completely unmotivated feature, [+N] to *yoo-ni* as done by Nakau.

3. *Yoo* takes a postposition, in this case, *ni*. This is a regular pattern for the occurrence of an NP and could be taken as independent evidence that *yoo* is a noun.

4. The PP Analysis captures a new generalization; it fits into a pre-existing paradigm in which a PP consisting of an adjectival noun and *ni* forms an adverbial-like phrase and becomes an adjective when suffixed by *na*, as shown below:

   (117) a. kantan ni  `simply'
       kantan-na `simple'

   b. yooi ni  `easily'
       yooi-na `easy'

   c. iku yoo ni (meijiru)  `(order) to go'
       iku yoo-na (kehai)  `(atmosphere) to go'

Full sentence examples of each of these combinations are provided below to clearly illustrate the paradigm:

(118) a. John wa sore o   kantan ni setsumeishi-ta.
       TOP that Acc simply explain-PST
       `John explained that simply.'
John no kantan-na setsumei ga owat-ta.
Gen simple explanation Nom finish-PST
'John's simple explanation ended.'

b. Sono shigoto wa yooi ni deki-ru.
that job TOP easily can=be=done
'That job can be easily done.'

Sore wa yooi-na shigoto da.
that TOP easy job COP
'That is an easy job.'

TOP Lcv run=away-PRS advise-PST
'John advised Mary to run away.'

John wa [Mary ga nige-ru] yoo-na kehai o kanji-ta.
TOP Nom run=away-PRS atmosphere Acc feel-PST

'John felt the atmosphere that Mary may run away.
(John sensed that Mary might run away.)'

5. The PP Analysis does not need to establish a major lexical class called "complementizer," and hence involves a smaller number of major categories in a grammar. This is
preferable, not only in terms of simplicity of grammar, but also in terms of generality of grammar.

For all the reasons listed above, this dissertation adopts the PP Analysis for \text{yoo ni}. A lexical representation of the \text{yoo ni} complement construction can be presented, then, as follows:

(119)

\begin{center}
\begin{dependency}
1 [S \[P \[PP \[NP \text{John} \] \[P \text{ga} \] \[NP \text{Mary} \] \[P \text{ni} \][P \text{yoo} \] \[NP \text{ni} \][S' \[V \text{susume-ta advise-PST} \] \[V \text{nige-ru run=away-PRS} \]]]]
\end{dependency}
\end{center}

2.3.2 Examination of \textit{to}

\textit{To} occurs in a complement construction and marks the complement sentence as follows:

(120) John ga [Mary ga nige-ta] to omot-ta.

Nom Nom run=away-PST think-PST

'John thought that Mary ran away.'
There are again two analyses as to the lexical status of this item. Nakau (1973) claims that to is a Complementizer. His position will be referred to here as "the Complementizer Analysis". The other analysis is to view to as a postposition, which is functioning as a complementizer. The latter will be called "the Postposition Analysis." The basic difference between the two analyses is that the former establishes a lexical major class called "complementizer" while the latter does not. Let me first review Nakau's argument for the Complementizer Analysis. It actually takes exactly the same pattern of argumentation as the one adopted for yoo-ni; a to complement does not undergo the processes of Topicalization, Cleft Formation, NP Deletion, Sore pronominalization, and Subject-Object Inversion, suggesting that it is not an instance of an NP forming a Noun Complement. In contrast, it undergoes the rules of Soo sentential pro-formation and Sentential preposing, suggesting that it is an instance of an S forming a Predicate Complement. His examples follow:

Topicalization:

(121a) (Nakau's 29ai)

Boku-wa [moo haru-ga ki-ta] to omot-ta.

I TOP already spring-Nom come-PST Comp think-PST

'I thought that spring had come already.'
(121b) (Nakau's 29aii)

*Moo haru-ga ki-ta* to-wa boku-ga/wa omot-ta.
already spring-Nom come-PST Comp I-TOP/Nom think-PST
'(Literally) *As for that spring had come already, I thought (it).*'

Cleft Formation:

(122a) (Nakau's 29ai)

Boku-wa *moo haru-ga ki-ta* to omot-ta.
I TOP already spring-Nom come-PST Comp think-PST
'I thought that spring had come already.'

(122b) (Nakau's 31a)

*Boku-ga omot-ta no-wa, moo haru-ga ki-ta*
I-Nom think-PST Nom-TOP already spring-Nom come-PST
to da.
Comp Cop
'What I thought was that spring had come already.'
NP Deletion, Sore Pronominalization:

(123a) (Nakau's 33a)

Taroo-wa [anata-ga ko-na-i-daroo] to
Contr(Sub) you-Nom come-NEG-PRS-Presum Comp

it-te-i-ta.
say-Dur-PST

Hanako-mo [anata-ga ko-na-i-daroo] to it-te-i-ta.
also

'Taro had said that you would not come, and Hanako also had said that you would not come.'

===> (123b) (Nakau's 33bii)

Taroo-wa [anata-ga ko-na-i-daroo] to
Contr(Sub) you-Nom come-NEG-PRS-Presum Comp

it-te-i-ta.
say-Dur-PST

Hanako-mo *sore-o\textsuperscript{35} it-te-i-ta.

it

'Taro had said that you would not come, and Hanako also had said it.'
Subject-Object Inversion:

(124a) (Nakau's 29ai)

Boku-wa [moo haru-ga ki-ta] to omot-ta.
I TOP already spring-Nom come-PST Comp think-PST
'I thought that spring had come already.'

==> (124b) (Nakau's 36a)

*[Moo haru-ga ki-ta] to -ga/wa,
already spring-Nom come-PST Comp Nom/TOP
(boku-ni/hitobito-ni) omow-are-ta./ kanzi-rare-ta.
I-by/people-by think-PSV-PST/ feel-PSV-PST
'It was thought/felt (by me/by people) that spring had come already.'

Soo Sentential pro-formation:

(125a) (Nakau's 33a)

Taroo-wa [anata-ga ko-na-i-daroo] to
Contr(Sub) you-Nom come-NEG-PRS Presum Comp
it-te-i-ta.
say-Dur-PST

Hanako-mo [anata-ga ko-na-i-daroo] to it-te-i-ta.
also
'Taro had said that you would not come, and Hanako also had said that you would not come.'
Taro had said that you would not come, and Hanako also had said so.'

Sentence Preposing:

(126a) (Nakau's 29ai)

Boku-wa [moo haru-ga ki-ta] to omot-ta.
I TOP already spring-Nom come-PST Comp think-PST
'I thought that spring had come already.'

I will now examine Nakau's arguments and present my criticism under two headings again: [I] Questions of fact and [II] Questions of argumentation.
Questions of fact

Contrary to Nakau's observation, Topicalization is possible with to complement as seen below in (126):

(127) A: John ga nige-ta yo.
   Nom run=away-PST
   'John ran away, you know?'

      really Nom run=away-PST TOP know-NEG-PST
      'Really? That John ran away, I didn't know it.'

Nakau's argument, which is based on the ungrammaticality of the topicalized sentence, (121b) thus faces this counterexample.

Questions of argumentation:

i) Cleft formation. Nakau has pointed out that to complement cannot undergo this rule, suggesting that it is not a noun complement but an instance of an S forming a predicate complement. I have already pointed out in 2.3.1 that such a generalization does not hold—even a PP with a sentential sister can occupy the pre-copula position in a cleft construction. I have, however, no explanation at the moment as to why a to complement cannot occupy the same position in a cleft construction as seen in (122b).
ii) **Sore** pronominalization. I have also pointed out in 2.3.1 that a sentence can be an antecedent of a **sore** (see (113)). Therefore, Nakau's argument that a to complement must be an instance of an S because it cannot serve as an antecedent of **sore** cannot be maintained. However, further research is needed to explain why a to complement cannot be replaced by **sore** as seen in (123b) or (123b') in Note 34.

iii) **Soo** sentential pro-formation. It has been pointed out in 2.2.1 that **soo** can serve as a pro-form to not only a sentence but also a noun complement (see (113) for the example). Therefore, the use of this phenomenon by Nakau to provide evidence that a to complement is an instance of an S is not acceptable, even though his conclusion is right.

iv) Sentence preposing. This phenomenon has also been discussed in 2.3.1. We have seen that any sister constituent of the main predicate can be preposed to the sentence-initial position as long as it is not a bare sentential complement. (See (115) for the illustration.) Therefore, Nakau's argumentation using this phenomenon as evidence to prove that a to complement is an instance of an S is again unacceptable, even though his conclusion is right.
Let me now summarize my reasons for adopting the Postposition Analysis rather than the Complementizer Analysis.

1. The Postposition Analysis can explain the phenomena which have been observed concerning to complements without creating a major class called 'complementizer' in a grammar.

i) To complements can be topicalized as seen in (127) and this is consistent with the fact that any PP can be topicalized as long as it is old information and a sister constituent to the main predicate.

ii) To complements can be preposited as seen in (126) and this is consistent with the fact that any PP can be preposed to the sentence-initial position as long as it is a sister constituent to the main predicate.

iii) To complements cannot be omitted in a successive chain of sentences, as seen in (123b), and this is consistent with the fact that such omission is applicable only to o-marked object NPs as observed in (107).

iv) To complements cannot be the subject of the passive construction, as seen in (124b), and this is consistent with the fact that only an NP can occupy this position.
2. *To* exhibits the characteristics of a postposition, i.e., it does not inflect and it occurs as the lexical head of an exocentric construction with a single phrase or a clause. It is also homophonous with the *to* of *to (issoni)* as in (128), which does not prove anything, but is suggestive.

(128) John ga Mary to (issoni) nige-ta.

Nom Cmv together run=away-PST

'John ran away (together) with Mary.'

3. The Postposition analysis does not establish a lexical major class called 'complementizer', hence involves a smaller number of major categories in a grammar. This is preferable in terms of simplicity of grammar. Note that the analysis viewing *to* as a postposition used to identify whatever immediately precedes it as a quotation matches with the general opinion among traditional Japanese grammarians (Ito 1984) and the first lexicase analysis of Japanese, done by Taylor (1972).

For all the reasons listed above, this dissertation adopts the Postposition analysis for *to*. A lexicase representation of the *to* complement construction, then, can be presented as follows:
2.3.3 Examination of no

No occurs in a complement construction as follows:

(129) John ga [Mary ga nige-ru] no o mi-ta.

Nom Nom run-away-PRS Acc see-PST

'John saw Mary running away.'

As for the lexical status of no, there have been basically two different claims made; (I) it is a noun and (II) it is a particle. Let me briefly introduce these two claims as put forward by traditional Japanese grammarians as well as by generative grammarians.

Traditional Japanese grammarians present two different claims; one classifies no as a new category called
keishiki meishi 'formal noun', the other classifies it as a kind of joshi 'particle'. The former is represented by such grammarians as Matsushita (1930) and Tokieda (1941), based on the observation that no is noun-like, but, unlike ordinary nouns, it cannot be a subject on its own. The latter is represented by Yamada (1922) and S. Hashimoto (1944) and is based on the observation that no is like a joshi in its distribution: it does not occur without a modifier.

Some of the transformational grammarians, such as Ueda (1966), Beddel (1972), and Kitagawa and Ross (1982), on the other hand, were more concerned with explaining the distribution of no by postulating abstract grammatical structures which are to be related to observable sentences by transformational rules. Although their claims and arguments are different, they are basically the same in one aspect; no is transformationally inserted in the required position, and hence is not listed in the lexicon and does not appear under a lexical category node in surface structure trees. Thus, there is no particular argument as to the categorial status of no in their analyses. At any rate, such analyses would not be acceptable in modern constrained Transformational approaches, which do not allow the arbitrary insertion of new lexical material by transformational rules, and is of course impossible in even more
constrained frameworks such as lexicase, in which there is no distinction between deep and surface structures.

In contrast to these syntacticians, Nakau (1973:100) claims that no must be present in deep structure rather than being introduced into phrase structure by transformations. He then specifically claims that no is a noun based on the argument that an embedded sentence followed by no constitutes an NP; that is, it behaves like an NP in terms of transformational operations of Topicalization, Cleft Formation, NP Deletion, Pronominalization, and Subject-Object Inversion. His examples follow:

Topicalization:

(131a) (Nakau's 19a)

Kodomo-demo [kuzira ga honyuu-doobutu dear-u]

child even whale Nom mammal COP

(to-yu-u) no-o sit-te-i-ru.

know-GER-ASP-PRS

'Even children know that the whale is a mammal.'
Kuzira ga honyuu-doobutu dear-u (to-yu-u) no-wa,
whale NOM mammal COP TOP

kodomo demo sit-te-i-ru.
child even know-GER-ASP-PRS

'As for the fact that the whale is a mammal, even children know it.'

Cleft Formation:

(132a) (Nakau's 19a)
Kodomo-demo [kuzira ga honyuu-doobutu dear-u]
child even whale Nom mammal COP

(to-yu-u) no-o sit-te-i-ru.
know-GER-ASP-PRS

'Even children know that the whale is a mammal.'

==> (132b) (Nakau's 20b)
*Kodomo demo sit-te-i-ru no wa kuzira ga
child even know-GER-ASP-PRS TOP whale Nom

honyuu-doobutu dear-u (to-yu-u) no da.
mammal COP COP
This example has turned out to be unacceptable, contrary to Nakau's expectation. He attributes this irregularity to some other factor as follows:

String (20b) is unacceptable for some reason which is unknown to me, but perhaps because the nominalizer no appears in the same phonological context (namely, before da) which is occupied by an independently motivated Predicate (Nominal-Adjective) no of no da "It is the case that". (Nakau 1973:103)

NP Deletion, Pronominalization:

(133) (Nakau's 20c and d)

Otona wa motiron kuzira ga honyuu-doobutu dear-u
adult TOP of course whale mammal COP-PRS

(to-yu-u) no o sit-te-i-ru ga, kodomo demo
know children even

\[
\begin{align}
(c) & \text{ sit-te-i-ru.} \\
(d) & \text{ sore o} \\
\end{align}
\]

it know

`Grown-ups of course know that the whale is a mammal, but even children know 0/it.'
Subject-Object Inversion:

(134a) (Nakau's 19a)

Kodomo-demo [kuzira ga honyuu-doobutu dear-u]
child even whale Nom mammal COP

(to-yu-u) no-o sit-te-i-ru.

'Even children know that the whale is a mammal.'

===> (134b) (Nakau's 20e)

Kuzira ga honyuu-doobutu dear-u (to-yu-u) no wa,
whale mammal COP

kodomo ni demo sir-are-te-i-ru.
children by even know-PSV-GER-ASP-PRS

'That the whale is a mammal is known even by children.'

Although I do not agree with the use of transformational rules in general, Nakau's examples can also be viewed from a non-transformational angle, and I agree with Nakau's conclusion that no is a noun for the following reasons:
1. It takes a case marking postposition like other NPs.

2. A constituent ending in no is an NP distributionally since it can appear as the nominal predicate in a cleft construction as seen in (132b), and it can be an object NP which is the subject NP of the corresponding passive sentence, as seen in (135). In other words, it occurs in the same clause position in which other NPs occur. Then the one-bar constraint of lexicase and the left-branching structure of Japanese NPs determines no to be a noun since it is the head of a constituent which has been identified as an NP.

It is, however, important to note that no has one feature which is not found in ordinary nouns: it always requires a modifier. Because of this fact, some may suggest that no could be a suffix which derives a noun. For instance, Taylor (1972), who examined another kind of no, an internominal modification marker and claimed that it is a derivational suffix, may also claim that the nominalizer no too is a derivational suffix that derives a noun. However, let me point out that inflectional suffixes such as -ta (past tense) can intervene between a verb stem and no as follows:
This is a good indication that no is not a derivational suffix. If it were a derivational suffix, the above examples would have constituted an unacceptable pattern of inflectional morphemes appearing inside the derivation. Contrast the above examples to another typical nominalizing suffix, -sa, which is used to derive a noun from an adjective as follows:

(136) atsu-i --> atsu-sa cf. *atsu-i-sa
    hot-PRS    hot-NMN    hot-PRS-NMN
    'hot'      'heat'     *atsu-katta-sa
    hot-PST-NMN

Here, -sa is confirmed to be a derivational suffix because an inflectional morpheme, -i, is not allowed to appear inside the word formation, between the adjective stem and the derivational suffix.

For the reasons listed above, this dissertation posits no as a noun, being the head of a complement sentence. Then, a lexicase representation of the no complement construction can be presented as follows:
2.3.4 **Koto** and **tokoro**

*Koto* and *tokoro* also occur in complement constructions as follows:

(138) Watashi wa John ga ku-ru koto o shira-nakat-ta.

\[ \text{I TOP Nom come-PRS Acc know-NEG-PST} \]

'I didn't know that John was coming.'

(139) Keisatsu wa doroboo ga nige-ru tokoro o tsukamae-ta.

\[ \text{police TOP thief Nom run=away Acc catch-PST} \]

'Police caught a thief running away.'

There has been little argument as to the lexical status of these two items among syntacticians. Traditional Japanese grammarians have called them *keishiki meishi* 'formal noun,' a kind of noun. Nakau (1973) also states that they are nouns based on the same arguments put forward
for no earlier. I will also consider them to be nouns, mainly for the fact that they behave as nouns, being objects of postpositions. Note, however, that they are different from ordinary nouns in the fact that they always have to be preceded by a sentential modifier. In this sense, they are the same as the no examined earlier and we can conclude that the three constitute a kind of syntactic group; nouns which function as nominalizers to complement sentences. Lexicase representations of koto complement and tokoro complement constructions can thus be presented as follows:

(140)
2.4 Confirmation of complement construction types

Given the range of complement constructions to be covered in 2.2 and the lexical status of 'complementizer' and 'nominalizer' examined in 2.3, I can now confirm the structures of complement constructions. I have identified two types of complement constructions in 2.2.6:
Type A in which a complement clause modifies a noun, and
Type B in which a complement clause modifies a predicate.
Type B is now further classified into two types here: Type B1 in which a complement clause modifies a predicate with the postposition to and Type B2 in which a complement clause modifies a predicate without a postposition. There are thus three types of structures identified as follows:
Type A: The matrix predicate is subcategorized to take a complementizer noun, which is the head of a complement sentence. The noun is *yoo*, *no*, *koto*, or *tokoro*, depending on the matrix predicate. The postposition, which forms an exocentric construction with the noun, must be *ni* if the noun is *yoo*.

Example sentences:

(142) John ga Mary ni [ nige-ru ] yoo ni susume-ta.
    Nom    Lcv run=away-PRS advise-PST
    'John advised Mary to run away.'

(143) John ga [Mary ga nige-ru] no o mi-ta.
    Nom    Nom run=away-PRS Acc see-PST
    'John saw Mary running away.'

(144) Watashi wa John ga ku-ru koto o shira-nakat-ta.
    I     TOP    Nom come-PRS Acc know-NEG-PST
(145) Keisatsu wa doroboo ga nige-ru tokoro o tsukamae-ta.
  police  TOP thief  Nom run=away  Acc catch-PST
  'Police caught a thief running away.'

Type B1: The matrix predicate is subcategorized to take a complement sentence which forms an exocentric construction with a complementizer postposition, to.

Example sentence:

(146) John ga [Mary ga nige-ta] to omot-ta.
    Nom  Nom run=away-PST think-PST
  'John thought that Mary ran away.'
Type B2: The matrix predicate is subcategorized to take a complement sentence without a complementizer postposition.

Example sentences:

(147) John ga [hon o yon-de] i-ru.
       Nom book Acc read-GER exist-PRS
'John is reading a book.'

(148) Mary ga [amerika-jin] da.
       Nom American COP
'Mary is an American.'

(149) Mary ga [amerika-jin] rash-i.
       Nom American seem-PRS
'Mary seems to be an American.'
NOTES

1 Nakau (1973) takes the position that yoo and ni form a single word, as indicated by the hyphen between them. I will, however, claim in 2.3.1 that they comprise two words, yoo and ni.

2 Nakau (1973) claims that des-u (formal form of da) is a complement-taking predicate, as exemplified in (12), and yet he places a hyphen between yotee and da (informal form of des-u) in (11), suggesting that da is a suffix. It is not known whether he is treating da and des-u separately as he does not provide any justification with respect to the hyphenation. In my analysis, da and des-u are both one word, hence the hyphenation between yotee and da in (11) must be removed. See 2.1.2.4 where I present reasons for regarding da/des-u as one word.

3 It is noteworthy that Nakau has viewed nai as a complement-taking predicate. He does not provide any evidence for assuming that nai is a word, and I suspect that his analysis is influenced by English, in which the negative morpheme 'not' is a word on its own. Whether negatives are words or suffixes is an open and empirical question for each language. In Japanese, nai is a suffix as suggested by the fact, among others, that it cannot be separated and deleted in a chaining construction as follows:

(1) John ga tabe-*(nai)-shi noma-nai.
Nom eat- NEG and drink-NEG
`John does not eat or drink.'

Thus, nai does not hold the status of a word, and it consequently cannot stand as a complement-taking predicate in my analysis.

4 no is a noun as discussed in 2.3.3.

5 Kameyama (1985) and Gunji (1987) are other major works on Japanese grammar which place emphasis on the lexicon or some kind of functional concept rather than on transformations. Ishikawa (1985) and Kameyama (1985) have adopted the framework of Lexical Functional Grammar (LFG). However, in spite of the standard LFG assumption that such constructions as causatives and passives are to be handled in the lexicon, they still categorize -sase-/ rare- as "y"
and seem to be viewing the constructions as instances of complementation, as follows:

(Ishikawa's 12a)

the o-causative suffix

\[(s)ase \ V (1 \ Pred) = 'sase<(1\text{SUBJ})(1\text{OBJ})(1\text{XCOMP})>\]

(Kameyama's 16) The lexical forms:

A. \[-(s)ase 'CAUSE';V;<(\text{SUBJ})(\text{OBJ})/(\text{OBJ2})(\text{XCOMP})>\]
   \[(\text{XCOMP SUBJ})=(\text{OBJ})/(\text{OBJ2})\]

B. \[-(r)are 'PASSIVE';V;<(\text{SUBJ})(\text{OBJ2})(\text{Xcomp})>\]
   \[(\text{XCOMP SUBJ})=(\text{OBJ2})\]

Gunji has developed his own framework called Japanese Phrase Structure Grammar (JPSG), which is loosely based on such frameworks as Generalized Phrase Structure Grammar (GPSG) and Head-driven Phrase structure Grammar (HPSG) (Gunji 1987:vii). It is not clear to me whether Gunji's JPSG supports the lexicalist approach in general, but he certainly adopts the decompositional analysis of causatives in Japanese, as follows:

...\text{sase} is just a verb that subcategorizes for three things: a subject, an object, and a VP. (Gunji 1987:53)

...Thus, the following is the structure for causativization, which is yet another example of complementation. (Gunji 1987:52)

Thus, all three non-transformational analyses of Japanese appear to be reviving a complementational analysis of passives and causatives, despite the fact that the excessive use of transformation power required in such an analysis was the main reason for the downfall of Generative Semantics and loosely constrained transformational grammar. Let me, however, note that Kameyama (personal communication) defends her lexicalist position as follows:
It is not the case that the above lexical forms are for causative and passive morphemes seen as independent verbs. They are suffixes that form new lexical forms for the complex verb-suffix form taking the lexical forms of the verbs as input. This valency-changing operation is supposed to take place in the lexicon as part of lexical formation.

A contrast of LFG and LXC then may be found in the fact that LXC has no lexical entries for affixes, whereas there is no such assertion made in LFG, according to Kameyama.

6 Adverbs are normally free from word order constraints, but they cannot be inserted between V-te and i-ru as follows:

(1) *John ga hon o yonde yukkuri i-ru.  
   Nom book Acc read-GER slowly exist-PRS

This phenomenon, however, does not provide counter-evidence to the claim that V-te and i-ru are two separate words, because the ungrammaticality of the above example is caused instead by the fact that the adverb, yukkuri "slowly" is not placed before the verb to be modified, i.e, yon-de. Since Japanese is a verb-final language, nothing except sentential particles can follow a verb in a clause. As for an adverb, it can be placed anywhere as long as it precedes the verb to be modified, as follows:

(2) a. John ga hon o yukkuri yon-de i-ru.
   
   b. John ga yukkuri hon o yon-de i-ru.
   
   c. Yukkuri John ga hon o yon-de i-ru.
   
   'John is slowly reading a book.'

7 Actually, gapping can delete parts of words as found in the following examples (from Starosta's handout for Linguistics 422 course in Fall 1985):

(1) Harry would probably quit his job whatever the in- or outcome.

(2) "Did you say 'income' or 'outcome'?'" "In."
Thus, the phenomenon of omission in chaining constructions alone cannot be an absolute criterion for something to be a word. It does, however, at least support such an analysis.

8 Hosaka (personal communication) pointed out to me that *Meikai Nihongo Akusento Jiten* (Meikai Japanese accent dictionary) lists the accent of 'hajimeru' as follows:

(1) hajimeru

The point of the discussion, however, remains the same since there still is only one accentual peak, whether the accent is:

yomi-hajimeru or yomi-hajimeru.

9 I have, however, noticed that there is only one peak if V1's accent pattern is Low-High as follows:

(1) a. ik-u + i-ru ---> it-te i-ru
go-PRS exist-PRS have gone

b. yob-u + i-ru ---> yon-de i-ru
call-PRS exist-PRS calling

Although there is a regular pattern involved here, the above examples are still evidence against my analysis unfortunately.

10 According to Hosaka (personal communication), the examples in (40) can be uttered in two possible ways: with two peaks as presented in (40), or with only one peak as follows:

(1) a. yom-u + i-ru ---> yon-de i-ru
read-PRS exist-PRS reading

b. hanas-u + i-ru ---> hanashi-te i-ru
speak-PRS exist-PRS speaking

Hosaka further expresses the same opinion on the examples in Note 9. In other words, (1) of Note 9 can also be pronounced as follows:
(2)  
  a. ik-u + i-ru ---> it-te i-ru  
      go-PRS exist-PRS have gone  
  b. yob-u + i-ru --> yon-de i-ru  
      call-PRS exist-PRS calling

I am aware that the argumentation based on accentual peak alone is not strong enough, especially when I have not examined the accentual phenomena of Japanese in a broader perspective, which is to be one of the future topics of investigation for me.

11 The analysis presented here, i.e., postulating an auxiliary verb i-ru as a main verb of its own clause, with a so-called 'main verb' embedded under it as a complement, corresponds to the LXC analysis of English auxiliary verbs. Starosta (1987) provides a number of arguments to demonstrate the superiority of the 'auxiliary-as-main-verbs' analysis to Chomsky's Aux/INFL analysis, in which auxiliary verbs are not represented as verbs at all.

12 There is another possible structure for the construction as follows:

I can think of an argument to support this structure based on the selectional restriction found in the verb i-ru: i-ru must have an animate subject. However, when it is used in a V-te i-ru construction, the selectional restriction disappears. This phenomenon can be explained if we posit the structure (a) in which the subject of the V-te is not the subject of the higher verb, i-ru. In this dissertation, however, i-ru as a main verb and i-ru as an auxiliary verb are considered to be two different lexical items because their distributions are different. It can be tested by the fact that there is at least one verb which can occur in one of the two environments (the environment for i-ru as a main verb; NP ga NP ni __) but not the other (the environment for i-ru as an auxiliary verb; NP ga [ V-te] __). suwar-u is an example which occurs in environment
a. but not b., whereas mi-ru is an example which occurs in environment b. but not a., as follows:

(1) a. The environment for i-ru as a main verb:

\[
\begin{align*}
\text{John ga soko ni \{i-ru. \}} \\
\text{Nom there Ltv \{exist-PRS\}} \\
\text{suwar-u.} \\
\text{sit-PRS} \\
*\text{mi-ru.} \\
\text{see-PRS}
\end{align*}
\]

'John is there.'

sits
*sees

b. The environment for i-ru as an auxiliary verb:

\[
\begin{align*}
\text{John ga utat-te \{i-ru. \}} \\
\text{Nom sing-GER \{exist-PRS\}} \\
*\text{suwar-u.} \\
\text{sit-PRS} \\
\text{mi-ru.} \\
\text{see-PRS}
\end{align*}
\]

'John is singing.'

*sits
sings and sees what it is like.

Thus, a main verb, i-ru and an auxiliary verb, i-ru are different items, and can hence have different selectional restrictions. The difference in selectional restriction thus does not provide evidence for positing structure (a). There is, however, no clear evidence for positing the other structure (41) either. Given this situation of not having any clear evidence either way, I will choose alternative (41), which fits with other languages where the evidence is clear (i.e., English) rather than go against the evidence from other languages, and thus have a better chance of attaining explanatory adequacy in linguistic theory.

I have found two examples which deviate from the features listed above for a complement construction, as follows:

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1. Kut-te kakaru forms a V-te V construction, but its meaning, 'to attack verbally' is idiosyncratic, since it cannot be reconstructed from the individual meanings of the two Vs; the V1 is 'to eat' and V2 is 'to hang' respectively. Also, this formation is unproductive. There are only a few verbs which can fit into the V1 slot, such as name-te kakaru 'to make light of someone', and chuuishi-te kakaru 'to handle with care' (I owe these examples to Hattori via personal communication with Hosaka). These behaviors suggest that kut-te-kaka-ru must be listed separately in the lexicon. It could be, however, a phrasal idiom rather than a single word formed in the lexicon.

2. There is one example of nominalization I found in the V-te V construction--mi-te kure 'appearance', which is presumably derived from mi-te kure-ru 'receive a favor of (someone) looking at something (for me)'. Mi-te-kure is a noun, as confirmed by the following behaviours:

i. It is followed by a postposition.

John wa mite-kure ga i-i.
appearance good
'John is good in his appearance. (John is good-looking.)

ii. It can be modified by a demonstrative.

John wa ano mite-kure de shoobusu-ru.
that appearance with compete-PRS
'John competes (with others) using his appearance (as a weapon).'

These are, however, the only two examples I could find in my data. Given all the other evidence for the complementation analysis for the V-te V construction, these two examples cannot be considered strong counter-evidence.

14 This is not the 'see' mi-ru, but rather one which has the lexical meaning of some kind of sampling, and which is subcategorized to take a V-te complement. Since this mi-ru is an auxiliary verb, it is possible that it can have a slightly different meaning from that of the main verb.

15 Intransitive verbs can also appear in this construction as follows:

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a. Kyoo wa tappuri ne-te ar-u.
   today TOP enough sleep-GER exist-PRS
   'I have taken enough sleep today.'

Such a sentence is not discussed here, because it does not cause problems, at least for case marking.

16 Another type of the construction is the one with the Accusative rather than the Nominative postposition, as follows:

a. Terebi o tsuke-te ar-u.
   TV Acc switch=on-GER exist-PRS
   '(I) have switched on TV.'

Such an example is not discussed here, because it does not cause problems for case marking.

17 This example is taken from Matsumoto (1989:10).

18 A 'middle' construction is a derived intransitive construction in which the object of the transitive can be the subject of the middle. It is typically found in Greek. (Larousse Linguistics dictionnary) Although this is unfamiliar terminology to be used in Japanese grammar, other more familiar concepts cannot explain the phenomenon in question. For instance, it cannot be a passive participle, as there is no passive morpheme rare involved here, unless it is a hitherto unrecognized type of passive.

19 The crucial characteristic of an infinitive is that it is subject-less rather than tense-less. Thai, for instance, has no grammatical tense but does have infinitives. (Starosta 1988:186)

20 Some examples present two possibilities as follows:

(1) a. Sensei ga o-utai-hajime ni nar-u.
    teacher Nom HON-sing-start Ltv become-PRS
    'The teacher starts singing.'

b. Sensei ga o-utai ni nari-hajime-ru.
    teacher Nom HON-sing Ltv become-start-PRS
    'The teacher starts singing.'

Kuno (1983) explains this phenomenon with the notion of transitivity: he posits two lexical items, hajime-ru1 as a transitive verb and hajime-ru2 as an intransitive verb. According to Kuno, hajime- in (1a) is a transitive verb, hence is marked with the honorific prefix together with V1,
whereas *hajime-* in (1b) is an intransitive verb; hence only V1 gets marked with the honorific prefix. This explanation, however, is not convincing enough, because *hajime-ru* can never be an intransitive verb in any way. Kuno resorts to the power of transformations to fix this problem, postulating that it is an intransitive verb in a deep structure and changes only its form to the transitive counterpart in a surface structure. Kuno (1987) elaborates this claim by incorporating semantic features of the Vi; the transitive structure requires a Vi of a non-volitional nature such as *wakaru* 'understand' and the transitive structure requires a Vi which expresses a self-controllable action such as *yomu* 'read'. Kuno, however, notes the reverse is not true, viz, it is not the case that whenever the Vi is a verb of the self-controllable nature, we get a transitive structure and both the Vi and V2 get nominalized together in honorific formation. Kitagawa and Iguchi (1988), on the other hand, draw the generalization that V2 which denote time concepts, such as *hajimeru* 'start', possess the two possible honorific formations. I can, however, think of a counterexample to the generalization. *yam-u* 'stop' denotes a time concept, and yet *naki yam-u* 'stop crying' can have only one honorific formation in which V1 and V2 get nominalized together, as follows:

(2) Sensei ga o-naki-yami ni nat-ta.
    teacher Nom HON-cry-stop Ltv become-PST
    'The teacher stopped crying.'

    teacher Nom HON-cry Ltv become-stop-PST

I cannot, however, think of any better alternative explanation for this phenomenon at the moment.

21 Nakau (1973) is, however, not consistent in the presentation as noted in Note 2 earlier.

22 When *da* functions as a pro-verb, *John ga da* is possible (John Haig, personal communication). An example follows:

(1) A: Dare ga kore o yaru no da?
    who Nom this Acc do COP
    'Who is going to do this?'

    B: John ga da.
        Nom COP
    'John is (going to do that).'
23 VN is the abbreviation for verbal nouns, a term quoted from Martin (1975). VNs are identified by their ability to take suru 'do', as illustrated in (77). They function as nouns in certain respects and as verbs in others. For instance, a VN behaves as a noun when it is the object of a case-marking postposition, as follows:

(1) kenkyuu ga umaku ik-u.
research Nom well go-PRS
'The research goes well'

Certain VNs can also behave as verbs, being subcategorized to take a nominative NP and an accusative NP as follows:

(2) ((5a) in Kageyama and Shibatani (1988))

Kanai ga amerika o hoomon no ori ni wa,
wife Nom America Acc visit Gen occasion Lcv TOP
iroi osewa ni narimasita.
much hospitality Lcv received
'Thank you for your generous hospitality when my wife visited America.'

Note that the VN in this example (hoomon) also exhibits the characteristic of a noun being followed by the inter-nominal genitive postposition, no. Iida (1987) has also noted such a phenomenon and claimed that VNs can assign cases when they occur in a temporal clause. VNs are mostly Sino-Japanese words, but they can be native (e.g., kaimono suru 'do shopping') or foreign origin (e.g., saikuringu suru 'do cycling').

24 A VN can function as an accusative noun, being the object of the verb suru, as follows:

(1) John ga kenkyuu o su-ru.
Nom research Acc do-PRS
'John does research.'

When the accusative NP of this sentence is contrasted, the following is used:

(2) John ga kenkyuu wa su-ru.
TOP
'John does research (implying something in contrast, e.g., 'but he doesn't do any administrative work.')
If I had inserted the modal postposition *wa* in (78) without the accusative NP (*nihongo*), the sentence would have ended up exactly the same as (2) above, even though the original sentences are different—one is the *VN suru* construction and the other is *VN o suru* construction. In order to avoid this ambiguity, I have purposely placed the accusative NP (*nihongo* in the above example) in (78).

25 Starosta (personal communication) has pointed out that there is at least one exception to that in Sora as follows:

(1) Po-pun-kun-dam-l-iy.
    stab-stomach-knife-self-PST-me
    'I stabbed myself in the stomach with a knife.'

26 Certain kinds of word formation are restricted to Greek or Latin stems in English. (Starosta, personal communication)

27 *Su-* is inflected as *si* being a verb of a participial construction which modifies the main verb (*aruita*) and it is further lengthened to be *sii* because it is a monomoraic verb.

28 As commented in Note 1, I will argue in 2.3.1 that *yoo* is a separate word from *ni*, and it is a noun.

29 A hyphen is placed between *soo* and *da* in the original (14) presented earlier, but I deleted it here because *da* is one separate word in my analysis, as discussed in 2.2.4. (14) is actually a nested complement construction, as follows:

I will, however, include it in the scope of the dissertation because the predicative noun, *soo*, is subcategorized to take a complement clause. Recall that I have defined
the scope of the dissertation in 1.1 to include sentences where the matrix predicate or its argument is subcategorized to take a dependent clause. Based on this criterion, I will exclude such a sentence as (11) presented originally by Nakau (1973), because yotee is not subcategorized to take a complement clause.

(11) [Mary ga nige-ru] yotee da.
Nom run=away-PRS plan
'Mary plans to run away.'

A hyphen is placed between yotee and da in the original example presented in Nakau (1973), but I deleted it here because da is a separate word in my analysis, as discussed in 2.2.4.

30 To-yuu is excluded here because the focus of this dissertation is on the subcategorization of complement-taking matrix predicates. Note that a complement sentence marked with to-yuu subcategorizes a noun rather than the matrix verb as follows:

(1) John wa [Mary ga nige-ta] to-yuu hanashi o
run=away-PST story
shinji-na-katta.
believer-NEG-PST
'John did not believe the story that Mary ran away.'

(2) John wa [Mary ga nige-ta] to-yuu koto o
run=away-PST fact
shinji-nakat-ta.
believe-NEG-PST
'John did not believe the fact that Mary ran away.'

31 Nakau provides no statement as to the question of whether yoo-ni forms a single lexical item. He places a hyphen between yoo and ni, but he does the same with all the NPs followed by postpositions (which he calls 'particle') such as in Taroo-wa, and Ziroo-ni, despite the fact that he postulates a Phrase Structure rule, NP' -> NP Prt. Thus, it is not clear to me whether 'a complementizer' in his analysis excludes the possibility that it has more than one morpheme.
32 I am substituting Nakau's glosses with mine but retaining the original hyphenation. The same practice applies to all the quoted examples in this dissertation.

33 It is not clear to me why Nakau attached the postposition ̄ here rather than ni in line with yco-ni. The sentence is, however, still ungrammatical with sore-ni as shown below:

(98') Ryoozin-wa Taroo-ni [gakkoo-o yasuma-nai] yoo-ni
parents school absent NEG

settokusi-ta; sensee-mo (Taroo-ni) (ii) *sore-ni
persuade-PST teacher-also (iii) ?*O

settokusi-ta. persuade PST

'His parents persuaded Taro not to be absent from school, and his teacher also persuaded him of it/0.'

34 Nakau has also observed such an example as follows:

(1) (Nakau's 26b)

Taroo-ga ko-nakat-ta no-wa, (kare-ga) byooki-dat-ta
come-NEG-PST ill-COP-PST

kara da.
because COP

'It was because he was ill that Taro did not come.'

He has, however, analyzed [S] kara as an 'adverbial Noun Phrase' (p. 6), hence retaining his generalization that only NPs can occupy the pre-copula position in a cleft construction. Unfortunately, he does not provide any independent evidence that [S] kara is an NP, and in an X-bar analysis it cannot be, since neither kara nor the verbal head of the preceding clause is an N. Such a purely ad hoc analysis is ruled out in a modern X-bar analysis.

35 It is not clear to me why Nakau attached the postposition ̄ here rather than to in line with [S] to. The sentence is, however, still ungrammatical with sore to as shown below:
(123b') Taroo-wa [anata-ga ko-na-i-daroo] to
you-Nom come-NEG-PRS Presum Comp

it-te-i-ta; Hanako-mo *sore-to it-te-i-ta.
say-Dur-PST it

'Taro had said that you would not come, and Hanako
also had said it.'

36 X indicates a variable. I had to use this because
the number of arguments vary depending on the matrix predi-
cate chosen, even within the same type of complement
construction.
3.1 Introduction

This chapter aims to examine cooccurrence relations between predicates and complement sentences and formalize the findings in lexical rules.

3.2 Review of data and classification in earlier studies

Many of the earlier works on complementation (Smith 1970, Josephs 1976, Kuno 1973) have noted typical examples of predicate-complementizer cooccurrence relations as follows:

<table>
<thead>
<tr>
<th>Complementizer</th>
<th>Predicate</th>
</tr>
</thead>
<tbody>
<tr>
<td>to</td>
<td>iu 'say'</td>
</tr>
<tr>
<td>yooni</td>
<td>meijiru 'order'</td>
</tr>
<tr>
<td>no</td>
<td>miru 'see'</td>
</tr>
</tbody>
</table>

Most of the works, however, have introduced only a limited number of examples which are hardly controversial as data. In contrast, Masako Inoue's "A Study of Japanese Predicate Complement Constructions" (Inoue 1974), which has partly adopted Karttunen's analysis of English predicate complement constructions (1970), has listed quite a substantial
number of predicates classified according to the complement
types. Let me introduce a few examples each from all the
complement types listed in this work, pp. 212-32.

3.2.1 Inoue's 1974 classification and data

Complement types in Inoue (1974) are first determined
in terms of cooccurrence relations between predicates and
complementizers. Within each type, they are further
subclassified in terms of syntactic positions which the
complement occupies: either subject or object. Semantic
features of predicates generalized by Inoue are indicated
in < >. ? and ?? are marked by me on the predicates
where my native intuition on the cooccurrence relations does
not agree with Inoue's and where I find the definition of
'object' dubious respectively.

A. Predicates with [S]koto and [S]toyuuukoto complements
a) As subject complements:
ariuru 'possible' <verbals of possibility>
tashikada 'certain' <verbals of necessity>
hanmeisuru 'become clear' <verbals of inchoation>
? arawasu 'show' <verbals of revealing>
sukuu 'save' <verbals of causation>
hitoshii 'equal' <verbals of propositional relation>
ihituyoooda 'necessary' <verbals of importance>
b) As object complements:
   abaku 'expose' <verbals of revealing>
   manabu 'learn' <verbals of mental reaction>

B. Predicates with [S]no complements
a) As subject complements:
   abunai 'dangerous' <verbals of visual impressions>
   kawaii 'cute'

b) As object complements:
   ?? osoi 'slow' <verbals of speed>
   miru 'look at' <verbals of perception>
   hurikiru 'shake off' <verbals of physical reaction>

C. Predicates with [S]koto and [S]no complements
a) As subject complements:
   kantanda 'simple' <verbals of easiness>

b) As object complements:
   ?? husegu 'prevent' <verbals of planned stopping>
   ?? tokuida 'strong in' <verbals of forte>
   ?? sukida 'like' <verbals of liking>
   ?? seikoosuru 'succeed' <verbals of success>
   kuiru 'regret'
   ?? akiru 'be tired of' <verbals of emotional reaction>
   ?? kowai 'be afraid of'

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Verbals of emotional reaction do not uniquely belong to this class, but will also appear in other classes below (Inoue: p.216).

   a) As subjects:
      akirakada 'apparent'
      muzukashii 'difficult'  <subjective and emotional opinion of the speaker or the subject,
      warui 'wrong'
      tigau 'differ'
      zizituda 'fact'
   b) As objects:
      ?? bikkurisuru 'be surprised'
      ?? kurushii 'hard, difficult'  <verbals of emotional reactions>
      ?? meiwakuda 'annoying'

E. Predicates with [S]koto, [S]toyukoto, [S]no,
   [S]toyuno, and [S]to complements:
   a) As subject complements:
      kekkooda 'nice'  <No semantic feature given by Inoue>
      taihenda 'serious'
   b) As object complements:
      ?? odoroku 'be surprised'
      ?? arigatai 'grateful'  <verbals of emotional reactions>
      ?? omoshiroi 'interesting'
F. Predicates with [S]no and [S]toyuuno complements

Restricted to subject complements only:
atarimaeda 'natural'  <verbals of naturalness--strong
murida 'unreasonable' emotional interest of the speaker
   in the subject.>

G. Predicates with [S]no, [S]toyuuno and [S]to complements

Only as subject:
? asamasii `shameful'
? hushigida `strange'  <verbals of propriety>
? migotoda `superb'

H. Predicate with [S]toyuukoto and [S]toyuuno complements

Only as subject; there is only one predicate in this class.
hontooda `true'  <No semantic characterization given>

I. Predicates with [S]toyuuno complements

Only as subject; the following two are the only examples found.
usoda `false'  <No semantic feature given by
   utagawasii `suspicious' Inoue>

J. Predicates with [S]koto complements

Only as object:
? atekomu `expect'  <verbals of expectation>
? kinziru `prohibit'  <verbals of command>
?? dekiru `able'  <verbals of ability>
K. Predicates with [S]koto and [S]to complements

Only as object:

kimeru 'decide' <verbals of determination>
nozomu 'hope' <verbals of expectation>

? susumeru 'advise' <verbals of invitation>
iitukeru 'order' <verbals of command>

L. Predicates with [S]koto, [S]toyuukoto, and [S]to complements

Only as object:

ayamaru 'apologize' <verbals of revealing (verbal production)>
kangaeru 'think' <verbals of mental reaction (mental production)>
anziru 'worry' <verbals of emotional reaction>

M. Predicates with [S]no and [S]to complements

The following is the only predicate of this type found so far.

kanziru 'feel'

N. Predicates with [S]koto, [S]toyuukoto and [S]no complements

?? kizuku 'notice' <verbals of cognition>
awaremu 'pity' <verbals of emotional reaction>
?? kanasii 'sad'
These are negative emotional reactions in contrast to the predicates of emotional reaction in Type C (b).

O. Predicate with [S]no and [S]to complements
   kanziru 'feel'

P. Predicates with [S]to complements
   kotaeru 'answer' <verbals of verbal production>
   gokaisuru 'misunderstand' <verbals of mental production>

According to Inoue, these two predicates share the property of being 'verbals of communication'.

3.2.2 Inoue's 1974 classification and data vs. the lexicase approach

Despite its impressive volume, Inoue's data cannot be incorporated directly in my analysis for a number of reasons, which I will discuss under two headings: [I] Question of fact and [II] Questions of analysis.

[I] Question of fact

My native speaker's intuition does not agree with Inoue's in terms of cooccurrence relations between predicates and the complementizers. Such examples are marked
with ?. For instance, the predicate, \textit{atekomu} 'expect' in Type J should be in Type C according to my intuition.

[II] Question of analysis

1. "Object": I do not agree with Inoue's use of the term "object". According to Inoue, the following examples take 'object' complements:

   Type C (b) \hspace{1em} [S] koto/no ni seikoosuru. '... succeeds in ...

   Type E (b) \hspace{1em} [S] koto/no ni odoroku 'surprised to find ...

   Type N \hspace{1em} [S] koto/no ni kizuku 'notice that ...'

Note that all the complements are marked with a postposition, ni (Dative). In a lexicase analysis of Japanese, however, "object" refers to Patient actant in a transitive clause which is normally\textsuperscript{1} marked with a postposition, o (the accusative case).

2. Transitivity: Inoue's classification is solely based on the cooccurrence relations between predicates and complementizers, disregarding the number of arguments the predicate can take and the postpositions with which they cooccur. Consequently, a transitive verb and a homophonous intransitive verb may be grouped together. For instance, the predicate \textit{nozomu} 'to hope' is listed in Type K as one
which takes [S] koto and [S] to complements. However, nozomu occurs in two different syntactic frames depending on which complementizer it takes; with [S] koto it appears in a transitive frame as in (1), but with an [S] to complement it appears in an intransitive frame as in (2).

(1) Watashi ga [John ga kuru] koto o nozomu.
   I Nom come Acc hope
   'I hope that John will come.'

(2) Watashi ga [John ga kure-ba ii] to nozomu.
   I Nom come-if good hope
   'I hope "It would be good if John comes".'

In contrast, lexicase adheres to the principle that if a form occurs in two distinct syntactic environments, it must be represented as two distinct lexical entries. This is in line with the triune sign definition of a word in lexicase, that is, a word consists of three parts: sound, meaning, and distribution, and if a form occurs in two distinct syntactic environments, it must be represented as two distinct lexical entries (Starosta 1988:45). By this definition, the verb forms in the two sentences must be analysed separately; the form nozomu is a transitive verb nozomu when it takes an [S] koto complement as a direct
object and an intransitive verb nozomu\textsubscript{2} when it takes an [S] to complement as follows:

(1') Watashi ga [John ga kuru] koto o nozomu\textsubscript{1}.

\begin{tabular}{lllll}
Nom & Acc & <transitive verb> &  \\
AGT & PAT & & \\
\end{tabular}

'I hope that John will come.'

(2') Watashi ga [John ga kure-ba ii] to nozomu\textsubscript{2}.

\begin{tabular}{lllll}
Nom & Acc & <intransitive verb> &  \\
PAT & & & \\
\end{tabular}

'I think (lit. hope) "It would be good if John comes".'

The triune sign principle distinguishes the lexicase lexical subcategorization system from Inoue's approach, and from most if not all previous generative analyses. Earlier approaches such as Inoue's work by sets of environments: If Word\textsubscript{1} occurs only in environment a, Word\textsubscript{2} occurs only in environment b., and Word\textsubscript{3} occurs in both environments a. and b., then we must set up three distinct word classes, Class I (a only), Class II (b only), and Class III (both a and b), with W\textsubscript{1} belonging to Class I, W\textsubscript{2} belonging to Class II, and W\textsubscript{3} belonging to Class III. By the lexicase triune sign principle, in contrast, each distinct environment identifies a syntactic class, hence having only two classes instead of three. If W\textsubscript{3} appears in two different
environments, then it is by definition two distinct but homophonous lexical entries, \(W_{3A}\) (belonging to Class I) and \(W_{3B}\) (belonging to Class II). The contrast of two different approaches can be illustrated in the following table:

<table>
<thead>
<tr>
<th>Traditional Classification</th>
<th>Triune Sign Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment a b</td>
<td>Environment a b</td>
</tr>
<tr>
<td>Class I</td>
<td>Class I</td>
</tr>
<tr>
<td>(W_1) --</td>
<td>(W_1, W_{3A}) --</td>
</tr>
<tr>
<td>II</td>
<td>II</td>
</tr>
<tr>
<td>-- (W_2)</td>
<td>-- (W_2, W_{3B})</td>
</tr>
<tr>
<td>III</td>
<td></td>
</tr>
<tr>
<td>(W_3) (W_3)</td>
<td></td>
</tr>
</tbody>
</table>

The same triune sign principle applies to the case in which a predicate appears to occur interchangeably with the complementizer nouns \(koto\) and \(no\) as follows:

(3) John ga [Mary ga nige-ru] koto/no o yokishi-ta.

\[\text{run=away expect-PST}\]

'John expected that Mary would run away.'
The difference in the complementizer nouns here defines two grammatically distinct environments because we can find at least one verb which takes koto and not no, and one which takes no and not koto. kangae-ru 'think' is an example of the former type and mi-ru 'look' is an example of the latter as follows:

(4) John ga [nihon ni ik-u] koto/*no o kangaio-ta.
    Nom Japan Lcv go-PRS Acc think-PST
    'John thought of going to Japan.'

(5) John ga [Mary ga nige-ru] no/*koto o mi-ta.
    Nom Nom run=away-PRS Acc see-PST
    'John saw Mary running away.'

This demonstrates that no complements and koto complements define two grammatically and lexically distinct verb classes. Therefore, yokisu-ru in (3) must be seen as two homophonous words, yokisu-ru₁ which takes koto and yokisu-ru₂ which takes no as follows:

(3a) John ga [Mary ga nige-ru] koto o yokishi-ta₁.
    run-away expect-PST
    'John expected that Mary would run away.'

(3b) John ga [Mary ga nige-ru] no o yokishi-ta₂.
    run-away expect-PST
    'John expected that Mary would run away.'
This position coincides with the conclusion reached on semantic grounds by Josephs (1976), who has observed that there is a difference in nuance between the two sentences such as (3a) and (3b) and proposed that it is due to the semantic difference found between no and koto--no provides the sense of immediacy, directness, and concreteness whereas a sentence with koto sounds more distant, indirect, and abstract. The lexicase analysis, however, attributes such a semantic difference to the verbs themselves--the semantic difference resides in the distinct verb entries, yokisu-ru, and yokisu-ru, and this semantic distinction in turn is responsible for the choice of koto vs. no. Let me, however, note that there are cases where a native speaker's intuition fails to sense such a slight difference in nuance between two homophonous verbs. In this situation, however, the difference in distribution is still sufficient reason for setting up two distinct lexical entries.

The contrast between Inoue's classification and the lexicase approach to the classification of complement-taking predicates can be seen more clearly by comparing Table 3.2 and Table 3.3 on the following pages:
Table 3.2
Inoue's classification of complement-taking predicates

<table>
<thead>
<tr>
<th>Type</th>
<th>Example</th>
<th>[S]koto</th>
<th>[S]toyuu-</th>
<th>[S]no</th>
<th>[S]toyuu-</th>
<th>[S]to</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>koto</td>
<td>no</td>
<td></td>
<td>no</td>
</tr>
<tr>
<td>Type A</td>
<td>ariuru</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>'possible'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>manabu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>'learn'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type B</td>
<td>kawaii</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>'cute'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>miru</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>'look'</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Type C</td>
<td>kantanda</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>'simple'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>kuiru</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>'regret'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type D</td>
<td>warui</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>'wrong'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type E</td>
<td>kekkooda</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>'nice'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type F</td>
<td>atarimaeda</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>'natural'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type G</td>
<td>asamasii</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>'shameful'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type H</td>
<td>hontooda</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>'true'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: * x indicates the complementizers which the type of predicates takes. For instance, Type A refers to the predicates which take [S]koto and [S]toyuu-koto interchangeably.
<table>
<thead>
<tr>
<th>Type</th>
<th>Example</th>
<th>[S]koto</th>
<th>[S]toyuu-</th>
<th>[S]no</th>
<th>[S]toyuu-</th>
<th>[S]to</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>usoda</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>'false'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>atekomu</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>'expect'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>kimeru</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>'decide'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>ayamaru</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>'apologize'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>kanziru</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>'feel'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>awaremu</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td></td>
<td>'pity'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>kanziru</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>'feel'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>kotaeru</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>'answer'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.2 (Continued)

Inoue's classification of complement-taking predicates

179
In the following Table 3.3, Inoue's examples (marked with *) and some additional examples of mine are placed under the appropriate environment. Each distinct environment distinguishes a separate grammatical class, so forms which appear in more than one environment are split into two or more homophonous entries, as indicated by the different numerical subscripts:

Table 3.3
Classification of complement-taking predicates in lexicase

<table>
<thead>
<tr>
<th>Environment</th>
<th>[S] koto ga __</th>
<th>[S] no ga __</th>
<th>NP ga</th>
<th>[S] yoo ni __</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>---</td>
<td>---</td>
<td></td>
<td>tutomeru 'try'</td>
</tr>
<tr>
<td>Class 2</td>
<td>*ariuru 'possible'</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*kantan₁ 'simple'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*warui₁ 'wrong'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*kekkoo₁ 'nice'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class 3</td>
<td>---</td>
<td>*kawaii 'cute'</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*kantan₂ 'simple'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*warui₂ 'wrong'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*kekkoo₂ 'nice'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*atarimāe 'natural'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*asamasii 'shameful'</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3.3 (Continued)

Classification of complement-taking predicates in lexicase

<table>
<thead>
<tr>
<th>Environment</th>
<th>NP ga [S] no ni</th>
<th>NP ga [S] tokoro ni</th>
<th>NP ga [S] koto ni</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 4</td>
<td>kizuku₁ 'notice'</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Class 5</td>
<td>---</td>
<td>---</td>
<td>kizuku₂ 'notice'</td>
</tr>
<tr>
<td>Class 6</td>
<td>---</td>
<td>dekuwasu 'come across'</td>
<td>---</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environment</th>
<th>NP ni [S] koto ga</th>
<th>NP ni [S] no ga</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 7</td>
<td>aru 'have'</td>
<td>---</td>
</tr>
<tr>
<td>Class 8</td>
<td>---</td>
<td>wakaru 'find out'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environment</th>
<th>NP ga NP ni [S] yoo ni</th>
<th>NP ni [S] yoo ni</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 9</td>
<td>tanomu 'request'</td>
<td>---</td>
</tr>
<tr>
<td>Class 10</td>
<td>---</td>
<td>omoeru 'appear'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environment</th>
<th>NP ga [S] koto o</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 11</td>
<td>*manabu 'learn', *kuiru₁ 'regret'</td>
</tr>
<tr>
<td></td>
<td>*atekomu 'expect', *kimëru₁ 'decide'</td>
</tr>
<tr>
<td></td>
<td>*ayamaru₁ 'apologize', *kañziru₁ 'feel'</td>
</tr>
<tr>
<td></td>
<td>kateisuru 'hypothesize'</td>
</tr>
<tr>
<td>Environment</td>
<td>NP ga [S] no o __</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Class 12</td>
<td>*miru 'look', *kuiru2 'regret'</td>
</tr>
<tr>
<td></td>
<td>*kanziru 'feel', *awaremu1 'pity'</td>
</tr>
<tr>
<td>Class 13</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>NP ga NP ni [S] no __</td>
</tr>
<tr>
<td>Class 14</td>
<td>meiziru1 'order'</td>
</tr>
<tr>
<td>Class 15</td>
<td>---</td>
</tr>
<tr>
<td>Environment</td>
<td>[S] __ [S] to __</td>
</tr>
<tr>
<td>Class 16</td>
<td>---</td>
</tr>
<tr>
<td>Class 17</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Class 18</td>
<td>iru 'exist'</td>
</tr>
<tr>
<td>Class 19</td>
<td>---</td>
</tr>
</tbody>
</table>
Table 3.3 (Continued)
Classification of complement-taking predicates in lexicase

<table>
<thead>
<tr>
<th>Environ-</th>
<th>NP ni [S] to __</th>
<th>NP ga NP ni [S] [S]</th>
<th>NP ga NP ni [S] to __</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 20</td>
<td>---</td>
<td>morau 'receive a favor of ...ing'</td>
<td>---</td>
</tr>
<tr>
<td>Class 21</td>
<td>---</td>
<td>---</td>
<td>iu$_2$ 'say'</td>
</tr>
<tr>
<td>Class 22</td>
<td>kikoeru 'sound'</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

The lexicase reanalysis has produced more numbers of classes than Inoue's system for the following reasons:

1. Inoue's system did not distinguish transitive and intransitive verbs.
2. Inoue's system did not distinguish different subtypes of 'object'.
3. Inoue's system did not include complement types without complementizers.
3.3 Subcategorization of complement-taking predicates in lexicase

In a lexicase grammar, predicates (and in fact non-predicate nouns and postpositions as well) must be subcategorized for the array of inner case relations with which they are allowed to cooccur (Starosta 1988:138). Unetani et al. (1987) has presented such a lexicase classification of Japanese verbs as introduced in 1.5.5. In this section I will expand and elaborate the subcategorization so that complement-taking predicates can be highlighted. First of all, I will present the initial incorporated subcategorization (6) on the following page, as taken from Unetani et al. (1987). I will then indicate in the tree (6) where the complement-taking predicates appear by entering <A> - <F> at the relevant nodes. This will serve as the means to refer to such major categories later when presenting a finer subcategorization of complement-taking predicates. The nodes under which complement-taking predicates do not appear are marked with *. Unetani et al. (1987) may be referred to for examples and discussion on such non-complement-taking predicates. All the contextual features are marked with ?, which are to be replaced with index numbers of constituents later by linking rules (see Chapter 4).
(6) Initial subcategorization of complement-taking predicates
In accordance with the lexicase Patient centrality hypothesis, it is assumed that every verb includes a Patient in its case frame. Transitive predicates ( [+trns]) are different from intransitive predicates ( [-trns]) in that they include an additional argument in their case frames, an Agent ( [+AGT]). Locational predicates ( [+lctn]) refer to those which include a Locus actant ( [+LOC]) in the case frame. Correspondent predicates ( [+crsp]) refer to those which include a Correspondent actant ( [+COR]) in the case frame. Mode predicates are those which take a Means actant ( [+MNS]) in the case frame.

A further subcategorization of the initial classification can now be presented in (7) for each major category in which complement-taking predicates appear. - indicates the nodes under which complement-taking predicates have not been found in the data. For the whole picture of these subcategorizations, see Appendix B.
(7) Subcategorization of the major category <A>

+prdc
-trns
-1ctn
-crsp
-mode

-xtns

-cmpl +cmp

-prps +prps

-bstr +bstr

-tmng +tmng

* - A1 - A2 A3 A4 A5 A6
First of all, the A predicates are subcategorized into extension predicates ([+xtns]) and non-extension predicates ([−xtns]). The former require [+prdc] dependents as inner complements (?[+prdc]) whereas the latter do not (Pagotto 1985:3-4, Unetani et al. 1987:4). Examples follow:

(8) John ga [tabe-te] i-ru.
    eat    exist-PRS
    +prdc  +prdc
    +xtns  ?[+prdc]

'John is eating.'

(9) John ga gakkoo ni i-ru.
    school exist-PRS
    +prdc
    -xtns

'John is at school.'

Non-extension predicates have to be further classified into complementizable predicates (+cmpl, ?[+N,+xtns]), which take complementizer nouns ([+N, +xtns]5, i.e., nouns which are subcategorized to take [+prdc] dependents as inner complements) as their dependent sisters, and non-complementizable predicates ([−cmpl]),6 which do not take a complementizer noun. Consider the following pair of

[+xtns] vs. [−xtns]

[+cmpl] vs. [−cmpl]
sentences involving two homophonous verbs, medats-u₁ ([+cmpl]) and medats-u₂ ([−cmpl]):

(10)

'It is conspicuous that John is there.'

(11)

'John is conspicuous.'

The distinction between [−cmpl] and [+cmpl] verb classes can be justified by the existence of at least one predicate which can occur in the environment for [+cmpl] but not for [−cmpl], and another predicate which occurs in the
environment for [-cmpl] but +not for [+cmpl].\textsuperscript{7} tsutome-ru
'\textit{try}' is an example of the former type as seen in (12)
while hashir-u is an example of the latter type.

    Nom Japanese  speak-PRS  try-PST
    +N  +prdc  +xtns  -xtns
    +cmpl  ?[+N]
    [+xtns]

'John tries to speak Japanese.'
No grammatical sentence can be constructed if we posit a
Corresponding [-cmpl] predicate for tsutome-ru. Namely,
there is no [-xtns] noun which can fit in the slot of the
following pattern: \textit{NP ga ... ni tsutome-ta}. Similarly,
one of the [+xtns] nouns can cooccur with hashir-u 'run',
suggesting that the verb cannot occur as a [+cmpl]. Thus,
[-xtns, -cmpl] predicates, such as medats-u\textsubscript{2} in (10), do
not form a completion construction and are outside the
scope of this dissertation. Note that the terminal node of
the branch, [-xtns, -cmpl] in the tree (7) is marked with *
for this reason.

[+prps] \textit{vs.} [-prps]

[+cmpl] predicates can be further subcategorized into
two types; propositional predicates ([+prps]) and
non-propositional predicates ([+prps]). Propositional
predicates refer to those which take a [+xtns, +PAT]
complementizer noun. In other words, a complement sentence is construed as a [+PAT] constituent in a sentence headed by the propositional predicate. Examples of [+prps] and [-prps] follow:

(13) [kabin ga ware-ta] no ga John ni wakat-ta.
    [vase broken-PST] no ga John find=out-PST
    +prdc +N +N +prdc
    Nom Lcv +prps
    PAT LOC +cmpl
    +xtns ?[+N]
    -cncp ?[+PAT]
    ?[+LOC]

'John found out that the vase got broken.'

    run=away-PST no ni notice-PST
    +N +N -prdc
    Nom Lcv -prps
    PAT LOC +cmpl
    +xtns ?[+N]
    -cncp ?[+xtns]
    ?[+PAT]

'John noticed Mary running away.'

[+bstr] vs. [-bstr]

Propositional predicates can be further classified into abstract predicates ([+bstr]) and non-abstract predicates ([−bstr]). An abstract predicate is one which takes the complementizer noun, koto ([+N, +xtns, +cncp]) as its sister whereas non-abstract predicates are those which

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take a complementizer noun, no ([+N, +xtns, -cncp]) as a dependent sister (at least in this major category, although in the major category C, for instance, there are two candidates for [-bstr]; those which take no and those which take tokoro.) Examples follow:

(15) [John ga sore o yat-ta] koto ga hanmeishi-ta.\(^9\)
Nom that Acc do-PST be=proven-PST

\[
\begin{array}{ll}
+\text{N} & +\text{prdc} \\
+\text{xtns} & +\text{bstr} \\
+\text{cncp} & ?[+\text{N} \\
 & [+\text{xtns} \\
 & [+\text{cncp}]
\end{array}
\]

'It was proven that John did that.'

(16) [Asoko ni John ga i-ru] no ga medats-u.
there John exist-PRS conspicuous

\[
\begin{array}{ll}
+\text{N} & +\text{prdc} \\
+\text{xtns} & -\text{bstr} \\
-\text{cncp} & ?[+\text{N} \\
 & [+\text{xtns} \\
 & [-\text{cncp}]
\end{array}
\]

'It is conspicuous that John is there.'

[+mprs] vs. [-mprs]

[+xtns] predicates are classified into impersonal predicates ([+mprs]) and personal predicates ([-mprs]). Impersonal predicates ([+mprs, [-Nom]]) refer to those which do not take grammatical subjects, as shown in (17), whereas personal predicates may take grammatical subjects, as in (18):
(17) [John ga nige-ta] rashī-i.
run=away-PST seem-PRS
+prdc
+mprs
- [+Nom]

'It seems that John ran away.'

(18) John ga [tabe-te] i-ru.
eat exist-PRS
+N +prdc
Nom -mprs
PAT ? [+Nom]

'John is eating.'


Both impersonal and personal predicates are further subcategorized into subtypes: ? [+P, +prdc] identifies those which take a postposition, to [+P, +xtns]) as the head of a dependent sister as shown in (19), while ? [-P, +prdc] marks those which take a sentential complement without a postposition, as in (20):
(19)

\[
\text{\small \begin{array}{c}
\text{John} \quad \text{do-PST} \quad \text{+prdc} \\
\text{\quad yat-ta} \quad \text{+P} \quad \text{+xtns} \\
\text{\quad to} \quad \text{?} \quad [+\text{prdc}] \\
\text{\quad kagir-ana-i}^{10} \quad \text{limit-NEG-PRS} \\
\end{array}
\]

'It is not always the case that John did that.'

(20) [John ga nige-ta] rashi-i.

\[
\text{\small \begin{array}{c}
\text{run=away-PST} \quad \text{seem-PRS} \\
\text{\quad +prdc} \quad \text{+prdc} \\
\text{\quad -P} \quad ?[-P] \quad [+\text{prdc}] \\
\text{\quad [+Nom]} \\
\end{array}
\]

'It seems that John ran away.'

Let me now present examples of each class of the complement-taking predicates found in the major category A below:
A1 predicate:

(21) [Asoko ni John ga i-ru] no ga medats-u.
there exist-PRS no exist-PRS conspicuous-PRS
+N +prdc
Nom -trns
PAT -lctn
+xtns -crsp
-cnscp -mode
-xtns +cmpl +prps -bstr -tmng
? [+N ]
   [+xtns]
   [-cnscp]

'It is conspicuous that John is there.'

A2 predicate:

(22) [John ga sore o yat-ta] koto ga hanmeishi-ta.
Nom that Acc do=PST be=proven=PST
+N +prdc
Nom -trns
PAT -lctn
+xtns -crsp
+cnscp -mode
-xtns +cmpl +prps +bstr
? [+N ]
   [+xtns]
   [+cnscp]

'it was proven that John did that.'
A3 predicate:

(23) John ga [tabe-te] i-ru.
    eat    exist-PRS
    +N     +prdc  +prdc
    Nom    +V      -trns
    PAT    -p11    -lctn
    -root  -crsp
    +xtns  -mprs
    ?[-P 11
    [+prdc]
    ?[-root]
    ?[+PAT]

'John is eating.'

A4 predicate:

    run=away-PST  say-PST
    +N     +prdc  +P  +prdc
    Nom    +V  +xtns  +xtns  -trns
    PAT    +root +xtns  -lctn
    -P  --------- -crsp
            +P
            +prdc
    ?[+P  +prdc
    ?[+prdc]
    ?[+root]
    ?[+PAT]

'John said that Mary ran away.'
A5 predicates:

(25) [John ga baka] da.
    stupid
    +prdc  +cplr
    +N     +prdc
    -P     -trns
    -lctn  -crsp
    +mode  +xtns
    +mprs
    ?[-P]
    [+prdc]
    -[+Nom]
    'John is stupid.'

(26) [John ga nige-ta] rash-i.
    run=away-PST seem-PRS
    +prdc  +djct
    +V     +prdc
    +P     -trns
    +lctn  -crsp
    -crsp  -mode
    +xtns  +mprs
    ?[-P]
    [+prdc]
    -[+Nom]
    ?[+root]
    'It seems that John ran away.'
(27) [John ga nige-ta] yoo da.
run=away-PST appearance COP

+prdc +N
+V +prdc
-P -trns
+root -lctn
-crsp
-mode
+xtns
+mprs
?

'It appears that John ran away.'

A6 predicate:

(28) [John ga sore o yat-ta] to kagir-ana-i.
that do-PST not=limited

+prdc +P +prdc
+V +xtns -trns
-P -lctn
+root -crsp

'It is not always the case that John did that.'
(29) Subcategorization of the major category B

```
+prdc
-trns
-lctn
-crsp
+mode
```

---

```
-styl   +styl
  |     |
  *     B1
```

[+styl] vs. [-styl]

[+mode] predicates are further subcategorized into style predicates ([+styl]), which take a complementizer noun, yoo 'way, manner', and non-command predicates ([−styl]), which do not take yoo. Non-style predicates are not complement-taking predicates, hence * is entered at the node. Examples of [+styl] and [-styl] predicates follow:

    Japanese speak-PRS try-PST

`John tried to speak Japanese.'
John painted the house with paint.

There is only one class of complement-taking predicates under the major category B as follows:

B1 predicate:

`John tried to speak Japanese.'
Subcategorization of the major category \(<C>\)
The distinction between a timing predicate ([+tmng]) and a non-timing predicate ([−tmng]) is based on the existence of a complementizer noun tokoro ([+N, +xtns, +stnl]), which means 'place, situation, timing'. Thus, the predicates which take tokoro are classified as [+tmng].

Examples follow:

run-away-PRS come=across-PST

John came across Mary (at the time of her) running away.'

run-away-PST notice-PST

John noticed Mary running away.'

Examples of each class found in the major category C follow:
C1 predicate:

      run=away-PST notice-PST

] +N +N +prdc
 Nom Lcv +trns LOC +lctn
 PAT +xtns -crsp -cncp
 -cncl -mode -xtns
 +cncl -tmng +cmpl
 -prps -bstr
 -tmng
 ?[+N
 +xtns
 [-cncl

 'John noticed Mary running away.'

C2 predicate:

      run=away-PRS come=across-PST

] +N +N +prdc
 Nom Lcv +trns LOC +lctn
 PAT +xtns -crsp +stnl
 -cncl -mode -xtns
 +cncl -tmng +cmpl
 -prps -bstr
 +tmng
 ?[+N
 +xtns
 [+stnl

 'John came across Mary (at the time of her) running away.'
C3 predicate:

(38) John ga [Mary ga nige-ta] koto ni kizui-ta.
     Nom run=away-PST notice-PST

'John noticed that Mary ran away.'

C4 predicate:

(39) [kabin ga ware-ta] no ga John ni wakat-ta.
    vase broken-PST find=out-PST

'John found out that the vase got broken.'
C5 predicate:

(40) [Nihon ni it-ta] koto ga John ni ar-u.
Japan to go-PST John ni have-PRS

'John has the experience of having gone to Japan.'

C6 predicate:

(41) John ga Mary ni [shukudai o shi-te] morat-ta.
homework do receive=favour

'John received a favour from Mary that she did homework for him.'
C7 predicate:

(42) John ga Mary ni [Taroo ga ku-ru] to it-ta2. come-PRS say-PST
                      +N     +N                   +prdc    +P    +prdc
                            +V    +xtns    -trns
                            -P    +lctn    -crsp
                            +root    -mode
                                    +xtns    -mprs
                                    +prdc    ?[+P +prdc]
                                    ?[+root]
                                    ?[+PAT]
                                    ?[+LOC]

'John said to Mary that Taro is coming.'

Let me note here that the case relation assigned to Mary is Locus, unlike the analysis made in Unetani et al. (1987:17) where the same NP was assigned the Correspondent case relation. A piece of evidence to support this revision is found in the following example, which is exactly the same as the above example except for the fact that an inner Correspondent nominal is added to it:

(43) John ga Tom ni Mary ni [Taroo ga ku-ru] to iw-ase-ta. come-PRS say-CAUS-PST
          +Nom    +crsp    +lctn
          +PAT    +COR    +LOC

'John made Tom say to Mary that Taro is coming.'

The one per Sent constraint imposed by the lexicase framework entails that the case relation of Mary cannot be
Correspondent since there is another Correspondent (Tom in the example) in the same clause.

C8 predicate:

(44) John ni [Mary ga sore o yat-ta] to kikoe-ta.that do-PST sound-PST

'It sounded to John as if Mary had done that.'

(45) Subcategorization of the major category D

Since all the features have been explained earlier, I will simply present example sentences for the rest of the predicate classes.
D1 predicate:

run=away-PRS request-PST

'John asked Mary to run away.'

D2 predicate:

stand-PST appear-PST

'It appeared to John that Mary stood up.'
(48) Subcategorization of the major category <E>
El predicate:

(49) John ga [Mary ga nige-ru] no o tsukamae-ta₁.
    run-away-PRS catch-PST

    ₊N  ₊N  ₊prdc
    Nom  Acc  +trns
    PAT  -lctn
    +xtns  -crsp
    -cncp

'+John caught Mary running away.'

(50) John ga [taba-ru] no ga suki₁ da.
    eat-PRS  like COP

    ₊N  ₊N  ₊P  ₊prdc  ₊prdc
    Nom  Acc  +Acc  +trns  +xtns
    PAT  -lctn
    +xtns  -crsp
    -cncp

'+John likes to eat.'

The second ga in as example (50) and also in (55) below are analyzed as accusative, hence the predicates are
transitive. In Starosta and Nomura (1984:67-68), both ga in such examples were analysed as nominative. However, this results in the loss of two universal generalizations: (1) a clause should not have two subjects, and (2) the direct object of a transitive clause in an accusative language should be accusative. The cost of a homophonous-ga analysis is an extra homophonous postposition, ga₂, in one language rather than the loss of two universal generalizations for all languages. In addition to this main motivation for the revised analysis, we find the following phenomena to support our position:

a) When the complement sentence is replaced with an NP as in (51), the second ga is interchangeable with o, suggesting that native speakers perceive the NP to be an object of the verb.

(51) John ga Mary ga/o suki da.

Nom Acc like COP

'John likes Mary.'

Although this does not happen to (50), the fact that the predicate involved is homophonous and semantically identical is suggestive.
b) When the complement sentence is replaced with an NP and suki is replaced with suk-u, the verbal counterpart of suki, passivisation becomes possible, as follows:

(52) Mary ga John ni suk-are-te i-ru.
   Nom    Lcv like-PSV-GER exist-PRS
   'Mary is liked by John.'

Although the predicate of (52) is a verb derived from suki rather than suki itself, and although there is no direct passive counterpart of (50), the fact that the predicates involved have a common root and are related by derivation is suggestive.

The double ga construction is of course an old problem in Japanese syntax, and treating the second ga actant of the construction as a direct object is nothing new. Kuno (1973:79-95) has also posited this ga to be an object marker with transitive stative verbals, including adjectives and nominal adjectives in his terms.
E2 predicate:

run=away-PRS catch-PST

\[\begin{align*}
\text{Nom} & +N \\
\text{AGT} & +prdc \\
\text{Acc} & +trns \\
\text{PAT} & -lctn \\
& +xtns \\
& +stnl \\
\text{tmng} & -crsp \\
\text{mode} & -xtns \\
\text{prps} & +cmpl \\
\text{bstr} & +prps \\
? [+N] & +xtns \\
? [+stnl] & +stnl \\
? [+AGT] & +AGT \\
\end{align*}\]

'John caught Mary (at the time of her) running away.'

Note that (49) and (53) illustrate a semantic contrast between [-tmng] predicate and [+tmng] predicate. The interpretation of the [+tmng] example, (53), is ambiguous with respect to whether John physically caught Mary or discovered her in the act of trying to sneak away. In contrast, the [-tmng] example, (49), can only mean 'John physically caught Mary'. The triune sign assumption of lexicase accounts for the fact here that such syntactic differences can correspond to semantic differences too.
E3 predicate:

(54) John ga [Mary ga nihon ni it-ta] koto o kateishi-ta.
    Japan  go-PST  hypothesize-PST

John hypothesized that Mary had gone to Japan.

    eat-PRS  like COP

John likes to eat.
E4 predicate:

(56) John ga Mary o [baka da] to omo-u.
stupid COP think-PRS

+prdc +P +prdc
Nom +V +xtns +trns
AGT -P -lctn
+cplr -crsp
-------- -mode
+P +xtns
+prdc -mprs
?

'John thinks Mary to be stupid.'

(57) Subcategorization of the major category F

+prdc +trns +lctn -crsp -mode
-xtns

-cmpl +cmp1

-prps +prps

-bstr +bstr

-tmng +tmng

* - F1 - F2

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F1 predicate:

(58) John ga Mary ni [nihon ni ik-u] no o meiji-ta₁. Japan go-PRS order-PST

John ordered Mary to go to Japan.

F2 predicate:

(59) John ga Mary ni [nihon ni ik-u] koto o meiji-ta₂. Japan go-PRS order-PST

John ordered Mary to go to Japan.
Note that examples (58) and (59) above provide a clear contrast between [+bstr] and [-bstr] predicates. The [-bstr] example, (58), gives a nuance of immediacy compared to the [+bstr] example, (59). The triune sign assumption is confirmed here again with these examples.

3.4 The syntactic rules

The organization of a lexicase grammar can be characterized in terms of the flow chart shown on the following page. The rest of this Chapter presents lexical entries and all the rules required to reach the stage of simple syntactic representation. As seen in the flow chart, subcategorization rules apply to the output of redundancy rules. In the presentation to follow, however, subcategorization rules are presented first as I think that the readers who are not familiar with the framework will find it easier to understand the rules this way.
Figure 3.1 Lexicase flow chart

Lexical entries
  ↓
Derivation rules (DR's)
  ↓
Redundancy rules (RR's)
  ↓
Subcategorization rules (SRs)
  ↓
Morphological rules (MRs)
  ↓
Inflectional redundancy rules (IRR's)
  ↓
Fully specified lexical items
  ↓
Simple syntactic representation: fully specified phrases, (including sentences)
  ↓
Linking rules (LRs) Chaining rules (CRs)
  ↓
Augmented syntactic representation
3.4.1 Lexical entries

Lexical entries represent the starting point in the application of lexical rules. They must contain all the unpredictable features which cannot be supplied by redundancy rules later. The class identification is indicated for predicates so that the reader can refer to the examples which have been presented in the explanation of the respective predicate class earlier in 3.3.

A1 medats-u 'conspicuous'
[-trns,-lctn,-crsp,-mode,-xtns,+prps,-tmng]

A2 hanmeisu-ru 'be proven'
[-trns,-lctn,-crsp,-mode,-xtns,+prps,+bstr]

A3 i-ru 'be (...ing)'
[-trns,-lctn,-crsp,-mode,+xtns,-mprs,?[-P,+prdc],-djct,-cplr, ?[-root]]

A4 i-ul 'say'
[-trns,-lctn,-crsp,-mode,+xtns,-mprs,?[-P,+prdc],-djct,-cplr]

A5 da 'be (copula)'
[+cplr]

A5 rashi-i 'seem'
[+djct,-trns,-lctn,-crsp,-mode,+xtns,+mprs, ?[-P,+prdc],[+root]]

A5 yoo 'appearance, manner'
[+N,+prdc,-trns,-lctn,-crsp,-mode,+xtns,+mprs, ?[-P,+prdc],[+root]]

A6 kagir-ana-i 'not limited'
[+djct,-trns,-lctn,-crsp,-mode,+xtns,+mprs, ?[+P,+prdc]]

B1 tsutome-ru 'try'
[-trns,-lctn,-crsp,+styl]
C1 kizuk-u$_1$ `notice'
[-trns,+lctn,-crsp,-mode,-xtns,-prps,-tmng]

C2 dekuwas-u `come across'
[-trns,+lctn,-crsp,-mode,-xtns,-prps,+tmng]

C3 kizuk-u$_2$ `notice'
[-trns,+lctn,-crsp,-mode,-xtns,-prps,+bstr]

C4 wakar-u `find out'
[-trns,+lctn,-crsp,-mode,-xtns,+prps,-tmng]

C5 ar-u `have'
[-trns,+lctn,-crsp,-mode,-xtns,+prps,+bstr]

C6 mora-u `receive a favour of (...ing)'
[-trns,+lctn,-crsp,-mode,+xtns,-mprs,?[-P,+prdc],
-djct,-cplr,?[-root],+drcv]

C7 i-u$_2$ `say'
[-trns,+lctn,-crsp,-mode,+xtns,-mprs,?[-P,+prdc],
-djct,-cplr]

C8 kikoe-ru `sound'
[-trns,+lctn,-crsp,-mode,+xtns,+mprs,?[-P,+prdc],
-djct,-cplr]

D1 tanom-u `request'
[-trns,+lctn,-crsp,+styl,-mprs,+drcv]

D2 omoe-ru `appear, seem'
[-trns,+lctn,-crsp,+styl,+mprs]

E1 tsukamae-ru$_1$ `catch'
[+trns,-lctn,-crsp,-mode,-xtns,+prps,-tmng]

E1 suki, `like'
[+N,+djet,+trns,-lctn,-crsp,-mode,-xtns,+prps,-tmng]

E2 tsukamae-ru$_2$ `catch'
[+trns,-lctn,-crsp,-mode,-xtns,+prps,+tmng]

E3 kateisu-ru `hypothesize'
[+trns,-lctn,-crsp,-mode,-xtns,+prps,+bstr]

E3 suki$_2$ `like'
[+N,+djet,+trns,-lctn,-crsp,-mode,-xtns,+prps,+bstr]
E4 omo-u 'think'
   [+trns,-lctn,-crsp,-mode,+xtns,-mprs,?[+P,+prdc],
   -djc,-cpln]

F1 meiji-ru₁ 'order'
   [+trns,+lctn,-crsp,-mode,-xtns,+prps,-tmng,+drcv]

F2 meiji-ru₂ 'order'
   [+trns,+lctn,-crsp,-mode,-xtns,+prps,+bstr,+drcv]

Complementizer nouns:

   yoo [+mnnr]

   tokoro [+stnl]

   koto [+cncp]

   no [-cncp]

Complementizer postposition (see 1.5.3.5 for the localistic
features of other postpositions):

   to  [+P,+xtns]

3.4.2 Subcategorization rules (SRs)

Subcategorization rules characterize choices that are available within a particular category. These rules are of two subtypes, inflectional and lexical. Inflectional subcategorization rules state inflectional feature choices available within a particular paradigm, e.g., SR-15 below. Lexical subcategorization rules do not allow an actual
choice, but rather characterize binary subcategories of a lexical category, e.g., SR-1 below. Note that lexical SRs cannot add predictable features nor alter preexisting features.

SR-1 [+]V --> [±djct] (Unetani et al.'s SR-1)
; All verbs are either adjectival or non-adjectival.

SR-2 [-djct] --> [+cplr] (Unetani et al.'s SR-2)
; Non-adjectival verbs are either copular or not.

SR-3 [+]N --> [±djct]
; Nouns are either adjectival or non-adjectival. An example of adjectival nouns is shizuka 'quiet'.

SR-4 [+]N [±djct] --> [+prdc]
; Non-adjectival nouns are either predicative or non-predicative. Predicative nouns are those which function as a predicate of a complement sentence subcategorizing a higher copular verb. This feature is inflectional for nouns, but not for verbs, viz., it is chosen freely for nouns, but can only be [+prdc] for verbs.

SR-5 [+]V --> [±trns] [±lctn] [±crsp] [±mode]
; Verbs are transitive or intransitive, locational or non-locational, correspondent or non-correspondent, and mode or non-mode.

SR-6 [-mode] --> [±xtns]
; Non-mode predicates are extension or non-extension.
SR-7 [-xtns] --> [±cmpl]
;Non-extension predicates are complementizable or non-complementizable.

SR-8 [+xtns] --> [+mprs
    ?[±P
    [+prdc]]
;Extension predicates are impersonal or personal, and take a predicate as a sister with or without a postposition.

SR-9 [+cmpl] --> [+prps]
;Complementizable predicates are propositional or non-propositional.

SR-10 [+prps] --> [+bstr]
;Propositional predicates are abstract or non-abstract.

SR-11 [+lctn] --> [+bstr]
    -mode
    [-prps]
;Locational, non-mode, non-propositional predicates (the C category predicates according to 3.3) are abstract or non-abstract.

SR-12 [-bstr] --> [+tmng]
;Non-abstract predicates are timing or non-timing.

SR-13 [+mode] --> [+styl]
;Mode predicates are style or non-style.
SR-14 [+locn] --> [+mprs]
        [+styl]
    ;Locational, style predicates are impersonal or personal.

SR-15 [+V] --> [+root] (Unetani et al.'s SR-12)

    ;Verbs are root or non-root. Root verbs refer to those which may occur as the lexical head of the highest node in a free sentence, in contrast to non-root verbs which cannot occur in that environment.

SR-16 [+P] --> [+xtns]

    ;Postpositions are either extension or non-extension. An extension postposition takes a predicate as a sister. The example is to, the complementizer postposition.

SR-17 [+N] --> [+xtns]

    ;Nouns are also extension or non-extension. Extension nouns refer to those which are subcategorized to take a predicate as a sister. An example is no, a complementizer noun.

SR-18 [+N] --> [+prdc]
        [+xtns]
    ;Extension nouns are predicative or non-predicative.

SR-19 [+N] --> [+mnnr]
        [+xtns]
    ;Extension nouns are manner or non-manner. The Manner extension noun is yoo.

SR-20 [-mnnr] --> [+stnl]

    ;Non-manner extension nouns are situational or non-situational. The situational extension noun is tokoro.
SR-21 [-stnl] --> [+cncp]

;Non-situational extension nouns are conceptual or non-conceptual. The conceptual extension noun is koto, and the non-conceptual noun is no.

SR-22 [?[-P +prdc]] --> [? [+root]]

;(Extension) predicates which are subcategorized to take a predicate without a postposition as a sister by SR-8 take either a root or a non-root dependent verb (which is to be identified as the predicate sister in the matrix by a LR later).

3.4.3 Redundancy rules (RRs)

Redundancy rules add features which are predictable from either inherent features in the matrix of a lexical item, or predictable from other features added by earlier RRs. Like subcategorization rules, redundancy rules do not change preexisting features.

RR-1 [+cplr] --> [+V]

- trns
- lctn
- crsp
- mode
+ xtns
+ mprs
[?[-P +prdc]]

;Copular verbs are intransitive, non-locational, non-correspondent, non-mode, extension, personal verbs, which are subcategorized to take a predicate sister without a complementizer postposition.
RR-2  $[+V] \rightarrow [+\text{prdc}]$
;
Verbs (which include adjectival verbs $[+V,+\text{djct}]$ and the copula $[+\text{cpl}r]$) are predicative.

RR-3  $[+N$  \\
$\quad [+\text{djct}]$  \\
$\rightarrow [+\text{prdc}]$
;
Adjectival nouns are predicative.

RR-4  $[+\text{djct}] \rightarrow [+\text{sttv}]$
;
Adjectival verbs and nouns are stative.

RR-5  $[\pm\text{trns}] \rightarrow [+V]$  \\
;Transitive and intransitive words are verbs.

RR-6  $[\pm\text{prps}] \rightarrow [+\text{cmpl}]$
;
Propositional and non-propositional predicates are complementizable.

RR-7  $[\pm\text{tmng}] \rightarrow [-\text{bstr}]$
;
timing and non-timing predicates are non-abstract.

RR-8  $[+\text{styl}] \rightarrow [+\text{mode}]$
;
Style predicates are mode predicates.

RR-9$^{15}$  $[+\text{prdc}] \rightarrow [\pmPAT [\pm\text{Nom} [\pm\text{actr}}$
;
All predicates have a Patient in their case frames. They also take a nominative constituent and an actor as a sister.
RR-10 [+trns] --> [?[+AGT]] (Unetani et al.'s RR-6)
; All transitive predicates have an Agent in their case frames.

RR-11 [+lctn] --> [?[+LOC]] (Unetani et al.'s RR-7)
; All location predicates have a Locus in their case frames.

RR-12 [+crsp] --> [?[+COR]] (Unetani et al.'s RR-9)
; All correspondent predicates have a Correspondent in their case frames.

RR-13 [+mode] --> [?[+MNS]] (Unetani et al.'s RR-8 with my replacement of the term 'material' by 'mode')
; All mode predicates have a Means in their case frames.

RR-14 [+mprs] --> [-[+Nom]]
; Impersonal predicates cannot have a nominative dependent sister.

RR-15 [+trns] --> [?[+Nom]]
; Transitive predicates take an accusative ([+Nom]) dependent sister.

RR-16 [+xtns] --> [?[+prdc]]
; Extension predicates, postpositions, and nouns take a predicate dependent sister.

RR-17 [+cmlpl] --> [?[+N
[+xtns
[-prdc]]]
; Complementizable predicates take a non-predicative extension noun as a dependent sister.
RR-18 [+cmpl] --> [? [+root]]

;Complementizable predicates take a root verb as a dependent sister.

RR-19 [+xtns [+p] [+prdc]] --> [? [+root]]

;Extension predicates which are subcategorized to take a dependent predicate sister with a post-position take a root verb as a dependent sister (This is to be identified as the sister predicate in the [+xtns] matrix by a LR later).

RR-20 [+styl] --> [? [+N] [+xtns] [+mnnr]]

;Style predicates take a manner extension noun, viz., yoo as a sister.

RR-21 [+bstr] --> [? [+N] [+xtns] [+cncp]]

;Abstract predicates require a conceptual extension noun, viz., koto, as a dependent sister.

RR-22 [+tmng] --> [? [+N] [+xtns] [+stnl]]

;Timing predicates require a situational extension noun, viz., tokoro, as a dependent sister.

RR-23 [-bstr] --> [? [+N] [+xtns] [-cncp]]

;Non-abstract non-timing predicates require a non-conceptual extension noun, viz., no, as a dependent sister.
RR-24 \([+\text{cplr}] \rightarrow [?[-N \text{+prdc}]]\]

;A copular verb takes a predicative noun (including a predicative adjectival noun) as a dependent sister. 17

RR-25 \([+\text{cplr}] \rightarrow [\neg[-+V \text{-djct}]]\]

;A copular verb may not take a non-adjectival verb ([+V, -djct]) as a dependent sister.

RR-26 \([+\text{trns} \rightarrow ?[+\text{cplr}]]\)

\([?[-P \text{+prdc}]]\]

;A transitive verb which is subcategorized to take an exocentric construction composed of a postposition and a complement predicate as a dependent sister requires the predicate to be a copular verb.

RR-27 \([+V \rightarrow [?[-\text{root}]]\)

\([?[-\text{prdc} \text{-djct}]]\]

;Verbs which take an exocentric construction composed of a postposition and a predicate as a dependent sister imply that the predicate must be [+root], while verbs which take a predicate sister without a postposition imply that the predicate must be [-root].

RR-28 \([+\text{trns} \rightarrow [?[-\text{Acc} \text{+sorc}]]\]

;Transitive stative predicates (e.g., suki) take an Accusative source postposition, viz., ga₂ as a dependent sister.
An extension postposition requires a root verb as its dependent sister.

Extension nouns (viz., complementizer nouns) require a root verb as a dependent sister.

Major categories are negatively marked for all the other major categories.

Morphological rules are to indicate phonological consequences of the application of inflectional subcategorization rules.

Non-root verbs take an inflectional suffix, _-te_.

The output of the rules presented above is the simple syntactic representation, i.e., a syntactic tree in which the terminal nodes are fully specified lexical entries (Pagotto and Starosta 1986:8ff). The trees below are the
simple syntactic representations of three types of complementation structures identified in Chapter 2: Type A, Type B1, and Type B2. The representations are in fact incomplete because only the matrices of the complement-taking predicates and part of the relevant complementizer noun, postposition, and embedded predicates have been specified.

Type A structure: The matrix predicate is subcategorized to take a complementizer noun, which is the head of a complement sentence.

(60)

\[ \text{John} \quad \text{+P} \quad \text{ni} \quad \text{no} \quad \text{+P} \]

\[ \text{+N} \quad \text{nige-ta} \quad \text{+N} \quad \text{run=away-PST} \quad \text{+xtns} \quad \text{+cncp} \]

\[ \text{+Nom} \quad \text{actr} \quad \text{+V} \quad \text{+prdc} \quad ?[+root] \quad ?[+prdc] \]

\[ \text{PAT} \quad \text{ga} \quad \text{+V} \quad \text{LOC} \]

\[ \text{Mary} \quad \text{+root} \quad ?[+prdc] \]

\[ \text{kizui-ta} \quad \text{notice-PST} \]

\[ +V \quad -trns \quad +lctn \quad -crsp \quad -mode \quad -xtns \quad +cmlp \quad -prps \quad -bstr \quad -tmng \quad +prdc \quad ?[+P\text{AT}] \quad ?[+Nom] \quad ?[+actr] \quad ?[+LOC] \quad ?[+N] \quad \text{+xtns} \quad [-cncp] \]

'John noticed Mary running away.'
Type B1 structure: The matrix predicate is subcategorized to take a complement sentence which forms an exocentric construction with a complementizer postposition, to.

(61)

\[ \text{John} +P \]
\[ +N \]
\[ +Nom \]
\[ \text{actr} \]
\[ \text{PAT} \]
\[ \text{Mary} \]
\[ \text{ga} \]
\[ \text{to} \]
\[ \text{nige-ta} +P \]
\[ \text{run-away-PST} +xtns \]
\[ \text{+V} \]
\[ \text{-trns} \]
\[ \text{-lctn} \]
\[ \text{-crsp} \]
\[ +xtns \]
\[ \text{-mode} \]
\[ \text{-mprs} \]
\[ ?^+P \]
\[ \text{-djct} \]
\[ \text{-cplr} \]
\[ +prdc \]
\[ +root \]
\[ +X \]

'John said that Mary ran away.'
Type B2 Structure: The matrix predicate is subcategorized to take a complement sentence without a complementizer postposition.

(62)

`John is eating.'
NOTES

1 With the exceptions of ga2 which functions to mark Patient in transitive constructions with stative predicates as follows:

(1) John ga1 [sushi o tabe-ru] no ga2 suki da.
    eat-PRS     like
    AGT Nom    PAT Acc +trns
    Nom  Acc    +sttv

'John likes to eat sushi.'

Incidentally, note that in an intransitive clause q may mark the existence of the Locus case relation as follows:

(2) otiba no nakao iezio o isog-u.
    fallen-leaves inside road-home hurry-PRS
    Acc  Acc  Acc  Acc
    LOC  LOC  LOC

'(I) hurry home in fallen-leaves.'

This example is taken from Haig (1981), which has observed that such q-marked NPs (so-called 'traversal objects' which are used with motion verbs) are not object (Patient of a transitive clause in LXC) but adverbial PPs.

2 Unetani et al. uses the feature [+mtrl] to refer to the predicates which take a Means actant in the case frame, e.g., it-ta in (1). In the course of examining complementation constructions, however, I have noticed that there is an example in which the feature name 'material' is not very suitable. Observe the example (2) below in which the predicate tsutome-ta is subcategorized to take a Means actant yoo (see Note 13 of this Chapter for the justification for analyzing yoo as Means). Therefore, I have changed the feature name 'material' to 'mode' [+mode]), which covers two types of predicates; one which takes a de-marked actant as in (1) and another which takes a ni-marked actant as in (2).

(1) John ga kuruma de it-ta.
    Nom car Ins go-PST
    MNS

'John went by car.'
(2) John ga [nihongo o hanas-u] yoo ni tsutome-ta.
Nom Japanese Acc speak-PRS manner Lcv try-PST
MNS
'John tried to speak Japanese.'

Derived forms of complement-taking predicates can appear under [+crsp] nodes as well, as in for instance:

(1) (Unetani et al.'s 15)

John ga Mary ni [Tom ga baka da to] iw-ase-ta.
Nom fool COP say-CAUS-PST
Nom crsp -trns
PAT COR -lctn +crsp
+crsp +caus

'John made Mary say that Tom is a fool.'

where the causative verb iw-ase-ta is derived from the complement-taking verb i-u 'say', with the complement-taking properties carrying over in derivation. However, I will not be discussing them further because the properties are regular and predictable by general rule, and so they do not add anything new to the analysis.

4 A question mark ? is introduced here for the first time in a lexicase dissertation. This is not only to replace an implicational horseshoe sign, which has been used to indicate contextual features involving case relations and syntactically conditioned rules of interpretation in the past few years of lexicase analyses (Starosta 1988:30-31, Pagotto 1987), but also to indicate all the other contextual features which have been indicated by + so far. The initial motivation for this revision is as follows: (1) The marking by ? is intuitively more enlightening than ⊃ or + since it indicates a question that must be answered in order to achieve completeness and well-formedness, and (2) it brings lexicase into closer conformity with related systems such as the Mimo machine translation system (Dorrepaal and van Noord 1988). The implicational horseshoe sign will now be reserved to indicate semantic selectional restrictions only.

5 Unetani et al. (1987) marks complementizer nouns with the feature, [+N, +cpl]. This has been changed to [+N, +xtns] here because the same distinction of [+/-xtns]
is found in [+prdc], hence a greater generalization can be captured this way.

6 Unetani et al. (1987:39) defines this classification by the features [+bstr]. I have changed the terms to [+cmpl] because I am using [+bstr] features to refer to the difference between the predicates which take a complementizer noun, koto, and those which do not.

7 This criterion is stated in Starosta (1988a:98) as follows:

...two distributional patterns, A and B, will count as distinct if we can find a root W which occurs in A but not in B, and another root Y which occurs in B but not A. In this situation, a root Z which occurs in both patterns A and B will be analyzed into two distinct but derivationally related lexical entries, Z1 and Z2.

8 In these examples, case form labels such as Nom and Lcv are abbreviations for one or more localistic case-marking features. Case relation labels such as LOC and PAT are shown marked on the NPs for the convenience of the reader. In the latest notation of LXC, however, they are instead marked in the matrix predicate itself by linking. (See Chapter 4 for the mechanism of linking rules.)

9 hanmeisu-ru is analysed as one word. See 2.2.5 for the discussion of whether the combination of a noun (mostly Sino-Japanese words) and suru forms a complementation construction or not.

10 The affirmative counterpart of this verb, kagir-u 'limit' is not subcategorized to take a complement sentence. This difference in the environment suggests that kagir-ana-i and kagir-u are two distinct lexical items. Since the negation morpheme, (a)na-i is the factor which makes this distinction, it must be viewed as a derivational suffix rather than an inflectional suffix based on the principle that derivation creates new lexical entries whereas inflection does not. Thus, this phenomenon provides a piece of evidence for treating negation in Japanese as derivation rather than inflection. Note that this conclusion is independently supported by the fact that negative verbs are morphologically in the [+djc] class as indicated by their present tense marking -i, which also means that they must have entered this class via lexical derivation rather than inflection.
11 The dotted line below the features of the embedded predicate, yat-ta and P, to indicates that the features given below the line form a virtual matrix—the combined matrix of the features of all the co-heads of the exocentric construction, which jointly subcategorize the regent (Starosta 1988:58-59). Note, however, that features of the lexical head of an exocentric construction (e.g., to [+P] here) take precedence over features of phrasal heads of constructions (e.g., [-P] on yat-ta here). The presence of the negative feature, [-P] is ensured by RR-31 (to appear in 3.4.2), which ensures that major categories are marked negatively for all other major categories.

12 Here is another place where a negative feature, [-P] is required in order to show how the embedded predicate satisfies the ?[-P] environment specified under the matrix predicate. As stated in note 7 earlier, this negative feature is ensured by RR-31.

13 The postposition ni here indicates the case relation of yoo to be [+MNS] rather than [+LOC] or [+COR]. A piece of evidence for this analysis comes from a sentence which can have three ni marked NPs as follows:

(1) John ga Tom ni Mary ni [kae-ru] yoo ni iw-ase-ta.
    +COR   +LOC    return +MNS say-CAUS-PST
    'John made Tom tell Mary to return.'

Because of the one per Sent constraint of LXC, the case relation of yoo cannot be [+COR] or [+LOC], which exist in the clause as inner case relations already. Since yoo basically means 'manner', the conclusion that its CR is [+MNS] is plausible.

14 tokoro is PAT rather than LOC because the predicate, tsukamae-ta is a transitive verb by Hasegawa's question pull test criterion as introduced in 1.2.2.3 and requires a Patient actant as well as an Agent actant in the case frame. This requirement is satisfied if we consider tokoro to be a Patient in the above example. The fact that it is case marked by o is another piece of evidence to support this claim. Note, however, that an o-marked tokoro complement can be LOC, as shown in the following example in which the predicate is an intransitive verb. (The gloss may give an impression that it is a passive but there is no passive morpheme involved.)

237
(1) Mary ga [nige-ru] tokoro o tsukamat-ta.
    run=away-PRS LOC be=caught-PST

'Mary was caught when running away.'

15 Part of this rule is revised from Unetani et al.'s RR-5, [+V] --> [? [+PAT]], to include [+N, +prdc] (adjectival nouns and predicative nouns), which also take [+PAT].

16 This is another rule revised from Unetani et al.'s RR-10 which states [+xtns] --> [+[+V]] in order to include complements which are headed by [+N, +prdc] (adjectival nouns and predicate nouns).

17 As noted in 1.6, the scope of the present study is limited to the informal style of Japanese. Thus RR-24 applies only to the informal copula da. The rule needs to be revised if the formal copula desu is to be accounted for since it may take an adjectival verb on top of the usual predicative nouns.
4.1 Introduction

Lexical redundancy rules, subcategorization rules, inflectional redundancy rules, and the lexical matrixes of lexical items from which they have been extracted had been the sole sources of syntactic and semantic information in lexicase until Starosta and Pagotto (1985) began developing the theory in the areas of phrase-level anaphoric rules to describe sentence-internal coreference relations. The purpose of this chapter is to introduce phrase-level semantic interpretation rules—the formal mechanisms needed for interpreting structures such as those introduced in Chapter 3 for 'functional completeness or functional deviance' (Brame 1978:35), for formally specifying which constituent satisfies which contextual feature, and for identifying certain grammatically determined coreference relationships. These interpretation rules are linking rules (LR) and chaining rules (CR). Linking rules apply only to the head of a construction and its sisterhead, while chaining rules apply outside the phrase of which the word containing unindexed contextual features is a head.
4.2 Linking rules (LR)

Since around 1988, lexicase has been evolving a notation in which all positive contextual features are replaced with implicational features and linked by linking rules. It is a way of marking a tree for well-formedness. Any obligatory implicational feature which is not indexed at the end of the derivation marks the tree as ill-formed. This section presents linking rules relevant to our data and illustrates how they work. Some of the rules are universally applicable and follow Starosta (1989 Stuttgart seminar notes).¹

LR-1 (Starosta's LR-1)

\[ ??{\alpha F_1} \rightarrow [m{\alpha F_1}] / [\alpha F_1] \text{ [mindex]} \]

;Replace the ? of ??{\alpha F_1} with the index of an immediate dependent which matches \( F_1 \).

The following tree is the representation of the example (36) from Chapter 3 before linking rules are applied:
(1) ((36), C1 predicate introduced in Chapter 3)

\[
\text{John noticed Mary running away.}
\]

LR-1 applies to this tree, replacing ? of the contextual features under Ps ga and ni with the index numbers (1 and 4) of their immediate dependents (John and no). It also replaces ? of the verbal contextual features ?[+N,+xtns] and ?[-cncp] with the index number (4 here) of the verb's immediate dependent no, and it replaces ? of ?[+Nom] with the index number (1 here) of John, and of ?[+Lcv] with the index number (5 here) of ni. In the same manner, the rule
also replaces ? of ?[+prdc] and ?[+root] under no with the index number (3 here) of its immediate dependent, nigeta.
The arrows in the following tree indicate the contextual features which have been coindexed by LR-1:

(2) (36), C1 predicate introduced in Chapter 3)

'John noticed Mary running away.'
LR-35  (Starosta's LR-2a) Nom > < actr, Accusative languages

| ?[+actr] | --> [n[+actr]] | n[+Nom] |

; Nominative always marks actor in accusative languages.

This rule links ?[+actr] and l[+Nom] of the V by replacing ? of the former with l of the latter as follows:

(3) ((36), C1 predicate introduced in Chapter 3)

kizuita
noticed

John 2ndex +P
1ndex +Nom +N ?[+Nom] +Nom
Mary ga 3ndex +V +prdc +root +Acc

no 5ndex +P +Lcv
4ndex +P +Lcv
ran=away +N 4[+Acc]

+xtns -cncp -tng -root -pm
+prdc 3[+prdc]
+prdc 3[+root]

'John noticed Mary running away.'
It states that the actor of the verb *kizuita* is identical to the subject ([+Nom]) of the verb *kizuita*, that is, John.

LR-4 (Starosta's LR-7b)

PAT > < actor, intransitive clauses

```
[? [+PAT] ] --> [n [+PAT]]
[n [+actr] ]
 [-trns]
```

; A Patient in an intransitive clause is the actor.

This rule links ? [+PAT] and 1 [+actr] of the V by replacing ? of the former with 1 of the latter as follows:
(4) (((36), C1 predicate introduced in Chapter 3))

\[
\begin{array}{c}
\text{John} \quad \text{2ndex} \\
\quad +P \\
\quad +N \quad ?[+Nom] \\
\quad +Nom \\
\vdots
\end{array}
\quad \quad
\begin{array}{c}
\text{Mary} \\
\quad 3ndex \\
\quad +V \\
\quad +prdc \\
\quad +root \\
\vdots
\end{array}
\quad \quad
\begin{array}{c}
\text{kizuita} \\
\text{noticed} \\
\quad 6ndex \\
\quad +V \\
\quad -trns \\
\quad +lctn \\
\quad -crsp \\
\quad -mode \\
\quad -tmng \\
\quad +prdc \\
\quad +cmpl \\
\quad -bstr \\
\quad +cncp \\
\quad +xtns \\
\vdots
\end{array}
\]

'John noticed Mary running away.'

This identifies John as the Patient of kizuita.

LR-5 (Starosta's LR-12) CF on postpositions marks inner CF

\[
\begin{array}{c}
+V \\
? [+LOC] \\
n [+Lv] \\
\end{array}
\quad \rightarrow \quad \begin{array}{c}
nm [+LOC] \\
+P \\
n [+Lv] \\
\end{array}
\]

This rule links the implied ? [+LOC] of the V with the object (no here) of the P (ni here), which has the same index number (5 here) as the relevant contextual feature, i.e., 5 [+Lv]. The rule thus replaces ? of ? [+LOC] with the
index number of the noun object of the P, no (4 here) as follows:

(5) ((36), C1 predicate introduced in Chapter 3)

```
\begin{array}{ll}
\text{John} & \text{2ndex} \\
+P & \\
\text{nigeta} & \text{ran=away} \\
+\text{Nom} & \text{3ndex} \\
+\text{N} & +\text{xtns} \\
+\text{Nom} & +\text{root} \\
\text{Mary} & \\
\end{array}
```

This identifies Mary ga nigeta as the Locus of kizuita.

All the obligatory implicational features are now coin-dexed, indicating that the sentence is well-formed.

'John noticed Mary running away.'
Transitive clause

Let me next present an example of a transitive clause, using the tree for the sentence (54) from Chapter 3. The following is the output of LRs 1 and 3. The process of applying these rules is not detailed here since it is essentially the same as for an intransitive clause, which has been presented above.

(6) ((54) from Chapter 3, E3 predicate)

'John hypothesized that Mary had gone to Japan.'
LR-6 (Starosta's LR-5)

PAT > < Acc, transitive clauses, accusative languages

| ?[+PAT] | --> [n[+PAT]] ;[−Nom] refers to Accusative in a localistic analysis

+trns

Patients of transitive predicates are marked by the Accusative⁶ case form in accusative languages.

This rule replaces ? of the verbal contextual feature, ?[+PAT] with 4, the index number assigned to [+Acc] (the abbreviation for [−Nom, −1ctn]) as follows:

(7) ((54) from Chapter 3, E3 predicate)

`John hypothesized that Mary had gone to Japan.`
This rule thus identifies the Patient of kateishita, its 'direct object', as the NP headed by koto.

LR-7 (Starosta's LR-6 b.) AGT > < actor

\[? [+AGT] \rightarrow [n [+AGT]]\]

An Agent (which can only appear in a transitive clause) is always the actor. In accusative languages, in turn, the actor is always the Nominative, so an accusative language such as Japanese is one in which an Agent is always the subject.

This rule copies the index number 1 of 1 [+actr] to ? [+AGT] as follows:
(8) ((54) from Chapter 3, E3 predicate)

John hypothesized that Mary had gone to Japan.

This indexing identifies the Agent of kateishita as John. All the implicational features are thus coindexed, indicating the well-formedness of the sentence.

**Impersonal predicate**

Now let me next present an instance of an impersonal predicate and a linking rule required for its interpretation, using the tree for the sentence (26) from Chapter 3. The following is the output of LR 1:
"It seems that John ran away."

Remember that an impersonal predicate is one which does not allow an overt grammatical subject. Nevertheless, it is still a predicate, all predicates imply subjects, and the subject's ? must still be replaced by some index in order for the structure to be well-formed. This is accomplished by the following rule:

**LR-2 Impersonals**

\[ \text{[? [+Nom]]} \rightarrow \text{[0 [+Nom]]} \]

;Non-overt subjects of impersonal verbs are specified as ambient, indicated by a 0 index.

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This rule thus replace \(? of ?[+Nom] with 0 as follows:

(10) ((26) from Chapter 3, A5 predicate)

'It seems that John ran away.'

LR-3 and LR-4 now copy 0 of 0[+Nom] to ?[+actr] and ?[+PAT] respectively as follows:
(11) ((26) from Chapter 3, A5 predicate)

It seems that John ran away.

By this analysis, then, the implied Patient subject of the impersonal predicate, rashii is ambient; it has no referrent. Given that a Patient in a Lexicase grammar is the perceptual center of a predication, we are then saying that an impersonal predicate is one which has no perceptual center, which seems to be a reasonable semantic interpretation of ambient. All the implicational features in (11) are now replaced with index numbers, indicating that the sentence is well-formed.
I shall now present another example of an impersonal predicate in which the perceiver is not the subject of the sentence. The following is the output of LR-1 applied to (47) from Chapter 3:

(12) ((47) from Chapter 3, D2 predicate)

'It appeared to John that Mary stood up."

Since the complementizer noun yoo always takes the P ni and no other P, the following LR is required:
The manner complementizer noun *yoo* is the Accusative noun which forms an exocentric construction with the locative P, *ni*.

The manner complementizer noun is a Means.

LR-8 and LR-9 apply to the tree as follows:

(13) ((47) from Chapter 3, D2 predicate)

'It appeared to John that Mary stood up.'
LRs-2, 3, and 4 apply next.

(14) ((47) from Chapter 3, D2 predicate)

'It appeared to John that Mary stood up.'

LR-5 now links ?[+LOC] of the V and the object (John here) of the P (ni here), which has the same index number (2 here) as the relevant contextual feature, i.e., 2[+Lcv].

The rule thus replaces ? of ?[+LOC] with the index number of the linked noun, John (1 here) as follows:
"It appeared to John that Mary stood up."

Thus, the perceiver of an impersonal 'psych verb' by this analysis is not the subject but an inner Locus. This analysis, which applies to similar constructions in languages such as German (e.g., Mir ist kalt. 'To-me is cold.'), makes it possible to capture more generalizations in the area of case marking, since it is possible to say that the grammatical subject is always marked by the Nominative case, as it is not in Relational Grammar. All the implicational features in (15) are now replaced with index numbers, indicating that the sentence is well-formed.
4.3 Chaining rules (CR)

Many of the complement clauses in our data involve missing subjects as indicated by △ in the following examples. The △s are provided for convenience of reference; they do not form part of a well-formed Lexicase analysis.

(16) ((32) from Chapter 3, example of B1 predicate)

John ga [ △ nihongo o hanas-u] yoo ni
tsutome-ta.
try-PST
'John tried to speak Japanese.'

(17) ((58) from Chapter 3, example of F1 predicate)

John ga Mary ni [ △ nihon ni ik-u] no o
meiji-ta₁.
order-PST
'John ordered Mary to go to Japan.'

A clause containing a verb with an implied argument that remains unmatched or uninterpreted is considered to be 'functionally deviant' (Brame 1978:35, Pagotto 1985:34ff). This section presents chaining rules which assign interpretations to missing subjects, hence providing a way to examine whether a given clause is 'functionally sound'.
Examination of the data reveals that there are two types of predicates with respect to the coreference relation between a missing subject of a complement clause and a case relation of a nominal in the matrix clause as follows:

Type I: The missing subject of a complement clause is associated with the Patient of the matrix clause.

\[ \text{(18) John ga [\(\n\)-nihongo o hanas-u] yoo ni tsutome-ta.} \]

\[ \text{Japanese speak-PRS try-PST} \]

\[ \text{PAT} \]

\[ \hline \]

\[ \text{\'John tried to speak Japanese.\'} \]

This is the typical situation across languages, and was in fact the one which Pagotto accounted for with the first Lexicase chaining rule, her AIR-1 (1985:16).

Type II: The missing subject of a complement clause is associated with the Locus of the matrix clause.

\[ \text{(19) John ga Mary ni [\(\n\)-nihon ni ik-u] no o meiji-ta\(_1\).} \]

\[ \text{Japan go-PRS order-PST} \]

\[ \text{LOC} \]

\[ \hline \]

\[ \text{\'John ordered Mary to go to Japan.\'} \]

Type II predicates are, however, limited not only in terms of their number but also in their semantic characteristics; (1) they comprise only five percent of the total number of complement-taking predicates in my data, and (2) they can
be grouped together as a 'directive' \(^{6}\) predicates. For this reason, I will regard this group of predicates as a marked class, hence I enter a feature [+drcv] in their lexical entries. Then, chaining rules can be formulated as follows:

\[
\text{CR-1 } [?^{[+]\text{Nom}}] \rightarrow [n^{[+]\text{Nom}}] \setminus \begin{array}{c}
[N]^{[+\text{Nom}]} \\
+\text{xtns} \setminus \begin{array}{c}
[m^{[+\text{LOC}]}] \\
+\text{drcv} \\
+\text{xtns} \setminus \begin{array}{c}
m^{[+\text{N}]} \\
+\text{xtns} \setminus \begin{array}{c}
N \end{array} \end{array} \end{array} \end{array}
\]

The missing subject of a complement clause is chained to the LOC of the first commanding matrix containing the features, [+drcv], m[+N,+xtns] where m is the index number assigned to the extension noun, which is a sister to the regent of the missing subject.

The following schematic structure is provided to help in visualizing this situation:
CR-2 a. 
\[ \text{[?+[Nom]} \xrightarrow{\text{mndex}} [n+[Nom]] \backslash [n+[PAT]] \backslash [m+[prdc]] \]

b. 
\[ \text{[?+[Nom]} \xrightarrow{\text{mndex}} [n+[Nom]] \backslash [n+[PAT]] \backslash [m+[N+xtns]} [mndex], [m+[N+xtns} \]

(a) The missing subject is chained to the PAT of its upward regent context. (b) A missing subject of a predicate cap-commanded by a complementizer noun is chained to the PAT of the first commanding matrix predicate.

Note that CR-1 precedes CR-2 as the former is a more specific rule than the latter, thus following a general principle of rule ordering applicable to RRs in lexicase (Starosta 1988:103) and to linguistic rule-writing in general.

Let me now demonstrate how the CRs are applied by using examples from Chapter 3. The following is the output of all the relevant LRs applied to (58) of Chapter 3.
(20) 'John ordered Mary to go to Japan.'

CR-1 applies here replacing ? of ?[+Nom] under the complement predicate, *iku*, with the index number for the LOC of the first commanding matrix predicate, i.e., 3 as follows:
The missing subject of the complement clause in (16) is thus assigned a correct interpretation (3 = Mary), yielding a well-formed and functionally complete sentence.

Next, consider the following tree which is the output of the relevant LRs being applied to (32) of Chapter 3.
(22) ((32) from Chapter 3, B1 predicate)

'John tried to speak Japanese.'

CR-2 b. applies here, replacing ? of ?[+Nom] under the complement predicate, hanasu with the index number of the PAT of the first commanding matrix predicate, i.e., 1.
'John tried to speak Japanese.'

The missing subject of the complement clause is thus assigned a correct interpretation (1 = John), yielding a well-formed and functionally complete sentence.
NOTES

1 I have, however, changed the implicational horseshoe sign in Starosta's rules to \(?\), following the practice introduced in Chapter 3 (see note 4 of the chapter).

2 [+Acc] is a convenient abbreviation for the cluster of localistic features, [-Nom, -lctn]. Case forms of nouns in Japanese are either [+Nom] or [-Nom]. These are present even when the postpositions are omitted in casual speech. ga expects [+Nom] nouns and all other postpositions expect [-Nom]. For instance, no here possesses the localistic features, [-Nom, -lctn].

3 [+Lcv] is a convenient abbreviation for the cluster of localistic features, [-Nom, +lctn].

4 The case form of P (ni here) generally takes priority over the case form of the N (no here). For the Nom and Acc case forms only, however, we need to link to the N (John here) rather than P (ga). This operation is motivated by the fact that the same rule has to apply even when the ga and o are omitted in casual speech.

5 LR-2 is a rule required to account for impersonal verbs. The example appears later in (10). This rule is numbered "2" because it feeds LR-3.

6 A Lexicase Accusative Patient corresponds fairly closely to a "direct object" in other frameworks. Note, however, that by this definition, ergative languages do not have "direct objects".

7 This group of predicates has been called by different names by different linguists. For instance, Inoue (1974) names them verbals of expectation (e.g., kitaisuru "expect"), verbals of invitation (e.g., susumeru "advise"), and verbals of command (e.g., meijiru "order"). I have named them "directive" because all the verbs must have someone (which is expressed by a Locus nominal) to direct the action to.

8 \ indicates upward sisterhead context whereas \ indicates the first commanding matrix containing the required features.
CHAPTER 5
CONCLUSION

5.1 Summary of the study

The analysis presented here is the result of an investigation into the structures of complement constructions and the properties of complement-taking predicates in Japanese, which has been carried out in accordance with the principles and constraints of the Lexicase grammatical framework. Particular emphasis has been placed on the following two aspects: (1) the examination of word boundaries involved in complementizer-less complement constructions, which serves as the basis for confirming whether the structure under investigation does in fact form a complement construction, and (2) the subcategorization of complement-taking predicates as determined by their syntactic properties. The data used in this analysis consists of approximately 200 complement-taking predicates, which were initially collected from novels, essays, and scripts for drama, and then formed into sentences based on my intuition as a native speaker.
5.2 Results

Examination of the predicates involved in complementizer-less complement constructions has revealed that we can identify a word boundary (indicated by #) in the V-te # V construction and the Predicative noun # da construction. These constructions are thus confirmed to form complement constructions. In contrast, it has been demonstrated that there is no word boundary between V and -sase/-rare of the so-called complex predicates, between Vi and V of the ViV construction and between VN and suru of the VN suru construction. These constructions are thus concluded to form simplex structures.

Examination of the lexical status of the so-called 'complementizers', to and yoo-ni and 'nominalizers', no, koto, and tokoro has revealed that no, koto, tokoro, and yoo of yoo ni are in fact nouns which function as complementizers, whereas to is a postposition which functions as a complementizer. Thus, the distinction between a syntactic category and a function has been made clearly, and yoo, no, koto, and tokoro are defined as "complementizer nouns", whereas to is defined as "a complementizer postposition" in this dissertation.

The results of the investigation to this point have consequently led to the claim that there are three types of
complement constructions in Japanese, as follows: Type A, in which the matrix predicate is subcategorized to take a complementizer noun, which is the regent of a complement sentence; Type B1, in which the matrix predicate is subcategorized to take a complement sentence that forms an exocentric construction with a complementizer postposition to; and Type B2 in which the matrix predicate is subcategorized to take a complement sentence without a complementizer.

Six major categories of complement-taking predicates in Japanese have been identified on the basis of their argument structure, i.e., the case relations implied in their case frames, as follows:
Table 5.1

Major categories of complement-taking predicates

<table>
<thead>
<tr>
<th>Assigned features</th>
<th>Implied CRs</th>
<th>Class</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intransitive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-locational</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-correspondent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-mode ?[+PAT]</td>
<td>A</td>
<td>i-u</td>
<td>'say'</td>
</tr>
<tr>
<td>Mode ?[+PAT,+MNS]</td>
<td>B</td>
<td>tutome-ru</td>
<td>'try'</td>
</tr>
<tr>
<td>Locational</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-correspondent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-mode ?[+PAT,+LOC]</td>
<td>C</td>
<td>kizuk-u</td>
<td>'notice'</td>
</tr>
<tr>
<td>Mode ?[+PAT,+LOC,+MNS]</td>
<td>D</td>
<td>tanom-u</td>
<td>'request'</td>
</tr>
<tr>
<td>Transitive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-locational</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-correspondent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-mode ?[+PAT,+AGT]</td>
<td>E</td>
<td>suki</td>
<td>'like'</td>
</tr>
<tr>
<td>Locational</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-correspondent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-mode ?[+PAT,+AGT,+LOC]</td>
<td>F</td>
<td>meiji-ru</td>
<td>'order'</td>
</tr>
</tbody>
</table>
On the basis of their choices and requirements for different types of cooccurring sister constituents, predicates in these major categories are further subcategorized into 23 subcategories. These results are then formalized in terms of the lexical entries, the redundancy rules and subcategorization rules needed to make the grammar formal and explicit.

The final part of this study then has revealed that there are two types of complement-taking predicates with regard to the coreference relation between a non-overt subject of a complement clause and a case relation of a nominal in the matrix clause as follows: Type I, the statistically and cross-linguistically unmarked type, in which the non-overt subject of a complement clause is associated with the Patient of the matrix, and Type II, the marked type, in which the non-overt subject of a complement clause is associated with the Locus of the matrix clause. Semantic interpretation rules are then formulated to match the contextual features of the regent with those of its overt dependents which satisfy these features (linking rules) and to provide appropriate interpretations for non-overt subjects of complement clauses (chaining rules).
5.3 Contributions

This study can be considered a contribution to Japanese linguistics in general in the sense that it provides a formalized and explicit analysis of Japanese complement constructions, using a highly constrained syntactic theory. Although this is not the first lexicase analysis carried out on Japanese, this is certainly an improved and updated study. Firstly, this study is based on all the revisions made on the framework since the first LXC analysis on Japanese was carried out by Taylor (1971), such as the elimination of Phrase Structure rules, the reduction of the number of case relations, e.g., by collapsing DAT (Dative) and DIR (Direction) into LOC (Locus), and positing the Patient Centrality hypothesis. Secondly, this study has re-examined more recent analyses made on Japanese, such as Starosta and Nomura (1984), Shin et al. (1986), and Unetani et al. (1987), and made further revisions to them in the following aspects:

1. It has provided a more comprehensive picture of the localistic analysis of postpositions and the mapping of case relations and case forms (see 1.5.3.5).

2. It has provided a more comprehensive analysis of complement-taking predicates, e.g., by incorporating adjectival nouns which also function as complement-taking.
predicates, a category which was omitted from Unetani et al. (1987).

3. It has analyzed the verb classes which are left unanalyzed in Unetani et al. (1987:35-38) and integrated them into the subcategorization proposed in Chapter 3.

4. It has re-examined the case form of the second postposition ga involved in the so-called double nominative construction and revising the earlier LXC position that it is nominative (Starosta and Nomura 1984:67-68). This study claims that it is in fact accusative rather than nominative, for the reasons stated in 3.3 for the example (50) in that section. Thus, this study posits a new postposition, ga₂, which is homophonous with the nominative gal.

5. It has revised the case relation assignment of Correspondent to Locus, e.g., in sentences such as the following (see 3.3 and the example (43) in that section for justification):

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As for the analysis of Japanese complement constructions specifically, the study presented here can be considered a contribution in the following respects:

1. The study has provided a clear picture as to which structures are to be defined as "complement constructions" in Japanese. This issue has been left fuzzy in Japanese linguistics literature which typically provided no substantial evidence to support whichever position was taken in the past.

2. The study has examined the lexical status of complementizers and provided evidence that *yoo* of *yoo ni* is a separate word from *ni* and that it is in fact a noun, which is functioning as a complementizer. Thus, it occurs in Type A complement constructions in my classification (see Chapter...
2). This conclusion is in contradiction to Nakau's claim (1973) that *yoo-ni* is the complementizer of a predicate complement construction, which is a rough equivalent of my B1 complementation type.

3. The distinction between *no* and *koto* has often been discussed in earlier studies, e.g., Josephs (1972), Inoue (1974), and Kuno (1973). These earlier studies have usually divided verbs into three classes; (1) those which can take only *no*, (2) those which can take only *koto*, and (3) those which may take either *no* or *koto*. This study, however, has clearly put forward the claim that a predicate which seems to take either *no* and *koto* (Class 3 in the above stated classification) should be viewed as two separate lexical items. This claim is based on the lexicase triune sign principle and is supported by several examples such as (58) vs. (59) in Chapter 3, which in fact exhibit semantic differences involved in the sentences. By following this principle, the number of verb classes becomes fewer than in the conventional approach, viz., two (class 1 for the verbs which take *no* and class 2 for those which take *koto*) rather than three as stated earlier. The lexicase approach has thus simplified the grammar with respect to the issue of *no* vs. *koto* and made it clear that the distinction stems from the difference in the predicate.
lexical features rather than no or koto itself. Recall that Inoue (1974), which has classified verbs in the conventional approach and examined the relationship between complement types and logical classification, has in the end come up with no significant generalizations, as indicated by the following statement:

In fact this (referring to the findings) is not a very meaningful generalization, because we can go almost nowhere from these statements. (p. 188)

Inoue also points out the deficiency of the approach as follows:

Another question left unanswered in the present study is the problem of the actual choice of complement type when there is more than one possible type for a predicate. (p. 248)

In addition to these major contributions mentioned above, the present study also has thrown light on the following aspects of Japanese grammar:

1. The negative marking morpheme, -(a)na- is a derivational morpheme rather than an inflectional morpheme. This conclusion is based on the finding that there is a verb which has a different syntactic distribution depending on whether it takes an affirmative or a negative form. kagir-u 'limit' and kagir-ana-i 'not limited' is the example. The negative form is subcategorized to take a
complement sentence whereas the affirmative is not. This provides a strong piece of evidence that they are two distinct lexical items (see note 12 of Chapter 3 for the detailed discussion).

2. We may be able to claim that there is an infinitival clause in Japanese, or at least cast doubt on the popular statement that Japanese lacks an infinitive (Teramura 1984:59, Starosta 1988:217 Note 3). This is based on the finding that the complement clause with v-te in the V-te V construction examined in Chapter 2 can never have an overt subject, in contrast to other complement constructions (see 2.2.2.3 for examples and discussion).

As far as the lexicase framework is concerned, the present study reaffirms the workability of the theory since it has been demonstrated that complement-taking predicates can be explicitly and formally accounted for under the principles and constraints imposed by the framework except for one construction, which is presented in (3) below as a remaining problem. Lexicase possesses explanatory value by imposing severe constraints on the form of possible grammars. These constraints form a strong hypothesis about possible grammars, and a grammar which can simultaneously accommodate the facts and obey all these constraints is explanatorily adequate in the sense of
Chomsky (1965): it is the grammar which is selected by the universal theory. Furthermore, this study contributes to the development of the theoretical framework by introducing linking rules and chaining rules for the first time in a lexicase dissertation.

Around 1987, the lexicase theory was modified in such a way that syntactically conditioned rules of interpretation and the representation of case relations were to be marked as implied features of the regent rather than as positive contextual features. Such a revision was needed in order to account explicitly and effectively for missing constituents in Pro-drop constructions, and zero anaphora in languages such as Korean and Japanese. Pagotto (1987:748) claims that this case relation assignment procedure eliminates the redundancy entailed by the previous procedure, i.e., nouns, already marked with case relation features by subcategorization rules, are inserted into phrases cap-commanded by verbs, prepositions, or nouns which imply case relations, and the case relations on nouns are required to match the case relations implied by the cap-commanding constituents. She also believes that the new analysis in which the regents assign case relations to overt nominals reflects the actual process involved in the interpretation of semantic relationships better than a previous analysis in which case relations are assigned to
nouns arbitrarily by subcategorization rules and and only those assignments are accepted for which the case relation features match those implied by the regent verbs (Pagotto 1987:749).

This revision proposed in Pagotto (1987) has been further developed and refined in the present study by introducing a distinction between linking rules and chaining rules, where linking rules apply only to the sisterhead of a word, whereas chaining rules apply outside the phrase of which the word containing unindexed contextual features is a head. Thus, the theory can now formalize all the dependency relationships required among words to ensure well-formedness of a sentence. To be more specific about the Japanese data I examined, I have noticed that not only the case relation features but also other contextual features need to be marked with ? and be accounted for by a linking rule in the following example:
'John found out that the vase got broken.'

Wakat-ta is subcategorized to be a proposition ([+prps]) predicate, which is defined as a predicate which takes a Nominative Patient complementizer noun [+N, +Nom, +xtns, +PAT] (no here). If I have to reserve the use of an implicational feature only for case relations as has been done in previous lexicase analyses, I have to place an affirmative contextual feature for wakat-ta as in [+ [+N, +xtns]] since the features here are not case relations. Then, I need to devise some rather arbitrary measure to identify this [+N, +xtns] as a Patient actant of the verb. In contrast, if I mark all the contextual features with ?, which is to be replaced with the index number of the appropriate word by a linking rule, the contextual feature under the discussion here is presented as [? [+N, +xtns]],
as already done in the above example, and then it can be
accounted for by two more general linking rules; one to
replace ? of [?[Æ F1]] ([?[+N, +xtns]] here) with the
index of an immediate dependent which matches [Æ F1] (1 of
no here), and another rule to replace ? of [?[+PAT]],
which is stated separately as a feature applying universal­
ly to any predicate, with the same index number, 1 of no,
which has been marked Nominative by a separate rule.

In addition to the above-stated major contributions,
the current study also has revealed that such features as
[±xtns] and [±prsn], which were found in English and
Marshallese (Pagotto 1985, 1987), are also motivated in an
analysis of Japanese, a totally unrelated language.

5.4 Remaining problems

Despite the effort made to provide detailed and cohe­
rent descriptions for the phenomena involved in Japanese
complement constructions, a number of issues are still
left unanalysed in this study. They are listed as follows:

1. Among all the double nominative constructions I ex­
amined, there is one sentence pattern which could not be
accounted for satisfactorily. An example follows:
(3) John ga [tabe-ru] no ga haya-i.
Nom eat-PRS Nom fast-PRS
'John is fast in eating.'

Contrast this to (4), in which the second ga has been determined to be accusative rather than nominative (see 3.3).

(4) ((50) in Chapter 3)
John ga [tabe-ru] no ga suki da.
Nom eat-PRS Acc like COP
'John likes eating.'

In Chapter 3, a number of phenomena were presented which tended to support the transitive analysis of suki constructions. However, none of these tests applies to constructions like the one exemplified in (3). Note, for instance, that even though I replace the complement sentence by an NP as in (5), the second ga is never interchangeable with ga:

(5) John ga ashi ga/*o haya-i.
Nom leg fast-PRS
'John is fast in running.'

Many of the studies on double nominative constructions claim that sentences such as (5) are derived from (6) in
which the first ga is originally the genitive marker no:

(6) John no ashi ga haya-i.

Gen leg Nom fast-PRS

'John's legs are fast.'

This is semantically a plausible solution. A lexicase analysis, however, imposes a constraint that there are no simultaneous levels of syntactic representations, hence each 'surface' structure must be accounted for as it is. Thus, sentences like (3) remain an issue—the predicate is subcategorized to take both of the two NPs based on Hasegawa's Question pull test (see 1.2.2.3), and yet interpreting both of them as [+PAT] violates the one per Sent constraint imposed by lexicase. One may consider John as a topic NP with the exhaustive listing meaning. This analysis, however, is not plausible either since a topic NP by lexicase definition is an operator which does not subcategorize the predicate.

2. Most of the tests for word boundary presented in Chapter 2 face at least some counter-examples, as already stated in that chapter.

5.5 Topics for future study

There are several aspects of Japanese complement constructions which are noted but not examined in the
present study. They may constitute the main topics for further research, together with those remaining issues raised in 5.4. They are briefly stated as follows:

1. The examination of complement constructions in which the predicates are subcategorized to take a noun which is not a complementizer (hanashi in (7)), as follows:

(7) John ga [Mary ga nige-ta] to yuu hanashi o
    Nom run=away story Acc
    shinji-na-i.
    believe-NEG-PRS

`John does not believe the story that Mary ran away.'

As I have not examined the structure involving to yuu yet, I cannot present a well-motivated syntactic representation here. However, it is clear to me that a sentence containing to yuu does not belong to any of the three types of complement constructions I presented in Chapter 2.

2. The so-called question marking particle ka and its variation, ka doo ka also function as complementizers as follows:

(8) [Mary ga doko e nige-ta] ka (o) shit-te i-ru.
    where run=away-PST know-GER exist-PRS

`I know where Mary ran away.'
Although (8) may be identified as a sentence belonging to the Type A complement construction defined in Chapter 2, I have left it unanalysed for the following two reasons: (i) unlike other sentences in the Type A construction, the postposition (o here) is optional even in the formal style of Japanese, and (ii) I feel that ka and ka doo ka are related and need to be analysed together, but I have no idea as to how to analyse ka doo ka, which seems to be a phrasal complementizer.

3. Japanese is full of so-called "zero pronominalization" phenomena (Ohso 1976, Lee 1987). Zero pronominalization occurs not only in subject position but also in non-subject position, and it also occurs in complement sentences as illustrated by the following examples:
(10) John ga singapooru ni ki-ta.
    Singapore     come-PST
    'John has come to Singapore.'

Hanako wa [△ hookaa sentaa ni annaisu-ru] to it-ta.
    hawker center  show=around    say-PST

    'Hanako said she would show him (John) around a hawker center.'

I did not formulate a chaining rule for zero pronouns in
the non-subject position of a complement sentence because
they seldom occur in a complement unless I expand my scope
to the discourse level as shown in (10). Nonetheless, the
investigation into this area will certainly be an interest­
ing topic in Japanese grammar.

4. Japanese presents an interesting construction called
the "pivot-independent relative clause" (Kuroda 1974). It
is like an ordinary NP complement in terms of its syntactic
structure but is like a relative clause in terms of its
semantic interpretation. Observe the following examples
where (11) is an ordinary complement construction
(defined "Type A" in Chapter 2 of the present study)
whereas (12) is a pivot-independent relative clause.

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(11) [Sutoobu kara kemuri ga deru] no o mita.
   stove smoke come=out saw
   'I saw that smoke was coming out from the stove.'

(12) [Sutoobu kara kemuri ga deru] noi o keshita.
   stove smoke come=out extinguish
   'I extinguished the smoke coming out from the stove.'

In (12), no is referring to kemuri only, rather than to the whole proposition as in (11). Haig (1983) has noted that the type of clause structure appearing before wa in a cleft sentence such as in (13) below is also a pivot-independent relative clause in the sense that the identification of the reference of the head noun no has to be made pragmatically, just as the referent of no in (12) must be identified pragmatically.

(13) (Haig's 29b)
   Boku ga e1 tabeta noi wa [ano resutoran de] da.
   I ate that restaurant at COP
   '(The place) where I ate was at that restaurant.'

Although the present study has not touched on this issue, it will also be an interesting area of Japanese grammar where semantic selectional restriction needs to be accounted for. A Lexicase analysis will then fully utilize
implicational horseshoe symbols which have been reserved for this purpose.
NOTES

1 'e' in this example is equivalent to \( \triangle \) in other examples, viz., referring to a missing constituent.
APPENDIX A

VERB SUBCATEGORIZATION IN UNETANI, SHIN, AND STAROSTA (1987)

$+V \supset [+PAT]$ -djet:

- cplr - trns - lctn - crsp - mtrl - xtns sin-u
  + xtns $[+P +V]$ ir-u
    + $[+P +V]$ omo-u
  + mtrl ik$_2$-u
    + crsp - mtrl - caus - pssv - sttv - xtns nar-u
      + xtns $[+P +V]$ mora-u
        + $[+P +V]$ i-u
      + sttv - xtns wakar-u
        + xtns $[+P +V]$ ar-u
          + $[+P +V]$ i-e-ru
        + pssv - xtns nagur-are-ru
          + xtns $[+P +V]$ ---
            + $[+P +V]$ iw-are-ru
      + caus - pssv - sttv - xtns waraw-ase-ru
        + xtns $[+P +V]$ mi-ase-ru
          + $[+P +V]$ iw-ase-ru
        + sttv - xtns ---
          + xtns $[+P +V]$ ---
            + $[+P +V]$ ---
      + pssv - xtns waraw-ase-rare-ru
+mtrl -caus -pssv -sttv ---
  +pssv nru2-are-ru
  +caus -pssv -sttv nru2-ase-ru
    +sttv nru2-ase-rare-ru
    +pssv nru2-ase-rare-ru

+mtrl -caus -pssv -sttv okuru
  +pssv ---
  +sttv miser-are-ru
  +pssv ---
  +caus -pssv -sttv ---
    +sttv ---
    +pssv ---

+caus -pssv -sttv ---
  +pssv ---
  +mtrl -caus -pssv -sttv ---
    +sttv ---
    +pssv ---
    +caus -pssv -sttv ---
      +sttv ---
      +pssv ---

+casp -mtrl -caus -pssv -sttv okuru-are-ru
  +pssv ---
  +sttv okuru-are-ru
  +caus -pssv -sttv okuru-ase-ru
    +sttv okuru-ase-rare-ru
    +pssv okuru-ase-rare-ru

+mtrl -caus -pssv -sttv ---
  +sttv ---
  +pssv ---
  +caus -pssv -sttv ---
    +sttv ---
    +pssv ---

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   +djc+ atu-i
APPENDIX B

VERB SUBCATEGORIZATION OF COMPLEMENT-TAKING PREDICATES

+prdc
?([+PAT] : 
  -trns -lctn -crsp -mode -xtns -compl *
    +compl -prps --
      +prps -bstr -tmng <A1> medats-u
        +tmng --
          +bstr <A2> hanmeisu-ru
    +xtns -mprs ?[-P +prdc] <A3> i-ru
      ?([+P +prdc] <A4> i-u₁ 
    +mprs ?[-P +prdc] <A5> da, rashī-i
      ?([+P +prdc] <A6> kagir-ana-i
        +mode -styl *
          +styl <B1> tsutome-ru
    +crsp -mode *
      +mode *
  +lctn -crsp -mode -xtns -compl *
    +compl -prps -bstr -tmng <C1> kizuk-u₁
      +tmng <C2> dekuwas-u
        +bstr <C3> kizuk-u₂
          +prps -bstr -tmng <C4> wakar-u
            +tmng --
              +bstr <C5> ar-u
                +xtns -mprs ?[-P +prdc] <C6> mora-u


Notes: * indicates the nodes under which complement-taking predicates do not occur unless in derived forms.

-- indicates the nodes under which complement-taking predicates have not been found in the data.
APPENDIX C

LIST OF COMPLEMENT-TAKING PREDICATES

A1 [+prdc,-trns,-lctn,-crsp,-mode,-xtns,+cmp,+,prps,
-bstr,-tmng]

medats-u 'conspicuous'
okashi-l 'strange, funny'  
kawai-l 'cute'
i-l 'good'
yasashi-l 'easy'
toozen 'natural'
zannen 'pity'
muri 'beyond ability, unreasonable'

A2 [+prdc,-trns,-lctn,-crsp,-mode,-xtns,+cmp,+,prps,
+bstr]

hanmeisu-ru 'be proven'
okashi-i 'strange, funny'  
i-l 'good'
yasashi-l 'easy'
toozen 'natural'
zannen 'pity'
muri 'beyond ability, unreasonable'

A3 [+prdc,-trns,-lctn,-crsp,-mode,+xtns,-mprs,?[-P +prdc]]

i-ru 'be ... ing (lit. exist)'  
mi-ru 'do something and ) see (what it is like)'  
shima-u 'finish ... ing'  
ku-ru 'do something and) come (back)'  
iki 'do something and) go'

A4 [+prdc,-trns,-lctn,-crsp,-mode,+xtns,-mprs,?[+P +prdc]]

i-u 'say'
kotâe-ru 'answer'
kik-u 'hear'
kanji-ru 'feel'
omo-u 'think'
kangaé-ru 'think'
kime-ru 'decide'
shinji-ru 'believe'
handansu-ru 'judge'
suiteisu-ru 'guess'

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A5 [+prdc,-trns,-lctn,-crsp,-mode,+xtns,+mprs,?[-P +prdc]]

da (copula)
  rashi-i 'seem'
yoo 'appear'
  soo 'hear'

A6 [+prdc,-trns,-lctn,-crsp,-mode,+xtns,+mprs,? [+P +prdc]]
  kagir-ana-i 'not limited'

B1 [+prdc,-trns,-lctn,-crsp,+mode,+styl]
  tsutome-ru 'try'
  ganbar-u 'try hard'
  doryokusu-ru 'make an effort'
  nar-u 'become'
  kanji-ru 'feel'
  omo-u 'think'

C1 [+prdc,-trns,+lctn,-crsp,-mode,-xtns,+cmpl,-prps,-bstr -tmng]
  kizuk-u 'notice'
  odorok-u 'surprised'
  nare-ru 'get used to'
  atekom-u 'count on'
  ikar-u 'get angry'
  seikoosu-ru 'succeed'
  shippaisu-ru 'fail'

C2 [+prdc,-trns,+lctn,-crsp,-mode,-xtns,+cmpl,-prps,-bstr +tmng]
  dekuwas-u 'come across'
  butsukar-u 'bump into'

C3 [+prdc,-trns,+lctn,-crsp,-mode,-xtns,+cmpl,-prps,+bstr]
  kizuk-u 'notice'
  odorok-u 'surprised'
  nare-ru 'get used to'
  atekom-u 'count on'
  ikar-u 'get angry'
  seikoosu-ru 'succeed'
  shippaisu-ru 'fail'
  kimar-u 'decided'
  nar-u 'become'
su-ru 'decide'
yor-u 'based on'

C4 [+prdc,-trns,+lctn,-crsp,-mode,-xtns,+cmpl,+prps,-bstr -tmng]
wakar-u₁ 'find out'
simpai₁ 'worry'
taihen 'taxing'
omoshiro-i₁ 'interesting'
hazukashi-i₁ 'shameful, embarrassing'

C5 [+prdc,-trns,+lctn,-crsp,-mode,-xtns,+cmpl,+prps,+bstr]
ar-u 'have'
deki-ru 'capable'
wakar-u₂ 'disclosed'
bare-ru 'disclosed'
simpai₂ 'worry'
omoshiro-i₂ 'interesting'
hazukashi-i₂ 'shameful, embarrassing'
oo-i 'do frequently'

C6 [+prdc,-trns,+lctn,-crsp,-mode,+xtns,-mprs,?[-P +prdc]]
mora-u 'receive favor'
hoshi-i 'want (someone) to do'

C7 [+prdc,-trns,+lctn,-crsp,-mode,+xtns,-mprs,?+[P +prdc]]
i-u₂ 'say'
hanas-u₁ 'say'
setsumesu-ru 'explain'
tsutae-ru 'convey message'
meiji-ru₁ 'order'
tazune-ru 'ask'
yakusokusu-ru₁ 'promise'
chika-u₁ 'swear'

C8 [+prdc,-trns,+lctn,-crsp,-mode,+xtns,+mprs,?+[P +prdc]]
kikoe-ru₁ 'sound'
mie-ru₁ 'appear'
omoe-ru₁ 'seem'

D1 [+prdc,-trns,+lctn,-crsp,+mode,+styl,-mprs]
tanom-u 'request, ask'
i-u₃ 'tell'
susume-ru₁ 'advise'

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settokusu-ru 'persuade'
meiji-ru_2 'order'

D2 [+prdc,-trns,+lctn,-crsp,+mode,+styl,+mprs]

omoe-ru_2 'seem'
kikoe-ru_2 'sound'
mie-ru_2 'appear'

E1 [+prdc,+trns,-lctn,-crsp,-mode,-xtns,+cmpl,+prps,-bstr -tmng]

tsukamae-ru_ 'catch'
mi-ru_ 'see'
torae-ru_ 'catch'
samatage-ru_ 'prevent'
kik-ru_ 'hear'
kanji-ru_ 'feel'
shinji-ru_ 'believe'
soozoosu-ru_ 'imagine'
yame-ru_ 'stop'
kitaitsu-ru 'expect'

E2 [+prdc,+trns,-lctn,-crsp,-mode,-xtns,+cmpl,+prps,-bstr +tmng]

tsukamae-ru_ 'catch'
mi-ru_ 'see'
torae-ru_ 'catch'
samatage-ru_ 'prevent'
kik-ru_ 'hear'
soozoosu-ru_ 'imagine'

E3 [+prdc,+trns,-lctn,-crsp,-mode,-xtns,+cmpl,+prps,+bstr]

kateisu-ru 'hypothesize'
arawas-u 'express'
oboe-ru 'remember'
kokoromi-ru 'try'
kuwadate-ru 'plan'
kanga-ru 'think'
omo-u_ 'think'
shinji-ru_ 'believe'
soozoosu-ru_ 'imagine'
samatage-ru_ 'prevent'
yame-ru_ 'stop'

E4 [+prdc,+trns,-lctn,-crsp,-mode,-xtns,-mprs,?[+P +prdc]]
omo-u₄ "think"
minas-u "regard"
mikom-u "expect"

F1 [+prdc,+trns,+lctn,-crsp,-mode,-xtns,+cmpl,+prps,-bstr
-tmng]
meiji-ru₃ "order"
susume-ru₂ "advise"
nozom-u₁ "hope"
yakusokusu-ru₂ "promise"
chika-u₂ "swear"
hanas-u₂ "tell"
setsumeisu-ru₂ "explain"
tsutae-ru₂ "convey message"

F2 [+prdc,+trns,+lctn,-crsp,-mode,-xtns,+cmpl,+prps,+bstr]
meiji-ru₄ "order"
susume-ru₃ "advise"
nozom-u₂ "hope"
yakusokusu-ru₃ "promise"
chika-u₃ "swear"
hanas-u₃ "tell"
setsumeisu-ru₃ "explain"
tsutae-ru₃ "convey message"
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