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A LEXICAL APPROACH TO VOICE ALTERNATION IN JAPANESE VERBS

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List of Abbreviations

ACC	accusative
ADJ	adjective
ADV	adverb
CAUS	causative
COMP	complementizer
COP	copula
DAT	dative
DES	desiderative
GEN	genitive
LV	light verb
NEG	negative
NOM	nominative
PART	particle
PASS	passive
PERF	perfect
PRES	present
POSTP	postposition
POT	potential
PROG	progressive
PAST	past
Q	interrogative
STAT	stative
TOP	topic
VOL	volitional

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Chapter 1   Introduction

1.1   The Aim and the Scope of this Dissertation

What is a lexical entry? What information does it include? How are lexicons organized? (*Lexical Matters.*, Sag and Szabolcsi 1992: vii) As Sag and Szabolcsi (as well as Levin (1993: 1), Koenig (1999:1) and many others) have mentioned, the lexicon was regarded as a list of idiosyncrasies, which attracted very little attention among linguists in the early era of generative grammar, thus such questions were hardly taken up seriously. Borrowing Bloomfield's (1933: 274) words, the status of lexicon was a sort of "an appendix of the grammar" which reflects the view that the lexicon was completely separated from the universal aspects of language that were believed to be found in the highly elaborated syntactic rules.

Nevertheless, such a view of lexical knowledge is obviously problematic. For instance, by presenting a range of natural classes of verbs which show regular alternation patterns, Levin (1993) has shown that the knowledge of lexical items demonstrated by native speakers should be more than just an unorganized list of word-specific properties. Actually, in the nearly forty years since the mid sixties, where the lexicon was suffering from its unfair treatment as a 'rubbish bin', the status of lexicon in the grammatical theory of natural language has been changed. From the late seventies to the early eighties, in order to avoid excessive dependence upon transformations, the grammatical burden has shifted to the lexicon, which has invoked a range of lexicon-driven grammatical theories based on the general assumption that grammatical phenomena "can be adequately described in a monostratal framework" (Webelhuth, Koenig and Kathol 1999: 2) which is well-constrained by a limited number of highly general principles and lexical rules. The lexical structure assumed in such theories is characterized by its systematic and productive aspects. The major theories among them has been Lexical Functional Grammar (LFG hereafter: see a collection of papers in Bresnan (ed.) 1982, Kaplan and Bresnan 1982, Bresnan 2000) and Generalized Phrase Structure Grammar (GPSG hereafter: Gazder, Klein, Pullum

and Sag 1985; also see Gunji 1987a). The latter is regarded as the direct prede-
cessor of Head-Driven Phrase Structure Grammar (abbreviated as HPSG hereafter:
see Pollard and Sag 1984, 1994; Wechsler 1995; a collection of papers in Green and
Levine 1999, Gunji (ed.) 2000, among many others), but at the same time, HPSG
has evolved also under the influence of LFG, Categorial Grammar (Oehrle, Bach and
Wheeler (eds.) 1988), and Government-Binding Theory (Chomsky 1965, 1981,1982,
1986 etc.). The approach taken in this dissertation is generally characterized by such
constraint-based lexicalist (CBL hereafter) perspectives. Specifically, I will adopt sev-
eral analytical tools, thus developed and reshaped through the evolution of HPSG
such as FEATURE STRUCTURES, LEXICAL RULES and INHERITANCE HIERARCHY (see
Koenig 1999, Sag and Wasow 1999 among many others), which will play a crucial
role in clarifying and formalizing the linguistically significant generalizations.[1]

Thus, it is now widely accepted that the lexical representations are highly or-
ganized and greatly contribute the investigation of universal aspects of natural lan-
guages. Nevertheless, as Sag and Szabolcsi (1992: vii) has suggested, it should not be
overlooked that "no real consensus has yet been achieved concerning the content of
lexical entries, the precise nature of lexical representations, the scope of the lexicon
and lexical analyses in general, or the matter of how the lexicon should be structured."
Of course, for the past eight years since Sag and Szabolcsi (1992), a considerable num-
ber of studies have been made (including Pollard and Sag 1994, Sag and Wasow 1999),
which has brought about the remarkable progress in this area. What seems yet to
be explored, however, is a further elaboration of the lexical representation of verbal
semantics. Particularly, the sophisticated models developed in the modern lexical se-
mantics (Hale and Keyser 1987; Jackendoff 1990, 1997; Levin and Rappaport-Hovav
1995, 1996; Pustejovsky 1995; Rappaport-Hovav and Levin 1998, among many oth-
ers) is expected to make a large contribution in the general CBL framework, but only
few attempts have been made so far. This dissertation investigates the lexical rep-
resentation of the semantic structures of verbs and the mechanism of their syntactic
realization by exploring the point where the lexical semantic approach and the CBL
approach converge. My concern is to present the theory of verbal semantics, which
is capable of describing a wide range of facts observed in Japanese in the first place,

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[1]The further discussion on the theoretical background assumed here will be given in the following
chapter.

and of providing them with well-constrained, mathematically and logically explicit formalization.

The central topics in this dissertation are a wide range of voice alternation phenomena observed in Japanese verbs. Through the detailed analysis of the voice alternation in Japanese verbs, I will examine the nature and status of the semantic structure of verbs in grammatical theory and its interaction with argument structure.

In accordance with the universally observed properties of passives, the active-passive voice alternation in Japanese is commonly marked by the morphological change of the transitive verbs. The addition of the verbal suffix *-(r)are* productively derives the passive sentence (1b) from its active transitive counterpart (1a):

(1) a. Ken-ga   Naomi-wo   home-ta.
       Ken-NOM Naomi-ACC praise-PAST
       'Ken praised Naomi.'

   b. Naomi-ga   (Ken-ni) home-rare-ta.
       Naomi-NOM (Ken-by) praise-PASS-PAST
       'Naomi was praised by Ken.'

The grammatical subject of the passive sentence (1b), i.e., Naomi, corresponds to the object of the active transitive sentence (1a), while the agentive subject of the active sentence, i.e., Ken, is optionally realized as the postpositional phrase in the passive sentence. Since the passive morpheme *-(r)are* can be suffixed to the majority of transitive verbs productively deriving passive sentences, passivization such as (1) is often regarded as a typical example of SYNTACTIC VOICE ALTERNATION, which has been the object of numerous studies.

On the other hand, a restricted number of verbs in Japanese show active-passive voice alternation which is realized not by the passive morpheme *-(r)are* but by the transitive/intransitive alternation.

(2) a. Kyaku-ga   uketukegakari-ni kityoohin-wo   azuke-ta.
       customer-NOM receptionist-DAT valuables-ACC entrust-PAST
       'The customer entrusted valuables to the receptionist.'
       (Kageyama 1997b)

b.   Uketukegakari-ga kyaku-kara   kityoohin-wo azukat-ta.

receptionist-NOM customer-from valuables-ACC receive-PAST

'The receptionist received valuables from the customer.'

(3) a.   Ken-ga   Naomi-ni   eigo-wo   osie-ta.

Ken-NOM Naomi-DAT English-ACC teach-PAST

'Ken taught English to Naomi.'

b.   Naomi-ga   Ken-ni/-kara   eigo-wo   osowat-ta.

Naomi-NOM Ken-DAT/from English-ACC be taught-PAST

'Naomi was taught English from Ken.'

What is important is that the suffixation of *-ar* in (2b) and (3b) does not affect the valency, which shows that the relation between the pairs of verbs in (2) and (3) cannot be analyzed solely by referring to the degree of transitivity.

Rather, two verb forms which share the verbal stem (e.g., *azuk* and *os*) denote the same event from the different viewpoints.[2] (2a) and (3a) describe the events seen from the person who initiates the transfer of the information, whereas, in (2b) and (3b), the same events are described from the viewpoint of the recipient.

Since the number of verbs in Japanese which show such an alternation is relatively restricted, they have been regarded as more or less idiosyncratic in nature (Noda 1991). Such verbs have been termed LEXICAL VOICE ALTERNATIONS (see Kageyama 1997b for instance). In contrast with a large number of studies on grammatical passives, surprisingly little attention has been given to them. However, are they really idiosyncratic? Less productive though they are, they show (partially, at least) morphological regularity. The verbs, which denote events viewed from the perspective of receiver (e.g., (2b), (3b) above) are both marked by the morpheme *-ar*, i.e., *azuk*

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[2]Strictly speaking, the verb *azukat-ta* in (2b) and *osowat-ta* in (3b) should be glossed as follows:

(i) a.   azuk-at-ta.

entrust-SUFFIX-PAST

'received'

b.   osow-at-ta.

teach-SUFFIX-PAST

'was/were taught'

In this dissertation, however, I will employ the way of glossing in (2) or (3) for the sake of simplicity.

+ *-ar*, *osow* + *-ar*.[3] Thus, *osowar* should be distinguished from the verb *naraw* in the following which semantically denotes the same sort of the transfer of information viewed from the receiver, but lacks such morphological regularity:

(4) Naomi-ga Ken-ni eigo-wo narat-ta.
     Naomi-NOM Ken-DAT English-ACC learn-PAST
     'Naomi learned English from Ken.'

Moreover, there exist many cases which indicate that such pairs of verbs are not necessarily idiosyncratic, but rather that they should be analyzed in a systematic way.

(5) *sazuke* 'award'   *sazukar* 'be awarded'
     kotozuke 'request to carry' *kotozukar* 'be asked to carry'
     iituke 'tell'   *iitukar* 'be told'
     mituke 'find'   *mitukar* 'be found'

One of the main issues addressed in this dissertation is voice alternation realized by such transitive/intransitive alternation; I propose to refine the category of voice in Japanese so that it can cover a much wider range of phenomena. This idea will apply to the case in which the same sort of contrast in voice can be observed in the various meanings denoted by the verb *without* any morphological change at all. The following serves as an example:

(6) Ken-ga kagu-wo heya-kara dasi-ta.
     Ken-NOM furniture-ACC room-from put out-PAST
     'Ken put the furniture out of the room.'

(7) Ken-ga hitai-kara ti-wo dasi-ta.
     Ken-NOM forehead-from blood-ACC shed-PAST
     'Ken shed blood from his forehead.'

---

[3]When the verb whose stem is ended with a vowel is suffixed by *-ar*, the glide *-w-* seems to be inserted. The pair *ue* (='plant') and *uwar* (='be planted') provides another example. More precisely, the suffix *-e-* in the transitive *osi-e-r* used to be pronounced *osi-we-r*, but in modern Japanese, the glide is lost except for *-w-a-* sequence, which is found in *osowar* above (p.c., Francis Michinao Matsui, 1999). At present it is not so clear whether the suffix *-ar* triggers the vowel shift from *-i-* to *-o-*, but the alternation between *-i-* and *-o-* is not so unusual in Japanese, e.g., *oki* (Vi)/*okos* (Vt) 'get up', *ori* (Vi) /*oros* (Vt) 'get off/let off', *oti* (Vi) / *otos* (Vt) 'fall/drop' etc. (Jacobsen 1992: 267). Jacobsen has also classified the pair *osie*/*osowar* into the same paradigm as *azuke*/ *azukar* (ibid., 260).

Both sentences have two arguments, i.e., 'Ken' as a grammatical subject and 'furniture' (6) or 'blood' (7) as grammatical objects. However, (6) and (7) are different with respect to the relationship between 'Ken' and the event described by the whole sentence. In (6), the grammatical subject is identified as the agent whose volitional activity brings about the change of location of the theme from inside to outside. On the other hand, in (7), 'Ken' is not an agent but rather corresponds to a 'recipient' (or 'experiencer') who suffers from the event in which his forehead is bleeding, i.e., blood comes out from inside of his body.

One explanation for such a difference may be that it is specified as a part of the lexical information of the verb. Specifically, I will assume that the transitive *das* should be further classified into the subtypes with distinctive semantic structures. It may be debatable whether *das* in (6) and (7) should be specified as independent lexical items. However, there are at least two reasons to support my assumption. The first point is that native speakers intuitively capture the semantic parallelism between the transitive sentence with *das* in (7) and the intransitive sentence with unaccusative *de* in the following:

(8) Ken-wa hitai-kara   ti-ga   de-ta.
     Ken-TOP forehead-from blood-NOM come out-PAST
     'As for Ken, blood came out of his forehead.'
     (=His forehead was bleeding.)

The semantic representation of these verbs should predict and explain such native speakers' intuition. This point will be taken up in chapter 3.

Another point is that *das* with affectee subject in (7) is distinct from *das* in (6) in that it cannot be passivized:

(9) a. Kagu-ga   (Ken-niyotte) heya-kara das-are-ta.   (cf. (6))
        furniture-NOM (Ken-by)   room-from put out-PAST
        'The furniture was put out of the room (by Ken).'
    b. *Ti-ga   (Ken-niyotte) das-are-ta.   (cf. (7))
        blood-NOM (Ken-by)   shed-PASS-PAST

It has been observed that there exists a group of transitives which do not undergo syntactic passivization, but many previous studies seem to have missed the point by

attributing this constraint to the idiosyncrasy of each lexical item.[4] Instead, I will show that my analysis makes it possible to account for this constraint on syntactic passivization by a general principle of the semantic structures of verbs.

1.2 The Organization of this Dissertation

This dissertation will be organized as follows. Chapter 2 will give the theoretical background assumed in this dissertation. Firstly, I will outline the structure of the lexicon, which is characterized by its type-hierarchical architecture. I will also show how argument structure and valency is specified in accordance with classes of verbs thus hierarchically organized. Next, I will outline the lexical-semantic approach characterized by its lexical representation which employs Lexical Conceptual Structure (LCS). It will be shown that the LCS-based approach is efficient particularly in abstracting the semantically equivalent classes of verbs, which will suggest a fresh perspective on the issue concerning the nature of thematic roles and lexical argument structure. Finally, I will offer two theoretical assumptions. Firstly, I will propose a novel semantic function AFFECTED to specify the relation between the individual who experiences and is affected (either physically or mentally) by the event (i.e., 'affectee') and the affecting event. Secondly, I will propose to incorporate the notion of 'event headedness' which has been introduced by Pustejovsky (1995) in the framework of Generative Lexicon, into the LCS representation.

Chapter 3 and chapter 4 discuss specific grammatical phenomena concerning voice alternation in Japanese: lexical compound verbs, non-agentive subject constructions. These are intended to prove the descriptive adequacy and the wide applicability of the LCS-based approach of this dissertation. Chapter 3 will examine complex event structures of lexical compound verbs in Japanese. Specifically, Verb-Verb compounds where the verb *das* and *de* appear as the second verb will be taken up. First, I will examine the behaviors of *das* and *de* when they are used as independent verbs and show that the transitive/intransitive distinction fails to capture the holistic interaction between the various usage of these verbs. Rather, I will claim that they are

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[4]Kageyama (1997b) is an exception. Based on a wide range of data, he has assumed that a group of transitive verbs are characterized by the absence of an external argument and that the constraint on syntactic passivization is explained by this characteristic argument structure.

further classified into various subtypes with respect to their argument-taking proper-
ties, which enables them to be arrayed in the interactional voice alternation system.
Here the semantic function AFFECTED will play a crucial role in the classification of
the verb. Next, based on such a classification, a pair of general compound lexical
rules, to compound the LCS representations of two verbs will be proposed. The gen-
eral principles which constraint the applicability of such unification rules will also be
proposed.

Chapter 4 will deal with non-agentive subject constructions. In particular, the
constructions which take the recipient subject (e.g., *azukar*, *osowar* etc.) and the
'affectee' subject (e.g., *mitukar*, *tukamar*) will be examined. It will be shown that
these verbs will equally be arrayed in the general voice system proposed in chapter 3.

Finally, Chapter 5 gives a brief summary of the overall discussion and the future
prospect of the analyses developed here.

Chapter 2   Theoretical Background

2.1   Overview

In this chapter, I will outline the theoretical background assumed in this dissertation. The basic assumption employed for the following analysis is that a range of grammatical phenomena in natural language are driven and constrained by the interaction of syntactic and semantic information within lexical entries. For the purpose of representing the lexical entry for each verb I will adopt the feature structures assumed and developed in such frameworks as, LFG, HPSG and related works. For the semantic representation of verbs, I will employ the predicate decomposition approach to the verbal semantics (i.e., Lexical Conceptual Structures, LCS), as well as the notions of EVENT HEADEDNESS in complex event structures introduced by Pustejovsky (1995).

2.2   The Structure of the Lexicon

Following numerous previous works based on the lexicalist approach (see Bresnan and Kaplan 1987; Pollard and Sag 1987, 1994; Sag and Wasow 1999; Gunji 1999, 2000, Bresnan 2000, among many others) , I assume that the lexicon has a complex internal organization and that rich information contained in each lexical entry is hierarchically ordered rather than simply listed. Such an assumption is strongly motivated by the parsimony of representations as well as psychological considerations. As a good illustration of psychological motivation for such a systematic aspect of the lexicon, Sag and Wasow (1999: 171–172) refer to the fact that any competent speaker adds the suffix –s to a novel English verb such as *email* when it is used in the present tense with a third person singular subject without fail. In this way, native speakers know a great many regularities exhibited by natural languages, and the lexicon must be equipped with the mechanisms to capture such regularities. In this section, I will overview the fundamental properties and technical apparatus of HPSG (e.g., Feature Structures, Structure-Sharing, Well-Formedness Definitions, Lexical Types and Lexical Rules) mainly based on the framework developed in Sag and Wasow (1999).

2.2.1 Feature Structures and Well-Formedness Definitions

2.2.1.1 Feature Structures: Examples

In HPSG, grammatical information is represented in the form of feature structures exemplified as follows. Each feature structure consists of ATTRIBUTES (i.e., a set of features) and their VALUES, thus it is called an ATTRIBUTE VALUE MATRIX (AVM). Throughout this dissertation, in accordance with the notation employed in the current works, the name of the type to which the feature structure belongs is represented in italicized form in the first line (i.e., *type*).[1]

(10)
$$\begin{bmatrix} type \\ \begin{bmatrix} \text{FEATURE}_1 & \text{value}_1 \\ \text{FEATURE}_2 & \text{value}_2 \\ \vdots \\ \text{FEATURE}_n & \text{value}_n \end{bmatrix} \end{bmatrix}$$

In the following, the symbols $\langle [\ ] \rangle$ represents the list which includes one entity, whereas $\langle\ \rangle$ represents the empty list. $\wedge$ represents the operation of unification, that is, amalgamation of the information contained in (more than) two compatible descriptions into a single (usually more specific) description.[2] Also it should be noted that the feature whose value is unspecified is unifiable with any value.

More specifically, the following AVM diagrams represent the feature structures for a verb *home* ('praise') and a proper noun *Ken* respectively:

(11) Naomi-ga   Ken-wo   home-ta.
      Naomi-NOM Ken-ACC praise-PAST
      'Naomi praised Ken.'

---

[1] Fuller discussion on lexical types and type hierarchy will be presented in 2.2.2.

[2] For further details of the notion of unification, see Pollard and Sag (1987, 1994), Sag and Wasow (1999), and Shieber (1986), among others.

(12) a. home 'praise':

$$
\begin{bmatrix}
word \\
\text{PHON} \quad \langle\ \text{home}\ \rangle \\
\text{SYNSEM} \begin{bmatrix}
\text{SYN} \begin{bmatrix}
\text{HEAD} & \begin{bmatrix} verb \end{bmatrix} \\
\text{SPR} & \langle\ \text{NP}_i\ \rangle \\
\text{COMPS} & \langle\ \text{NP[acc]}_j\ \rangle
\end{bmatrix} \\
\text{ARG-ST} \quad \langle\ [\ ]_i,\ [\ ]_j\ \rangle \\
\text{SEM} \begin{bmatrix}
\text{MODE} & \text{prop} \\
\text{INDEX} & s \\
\text{RESTR} & \left\langle \begin{bmatrix}
\text{RELN} & \text{praise} \\
\text{SIT} & s \\
\text{PRAISER} & i \\
\text{PRAISED} & j
\end{bmatrix} \right\rangle
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

b. Ken:

$$
\begin{bmatrix}
word \\
\text{PHON} \quad \langle\ \text{Ken}\ \rangle \\
\text{SYNSEM} \begin{bmatrix}
\text{SYN} \begin{bmatrix}
\text{HEAD} \begin{bmatrix}
noun \\
\text{AGR} \begin{bmatrix}
\text{PER} & \text{3rd} \\
\text{NUM} & \text{sg} \\
\text{GEN} & \text{masc}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix} \\
\text{ARG-ST} \quad \langle\ \rangle \\
\text{SEM} \begin{bmatrix}
\text{MODE} & \text{ref} \\
\text{INDEX} & i \\
\text{RESTR} & \left\langle \begin{bmatrix}
\text{RELN} & \text{name} \\
\text{SIT} & s \\
\text{NAME} & \text{Ken} \\
\text{NAMED} & i
\end{bmatrix} \right\rangle
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

Throughout this dissertation, I will adopt the convention in Sag and Wasow (1999) and use the term 'word' as a lexical entry whose feature structure is of type *word* like (12a) and (12b) above. The type *word* is specified for the features PHON(OLOGY) and SYNSEM (SYNTAX and SEMANTICS), and so is the type *phrase*. Note that the PHON value is presented in the form of a list, which makes it possible to represent the PHON value of the phrases which is usually a list of more than one form in a uniform way. More accurately, the lexical entry should specify a phonological information here, but it is customary in HPSG to use the word itself as the shorthand for the

detailed phonological representation.

2.2.1.2 SYNTAX features

SYN(TAX) features represent the syntactic properties of linguistic expressions. This feature is further decomposed into the HEAD, SPECIFIER (SPR) and COMPLE-MENTS (COMPS) features.[3] HEAD feature of the word typed as *verb* such as 'home' consists of the information about the part of speech.[4] In addition, a HEAD value of the type *noun* bears the specifications for CASE and AGREEMENT (AGR). The value of AGR is further decomposed into PERSON (PER), NUMBER (NUM) and GENDER (GEN) features. Note that the CASE feature of the proper noun such as 'Ken' is left unspecified. It follows from the fact that the CASE value of the proper noun is specified only when it combines with the verb whose lexical entry specifies the case of its complement(s) or specifier. In this way, some feature structures can be partial, thus, cumulatively become more specific as elements are combined.

The value of SPR is specified in the form of a list. Considering that sentences are normally considered to have a single subject and that NPs never have more than one determiners, treating SPR as a list-valued feature seems inappropriate at first glance. Nevertheless, as Sag and Wasow (1999) has noted, treating SPR and COMPS equally as list-valued features offers "a uniform way of formulating the idea that a particular valence requirement is unfulfilled ... or else is fulfilled" (Sag and Wasow 1999: 83–84).

The value of COMPS feature is a list of feature structures, which specifies the categories associated with the complements that the verb combines with. Thus, the

---

[3]Though abbreviated, the SPR and COMPS values of 'Ken' are considered to be empty lists as follows:

$$
\begin{bmatrix}
word \\
\begin{bmatrix}
\text{HEAD} & \begin{bmatrix} noun \\ \text{AGR} & \begin{bmatrix} \text{PER} & \text{3rd} \\ \text{NUM} & \text{sg} \\ \text{GEN} & \text{fem} \end{bmatrix} \end{bmatrix} \\
\text{SPR} & \langle\ \rangle \\
\text{COMPS} & \langle\ \rangle
\end{bmatrix}
\end{bmatrix}
$$

[4]Head feature of the verb is also decomposed into FORM feature which is specified when the verb appears in the phrase structure trees. I will shortly return to the analysis of how a phrase is built up under this lexical approach in the following section.

COMPS values for the (mono)transitive verb 'home' will be a list of length one. For so-called ditransitive verbs such as 'okur' ('send') or 'age' ('give'), the COMPS value will be a list of length two (i.e., ⟨NP, NP⟩), whereas for the intransitive verbs like 'aruk' ('walk') or 'warau' ('laugh'), the COMPS value will be a list of length zero (i.e., ⟨ ⟩). Such combinatoric potential of verbs is specified as a listed value of the feature ARG-ST (ARGUMENT STRUCTURE) which consists of the sum of the SPR value and the COMPS value.[5]

(13) a. *monotrans*: $\left[\text{SS} \quad [\text{ARG-ST} \quad \langle [\,], [\,]\rangle]\right]$

  b. *ditrans*: $\left[\text{SS} \quad [\text{ARG-ST} \quad \langle [\,], [\,], [\,]\rangle]\right]$

  c. *intrans*: $\left[\text{SS} \quad [\text{ARG-ST} \quad \langle [\,]\rangle]\right]$

Fuller discussion of this matter will be presented along with the classification of Japanese verbs later in this chapter. I will propose that a value of the feature ARG-ST will be further divided in to the list-valued features of EXT (external) and INT (internal).

2.2.1.3 SEMANTIC features

The SEM(ANTIC) features consist of three features: MODE, INDEX and RESTRIC-TION (RESTR). The values of the MODE feature are classified into the four basic kinds of meanings. Normally, the value of the MODE feature of the verb is specified as a proposition ('prop' for short), while that of the noun is specified as a reference ('ref' for short). The feature INDEX corresponds to the situation or individual referred to and the atomic values of INDEX is conventionally written with the letters such as *s, t, u,* etc. for the situations denoted by the verbs like 'home', and *i, j, k,* etc for individuals denoted by the nominal expressions like 'Ken'. The feature RESTR specifies a list of conditions that the situation of individual must satisfy for the appropriate expressions. Namely, the proposition, which is specified as a 'prop' value of the MODE feature is regarded as true in case there is some actual situation,

---

[5]'SS' is an abbreviation of 'SYNSEM'.

specified as the value s of the INDEX feature, where the conditions specified in the listed-value of the RESTR are all satisfied. For instance, the SEM value's RESTR of the verb 'praise' in (12a) is specified as the predication which involves a 'praising' relation, thus corresponds to the conditions such as 's is a situation wherein i praises j.[6] Likewise, the SEM value's RESTR of the proper noun 'Ken' in (12b) is specified as a 'naming' relation, i.e., 's is a situation wherein a certain individual i that the speaker intends to refer to and who is named 'Ken' (Sag and Wasow 1999: 109, also see fn. 7, 112).

Later in this chapter, I will present further modification of the SEM features of the verbs, but before moving on to that, I will briefly outline how the feature structures presented so far are combined to license a well-formed phrase and how such combinations are constrained by a set of universal principles.

2.2.1.4 Structure Sharing and Well-Formedness Definitions

As I have seen in the previous section, the CASE value of the proper noun like 'Ken' in (14) is specified only when its feature structure is combined with that of the verb, namely, when it is embedded within a larger feature structures as follows. For the sake of simplicity, the tree diagrams will be used as a shorthand representation, but tree structure itself is not of a great importance in the constrained-based grammatical theory such as HPSG. Neither configurational notions (e.g. government, c-command etc.) nor operations such as movement are assumed. Instead, much of the descriptive and explanatory burden is shifted to the lexical information and its internal organizations. Also note that PHON values for a phrase are written below the corresponding nodes.[7]

(14)   Naomi-ga   Ken-wo   home-ta.   (=(11))
       Naomi-NOM Ken-ACC praise-PAST
       'Naomi praised Ken.'

---

[6]Conventionally the notation such as NP$_i$ in (12a) is regarded as a shorthand for an NP, whose SEM value's INDEX is specified as i (see Sag and Wasow 1999: 113).

[7]More specifically, the inflected form of the verb 'home-ta' is obtained through the application of a certain lexical rule which derives past tense verb out of its stem 'home'. I will shortly turn to see how lexical types and lexical rules work in the grammatical framework assumed here in the following two subsections (2.2.2 and 2.2.3).

(15)

$$
\begin{bmatrix}
phrase \\
\text{SYN} \quad
\begin{bmatrix}
\text{HEAD} & \boxed{4} \\
\text{SPR} & \langle\, \boxed{3}\, \rangle \\
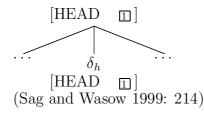\text{COMPS} & \langle\ \rangle
\end{bmatrix} \\
\text{SEM} \quad
\begin{bmatrix}
\text{MODE} & prop \\
\text{INDEX} & s \\
\text{RESTR} & \boxed{b} \oplus \boxed{a}\, \left\langle
\begin{bmatrix}
\text{RELN} & praise \\
\text{SIT} & s \\
\text{PRAISER} & i \\
\text{PRAISED} & j
\end{bmatrix} \right\rangle
\end{bmatrix}
\end{bmatrix}
$$

$\boxed{2}\,\text{NP}_j$

$$
\begin{bmatrix}
phrase \\
\text{SYN} \quad
\begin{bmatrix}\text{HEAD} & \boxed{1}\end{bmatrix} \\
\text{SEM} \quad
\begin{bmatrix}
\text{MODE} & ref \\
\text{INDEX} & j \\
\text{RESTR} & \boxed{b}
\end{bmatrix}
\end{bmatrix}
$$

$$
\begin{bmatrix}
word \\
\text{SYN} \quad
\begin{bmatrix}
\text{HEAD} & \boxed{4}\ [verb] \\
\text{SPR} & \langle\, \boxed{3}\ \text{NP}_i\, [\text{CASE} \quad nom]\, \rangle \\
\text{COMPS} & \langle\, \boxed{2}\, \rangle
\end{bmatrix} \\
\text{SEM} \quad
\begin{bmatrix}
\text{MODE} & prop \\
\text{INDEX} & s \\
\text{RESTR} & \boxed{a}
\end{bmatrix}
\end{bmatrix}
$$

home-ta

$$
\begin{bmatrix}
word \\
\text{SYN} \quad
\begin{bmatrix}
\text{HEAD} & \boxed{1}
\begin{bmatrix}
noun \\
\text{CASE} & acc \\
\text{AGR} & 3sing
\end{bmatrix}
\end{bmatrix} \\
\text{SEM} \quad
\begin{bmatrix}
\text{MODE} & ref \\
\text{INDEX} & j \\
\text{RESTR} & \boxed{b}\, \left\langle
\begin{bmatrix}
\text{RELN} & name \\
\text{SIT} & t \\
\text{NAME} & Ken \\
\text{NAMED} & j
\end{bmatrix} \right\rangle
\end{bmatrix}
\end{bmatrix}
$$

Ken

First, note that the HEAD specifications of the phrasal nodes (i.e., the 'VP' node of the top and the 'NP' node) are identified with those of their head daughters. In other words, the lexical head (V, N) and its mother node (VP, NP) share the same feature structures. In HPSG, structure-sharing relationship is conventionally represented by a boxed integer (i.e., 'tag') such as $\boxed{1}$ or $\boxed{4}$. The numbering itself is arbitrary. Such structure-sharing between the lexical heads and the headed phrases

is guaranteed by a general principle called Head Feature Principle:

(16)   Head Feature Principle:

The HEAD value of any headed phrase is structure-shared with the HEAD value of the head daughter. (Pollard and Sag 1994: 34).

$$[\text{HEAD} \quad \boxed{1}\,]$$

$$\cdots \qquad \begin{array}{c} \delta_h \\ [\text{HEAD} \quad \boxed{1}\,] \end{array} \qquad \cdots$$

(Sag and Wasow 1999: 214)

Next, note that the COMPS value of the top node (i.e., the 'VP' node) is empty. This obeys the Head-Complement Rule, which is a general condition on COMPS values of the head daughter (i.e., the V node dominating 'home'). Specifically, the head daughter's COMPS list is identified with the complement daughter(s) (i.e., NP node tagged $\boxed{2}$), thus, 'cancelled', which makes the mother's COMPS value empty. The Head-Complement Rule is formulated in general terms as follows:

(17)   Head-Complement Rule:

$$\begin{bmatrix} phrase \\ \text{COMPS} \quad \langle\ \rangle \end{bmatrix} \rightarrow \boxed{1} \quad \text{H} \begin{bmatrix} word \\ \text{COMPS} \quad \langle\,\boxed{1}\,\rangle \end{bmatrix}$$

This rule allows a phrase to consist of a lexical head preceded by its complement(s).[8] It should also be noted that the SPR value of the head daughter tagged $\boxed{3}$ is preserved

---

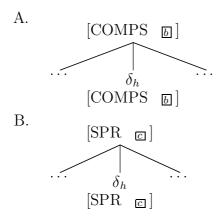[8]The Head-Complement Rule in (17) is based on the one formulated in Sag and Wasow (1999):

(i)   Head-Complement Rule:

$$\begin{bmatrix} phrase \\ \text{COMPS} \quad \langle\ \rangle \end{bmatrix} \rightarrow \text{H} \begin{bmatrix} word \\ \text{COMPS} \quad \langle\,\boxed{1}\,,\, \dots\, \boxed{m}\,\rangle \end{bmatrix} \boxed{1} \, \cdots \, \boxed{m}$$

(Sag and Wasow 1999: 127)

Ordering relations between heads and their complements are determined by the setting of the *head parameter* (Chomsky and Lasnik 1995). Note that the Head-Complement Rule formulated by Sag and Wasow (1999) is the one for a right-branching (i.e., head-initial) language like English, where heads precede their complements. The Head-Complement Rule I formulated above is the one for a left-branching (i.e., head-final) language like Japanese. Also note that Sag and Wasow's rule allows all the complements to be simultaneously combined with the head (see the notation $\boxed{1}$ ... $\boxed{m}$). On the other hand, I have adopted the view that head-complement relations are stated in a minimal, namely, binary branching phrase structure (see Gunji and Hasida 1998), thus, the number of complement combined with the head should be at most one.

as the mother's SPR value. In this way, (15) obeys the Valence Principle, formulated as follows:

(18)   The Valence Principle:
       Unless the rule says otherwise, the mother's SPR and COMPS values are identical to those of the head daughter. (Sag and Wasow 1999: 86)

A.

$$[\text{COMPS} \quad \boxed{b}\,]$$

$$\cdots \qquad \delta_h \qquad \cdots$$

$$[\text{COMPS} \quad \boxed{b}\,]$$

B.

$$[\text{SPR} \quad \boxed{c}\,]$$

$$\cdots \qquad \delta_h \qquad \cdots$$
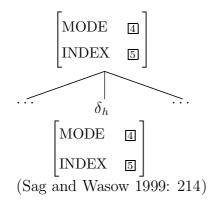
$$[\text{SPR} \quad \boxed{c}\,]$$

(Sag and Wasow 1999: 214)

Finally, the MODE and INDEX value of the mother are identified with those of the head daughter, whereas the RESTR value of the mother corresponds to the sum of those of all daughters (i.e., $\boxed{b} \oplus \boxed{a}$). Such constraints on the semantic features are specified by a couple of general semantic principles as follows:
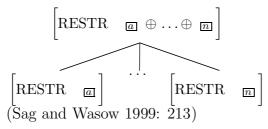
(19) a.   Semantic Inheritance Principle:
          In any headed phrase, the mother's MODE and INDEX values are identical to those of the head daughter. (Sag and Wasow 1999: 116)

$$\begin{bmatrix} \text{MODE} & \boxed{4} \\ \text{INDEX} & \boxed{5} \end{bmatrix}$$

$$\cdots \qquad \delta_h \qquad \cdots$$

$$\begin{bmatrix} \text{MODE} & \boxed{4} \\ \text{INDEX} & \boxed{5} \end{bmatrix}$$
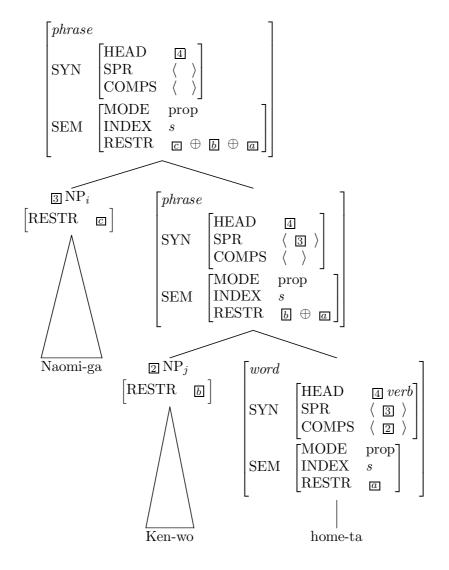
(Sag and Wasow 1999: 214)

b. Semantic Compositionality Principle:

In any well-formed phrase structure, the mother's RESTR value is the sum of the RESTR values of the daughters. (ibid.)

$$\left[\text{RESTR} \quad \boxed{a} \oplus \ldots \oplus \boxed{n}\right]$$

$$\left[\text{RESTR} \quad \boxed{a}\right] \quad \cdots \quad \left[\text{RESTR} \quad \boxed{n}\right]$$

(Sag and Wasow 1999: 213)

With general principles to satisfy the conditions on well-formed tree structures in place, the final step to combine the subject NP with the phrasal structure described above is handled exactly in the same way.

(20)

$$
\begin{bmatrix}
\textit{phrase} \\
\text{SYN} \begin{bmatrix} \text{HEAD} & \boxed{4} \\ \text{SPR} & \langle\ \rangle \\ \text{COMPS} & \langle\ \rangle \end{bmatrix} \\
\text{SEM} \begin{bmatrix} \text{MODE} & \text{prop} \\ \text{INDEX} & s \\ \text{RESTR} & \boxed{c} \oplus \boxed{b} \oplus \boxed{a} \end{bmatrix}
\end{bmatrix}
$$

$$
\boxed{3}\,\text{NP}_i \quad \left[\text{RESTR} \quad \boxed{c}\right]
$$

Naomi-ga

$$
\begin{bmatrix}
\textit{phrase} \\
\text{SYN} \begin{bmatrix} \text{HEAD} & \boxed{4} \\ \text{SPR} & \langle\ \boxed{3}\ \rangle \\ \text{COMPS} & \langle\ \rangle \end{bmatrix} \\
\text{SEM} \begin{bmatrix} \text{MODE} & \text{prop} \\ \text{INDEX} & s \\ \text{RESTR} & \boxed{b} \oplus \boxed{a} \end{bmatrix}
\end{bmatrix}
$$

$$
\boxed{2}\,\text{NP}_j \quad \left[\text{RESTR} \quad \boxed{b}\right]
$$

Ken-wo

$$
\begin{bmatrix}
\textit{word} \\
\text{SYN} \begin{bmatrix} \text{HEAD} & \boxed{4}\ \textit{verb} \\ \text{SPR} & \langle\ \boxed{3}\ \rangle \\ \text{COMPS} & \langle\ \boxed{2}\ \rangle \end{bmatrix} \\
\text{SEM} \begin{bmatrix} \text{MODE} & \text{prop} \\ \text{INDEX} & s \\ \text{RESTR} & \boxed{a} \end{bmatrix}
\end{bmatrix}
$$

home-ta

The structure in (20) is licensed by the Head-Specifier Rule, which allows a phrase to consist of a phrasal head preceded by its specifier.[9]

(21)   Head-Specifier Rule:
$$\begin{bmatrix} phrase \\ \text{SPR} \quad \langle \ \rangle \end{bmatrix} \rightarrow \boxed{1} \ \dots \ \boxed{m} \quad \text{H} \begin{bmatrix} word \\ \text{SPR} \quad \langle \boxed{1}, \dots \boxed{m} \ \rangle \end{bmatrix}$$
(Sag and Wasow 1999: 128)

The phrasal structure in (20) licensed by this rule obeys four general principles noted above, thus is guaranteed as the well-formed structure.

In this way, the feature structures associated with each lexical element are very rich in information, but the way in which they interact with each other is well constrained by a group of universal principles formulated in very general terms.

2.2.2   Lexical Types and Type Hierarchy

So far I have overviewed the features and well-formedness definitions assumed and developed in HPSG and seen how they work to license well-formed tree structures of words and phrases. With such a set of features and general principles in place, numerous attempts have been made to develop the mechanisms to capture and predict such systematicity of the lexicon, one of which is TYPE HIERARCHY (see Davis 1996; Green and Levine 1999; Sag and Wasow 1999; Koenig 1999; Davis and Koenig 2000; Gunji 2000 etc.). Introducing type hierarchy allows us to avoid a great deal of the redundancy in the lexicon. By using the notion of type to define feature values, common properties shared by a certain type are automatically obtained. Normally, information contained in supertypes apply to their subtypes unless otherwise specified. Such an idea helps to capture linguistically significant generalizations without repeatedly stipulating a range of information associated with each lexical entry. Nevertheless, as Sag and Wasow (1999: 172) have noted, the inheritance of constraints in type hierarchy is not always monotonic. Rather they have introduced DEFAULT INHERITANCE of constraints, according to which "contradictory information associated with a subtype takes precedence over (or OVERRIDE) constraints that would otherwise be inherited from a supertype" (Sag and Wasow 1999: 172). This idea neatly captures the fact

---

[9]It can be parametric whether the specifier precedes the head or follows it. Although it seems natural to assume that $\boxed{m} = 1$, but it is still debatable whether a single phrase allows the occurrence of more than two specifiers in it. I will leave the matter open.

that natural languages show a great many regularities, but not without exceptions. Throughout this dissertation, I will adopt this idea of DEFAULT INHERITANCE of constraints.

Let us turn to the particular lexical hierarchy assumed in the rest of this dissertation, which is shown in (22):

(22)

The class *sign* encompasses all classes of linguistic expressions (i.e., word, phrase etc.). One of the immediate subtypes of *sign* is *lex-item* (abbreviation for *lexical item*), which is further classified into *lexeme* and *word*. Such classification has been introduced and developed in Sag and Wasow (1999), where they have assumed the mechanism to derive the latter from the former through the application of various lexical rules. According to them, these two types reflect "two different uses of the term 'word' in everyday English" (Sag and Wasow 1999: 175). To take a simple example they have given, two distinct ways in which competent speakers treat the words *runs* and *ran* serve to illustrate the distinction between *lexeme* and *word*. Firstly, people regard *runs* and *ran* as two different words because they are characterized by different sounds and meanings. At the same time, however, they have an intuition that these two should be treated as the different forms of the single word *run*, that is, they belong to the same family. Thus, two different notions of 'word' coexist in speakers' mind, the first of which corresponds to the type *word*, whereas the latter corresponds to the type *lexeme*. In Sag and Wasow's words, a *lexeme* is "an abstract proto-word", from which *word* is derived through the application of a range of lexical rules.

2.2.3 Lexical Rules

Grammatical theories based on the lexicalist approach like LFG, HPSG have demonstrated the validity of positing a range of lexical rules to simplify and systematize the structure of the lexicon (Kaplan and Bresnan 1982; Sag and Wasow 1999). Lexical rules utilize the information contained in one lexical entry (i.e., the 'input' of the rule) as the basis to produce another lexical entry (i.e., the 'output' of the rule), which is systematically related to the input. Some lexical rules characteristically map entries of type *lexeme* into lexical entries for inflected forms of words. Such rules are called INFLECTIONAL rules. For instance, the past tense form of the verb 'home', namely, 'home-ta' is obtained through the application of Past-Tense Verb Lexical Rule formulated as follows:

(23)   Past-Tense Verb Lexical Rule:

$$
\left\langle \boxed{2}, \begin{bmatrix} verb\text{-}lxm \\ \begin{bmatrix} \text{SEM} & \begin{bmatrix} \text{RESTR} & \boxed{a} \end{bmatrix} \end{bmatrix} \end{bmatrix} \right\rangle \Rightarrow
$$

$$
\left\langle \text{F}_{PAST}(\boxed{2}), \begin{bmatrix} word \\ \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{FORM} & \text{fin} \end{bmatrix} \end{bmatrix} \\ \text{ARG-ST} & \left\langle \begin{bmatrix} \text{CASE} & \text{nom} \end{bmatrix}, \dots \right\rangle \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & \boxed{3} \\ \text{RESTR} & \boxed{a} \oplus \left\langle \begin{bmatrix} \text{RELN} & \text{t-precede} \\ \text{ARG1} & \boxed{3} \\ \text{ARG2} & \text{now} \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \end{bmatrix} \right\rangle
$$

(Sag and Wasow 1999: 192)

Sag and Wasow (1999: 192–193) have posited a function F_{PAST}, which maps verbal lexemes to their past tense forms. In English, such a function suffixes *-ed* to verbal stems, but there are many exceptions. In Japanese, the function usually adds 'ta' to verbal stems, thus, the past tense form like 'home-ta' is obtained. Semantically, it adds the relation 't-precede' on the restriction list, which specifies that the situation denoted by the index of the verb temporally precedes the time of utterance.
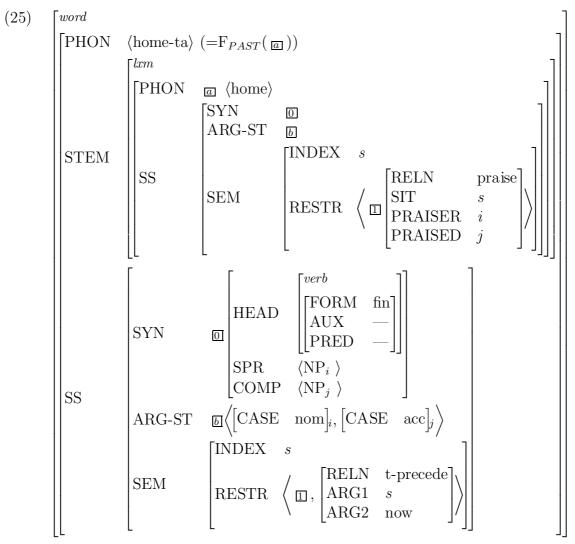
It may be worth pointing out, in passing, that such a lexeme-to-word (inflectional) lexical rule can be handled by types and represented in a single feature structure (Sag and Wasow 1999: 362–363). Sag and Wasow have posited a feature STEM for the

type *word* and assume that the value of STEM is of type *lexeme*. They also add the default constraints that the SYNSEM and PHON values of a word are identical to those of its STEM value. The symbol '/' is used to indicate that a certain constraint is a default (Sag and Wasow 1999: 176):

(24)
$$
\begin{bmatrix}
word \\
\begin{bmatrix}
\text{PHON} & / & \boxed{1} \\
\text{SYNSEM} & / & \boxed{2} \\
\\
\text{STEM} & \begin{bmatrix} lxm \\ \begin{bmatrix} \text{PHON} & / & \boxed{1} \\ \text{SYNSEM} & / & \boxed{2} \end{bmatrix} \end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

Hence, word such as 'home-ta' in the example above will have a feature structure as follows:

(25)
$$
\begin{bmatrix}
word \\
\text{PHON} & \langle \text{home-ta} \rangle \ (=\mathrm{F}_{PAST}(\boxed{a})) \\
\\
\text{STEM} & \begin{bmatrix}
lxm \\
\text{PHON} & \boxed{a} \ \langle \text{home} \rangle \\
\\
\text{SS} & \begin{bmatrix}
\text{SYN} & \boxed{0} \\
\text{ARG-ST} & \boxed{b} \\
\\
\text{SEM} & \begin{bmatrix}
\text{INDEX} & s \\
\text{RESTR} & \Big\langle \boxed{1} \begin{bmatrix} \text{RELN} & \text{praise} \\ \text{SIT} & s \\ \text{PRAISER} & i \\ \text{PRAISED} & j \end{bmatrix} \Big\rangle
\end{bmatrix}
\end{bmatrix}
\end{bmatrix} \\
\\
\text{SS} & \begin{bmatrix}
\text{SYN} & \boxed{0} \begin{bmatrix}
\text{HEAD} & \begin{bmatrix} verb \\ \text{FORM} & \text{fin} \\ \text{AUX} & - \\ \text{PRED} & - \end{bmatrix} \\
\text{SPR} & \langle \text{NP}_i \rangle \\
\text{COMP} & \langle \text{NP}_j \rangle
\end{bmatrix} \\
\\
\text{ARG-ST} & \boxed{b} \Big\langle \big[\text{CASE} \ \ \text{nom}\big]_i, \big[\text{CASE} \ \ \text{acc}\big]_j \Big\rangle \\
\\
\text{SEM} & \begin{bmatrix}
\text{INDEX} & s \\
\text{RESTR} & \Big\langle \boxed{1}, \begin{bmatrix} \text{RELN} & \text{t-precede} \\ \text{ARG1} & s \\ \text{ARG2} & \text{now} \end{bmatrix} \Big\rangle
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

On the other hand, natural languages usually have another kind of lexical rule which maps lexemes into lexemes, which are usually called DERIVATIONAL rules. In chapter 3, I will deal with the derivational process of compound verbs by postulating a set of compound lexical rules and general constraints on applicability of these rules.

Since further discussion on the whole architecture of lexicon and examination of each lexical rule assumed in previous works will go far beyond the scope of this dissertation, I would like to focus attention on verb classes in the hierarchical lexicon. Specifically, in the following section, I will propose to classify Japanese verbs in terms of their argument-taking properties, which will be represented in type hierarchical structure.

2.3 Verb Classes in Hierarchical Lexicon

Based on the idea of the hierarchical lexicon overviewed in the previous subsection, I will propose the classification of Japanese verbs as follows:[10]

Figure 1: Japanese Verb Classes in Type Hierarchy and Their Examples

It is assumed that a hierarchical structure as in Figure 1 is not specific to Japanese, but has universal characteristics. For the analyses based on the same sort of hierarchical structures, see Manning and Sag (1998), Manning, Sag, and Iida (1999), Sag and Wasow (1999) and Koenig (2000).

---

[10]Figure 1 is the modification of the one assumed in Gunji (2000).

First of all, note that the subclasses of verbs assumed here is not simply based on the number of arguments (i.e., the distinction between so-called 'transitive' and 'intransitive'). Rather, I assume that verbs are classified by the distribution of the external and internal argument(s), that is, the number of entities of different character in the list value of the feature ARG-ST in the lexical entry of each verb. Thus, the distinction between *agentive* and *nonagentive* in Figure 1 as the immediate subtypes of *verb* corresponds to the existence of the external argument in the list of argument structure. The point I wish to stress here is that what has been traditionally called 'transitive' verbs are assumed to have a subtype characterized by its unaccusativity (i.e., *diunaccusative* type), though unaccusative verbs are usually regarded as intransitives. The typical example of this type is 'deki' ('be able to'), which takes two arguments, neither of which is marked by accusative case *-wo*:

(26)　Ken-ni　eikaiwa-ga　　　　　　deki-ru.
　　　Ken-DAT English conversation-NOM be able to
　　　'Ken is competent in English conversation.'

The verb like 'azukar' ('receive') in (27a) takes the accusative marked object, but this verb is semantically different from the usual transitive verb with the accusative object like 'kowas' ('break') in (27b) in that its nominative subject is not agentive (or less agentive at least):

(27) a.　Uketukegakari-ga kityoohin-wo　azukat-ta.
　　　　　receptionist-NOM　valuables-ACC receive-PAST
　　　　　'The receptionist received valuables from the customer.'

　　 b.　Ken-ga　　kabin-wo kowas-ita.
　　　　　Ken-NOM vase-ACC break-PAST
　　　　　'Ken broke the vase.'

In this dissertation, I will assume that verbs with non-agentive subjects such as 'azukar' in (27a) are also classified as *diunaccusative*. It will be shown that such assumption enables us to give a more natural and holistic analysis of non-agentive subject constructions in Japanese.[11]

---

[11]Fuller discussion on this point will be given in chapter 4.

Specifically, I will posit the list-valued features of EXT (external) and INT (internal) as the value of ARG-ST. Each verb class represented in Figure 1 above will be defined by the specification of ARG-ST in (28). I assume that the ordering of elements in ARG-ST list corresponds to the order of the obliqueness hierarchy, that is, the least oblique element appears leftmost and the following elements are ordered in accordance with their increasing obliqueness:[12]

(28) a. $\begin{bmatrix} nonagentive \\ \text{ARG-ST} & \begin{bmatrix} \text{EXT} & \langle\,\rangle \end{bmatrix} \end{bmatrix}$

    1. $\begin{bmatrix} argless \\ \text{ARG-ST} & \begin{bmatrix} \text{EXT} & \langle\,\rangle \\ \text{INT} & \langle\,\rangle \end{bmatrix} \end{bmatrix}$

    2. $\begin{bmatrix} unaccusative \\ \text{ARG-ST} & \begin{bmatrix} \text{EXT} & \langle\,\rangle \\ \text{INT} & \langle[\,], \ldots\rangle \end{bmatrix} \end{bmatrix}$

      (i) $\begin{bmatrix} monounac \\ \text{ARG-ST} & \begin{bmatrix} \text{EXT} & \langle\,\rangle \\ \text{INT} & \langle[\,]\rangle \end{bmatrix} \end{bmatrix}$

      (ii) $\begin{bmatrix} diunac \\ \text{ARG-ST} & \begin{bmatrix} \text{EXT} & \langle\,\rangle \\ \text{INT} & \langle[\,]\,[\,]\rangle \end{bmatrix} \end{bmatrix}$

  b. $\begin{bmatrix} agentive \\ \text{ARG-ST} & \begin{bmatrix} \text{EXT} & \langle[\,]\rangle \end{bmatrix} \end{bmatrix}$

---

[12]Here I adopt the traditional notion of obliqueness assumed in Pollard and Sag (1994: 24), which is rather close to other proposed hierarchies of grammatical relations like Keenan-Comrie accessibility hierarchy and the SUB-OBJ-OBJ2 hierarchy assumed in LFG.

1. $\begin{bmatrix} \textit{unergative} \\ \\ \text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle [\ ]\rangle \\ \text{INT} & \langle\ \rangle \end{bmatrix} \end{bmatrix}$

2. $\begin{bmatrix} \textit{transitive} \\ \\ \text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle [\ ]\rangle \\ \text{INT} & \langle [\ ], \ldots \rangle \end{bmatrix} \end{bmatrix}$

    (i) $\begin{bmatrix} \textit{monotrans} \\ \\ \text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle [\ ]\rangle \\ \text{INT} & \langle [\ ]\rangle \end{bmatrix} \end{bmatrix}$

    (ii) $\begin{bmatrix} \textit{ditrans} \\ \\ \text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle [\ ]\rangle \\ \text{INT} & \langle [\ ], [\ ]\rangle \end{bmatrix} \end{bmatrix}$

Firstly, verbs are classified into *nonagentive* type (=(28a)) and *agentive* type (=(28b)) in terms of the existence of entity in the list of EXT in their ARG-ST.[13]

Next, these immediate subtypes of *verb* are further classified into their subtypes regarding whether they have any entity in the list of INT or not (see (28a-1, 2) and (28b-1, 2) above). Thus, in the case of the subtype of *nonagentive*, which lacks an external argument, if it does not have any internal argument either, such verb class will consist of verbs with no argument, hence *argless*. Typical examples of this class of verb describe certain natural phenomena such as weather in (29a) or a breakout of fire in (29b):[14]

(29) a.   Ame-da.

          rain-COP

---

[13]The terms *(non)agentive* employed here is intended to specify the argument-taking properties rather than purely thematic ones. Though there is fairly general agreement that the structural realization of arguments are predictable (to a certain extent, at least) from their semantic properties, it is not so clear whether such linking relationships can be posited as a set of lexical rules. I shall shortly return to this point in the following section.

[14]Here I assume that a phrase such as *ame-da* constitutes a single predicate, regarding the copula *-da* as a morpheme which marks the present tense in the same way as so-called "adjectival verbs" ("adjectival nouns" in Tsujimura's (1996) terminology) like *ziyuu-da* ('free'), or *byooki-da* ('sick'), which are analyzed as single predicates consisting of nouns/adjectives and copula *-da*.

'It is raining.'

b. Kazi-da.

fire-COP

'Fire!'

On the other hand, when the subtype of *nonagentive* has (usually at most two) internal arguments, it comprises the class of so-called *unaccusative*, which is further classified into *monounac* (i.e., mono-unaccusative) and *diunac* (i.e., diunaccusative) in terms of the number of entities in the list of INT (see (i) and (ii) under *unaccusative*).[15] The former corresponds to intransitive verbs taking one internal argument such as *wak* in (30a), while the latter a group of transitive verbs which typically take non-agentive subjects such as *deki* in (26) above, repeated here as (30b):

(30) a. Yu-ga   wai-ta

(hot) water-NOM boil-PAST

'The water boiled.'

b. Ken-ni   eikaiwa-ga   deki-ru.   (=(26))

Ken-DAT English conversation-NOM be able to

'Ken is competent in English conversation.'

Let me turn to the subclasses of *agentive* type. Some verbs have a non-empty EXT list but an empty INT list, which makes a group of *unergative* intransitive verbs (see (28b-1)). The typical example of this type will be 'hasir' ('run'):

(31) Ken-ga   hasir-u.

Ken-NOM run-PRES

'Ken runs.'

On the other hand, when verbs have non-empty INT list as well as their non-empty EXT list, they comprise *transitive* type, which undergoes further classification with respect to the number of internal arguments they take (see (i) and (ii) under *transitive*). Thus, transitive verbs with only one internal argument are classified as

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[15]Later in chapter 4, I will show that there exists a verb which should be analyzed as taking three internal arguments (i.e., tri-unaccusative) and discuss the validity of assuming this kind of subclass of unaccusative verbs.

monotrans (i.e., mono-transitivie), and those with dual internal arguments as *ditrans* (i.e., ditransitive).[16]

(32) a. Ken-ga   kabin-wo kowas-ita.   (=(27b))
       Ken-NOM vase-ACC break-PAST
       'Ken broke the vase.'

   b. Ken-ga   Naomi-ni   tegami-wo okut-ta.
      Ken-NOM Naomi-DAT letter-ACC send-PAST
      'Ken sent Naomi a letter.'

In this way, the value of ARG-ST of each subtype is specified by unifying the information of its own with the information contained in ARG-ST of its supertypes. For instance, ARG-ST value of *ditrans* is defined through the unification of the ARG-ST information of its own and that of *transitive*, which is specified through the unification with information contained in ARG-ST of *agentive* in turn. The relation between verb classes and the number of entities in the list of EXT and INT is summarized in Table 1 below.

So far I have seen that verbs may be divided into six distinct types in terms of their argument taking characteristics. Having made this classification, I will turn to the structural realization of these arguments. Though the fuller study of linking lies outside the scope of dissertation, I will propose a couple of general constraints regulating the correspondence between the arguments and valence.

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[16]To be more precise, a group of verbs classified as *monotrans* should be further divided into several subclasses in terms of CASE value of their internal arguments.

   (i) a. Tigers-ga   Giants-ni   kat-ta.   (-ni object type)
          Tigers-NOM Giants-DAT beat-PAST
          'The Tigers beat the Giants.'
      b. Ken-ga   Naomi-ni/-to   at-ta.   (-ni/-to object type)
         Ken-NOM Naomi-DAT/-with meet-PAST
         'Ken met Naomi.'
      c. Naomi-ga   Ken-wo/-ni   tayor-u. (-wo/-ni object type)
         Naomi-NOM Ken-ACC/-DAT depend
         'Naomi depends on Ken.'

There exist some transitive verbs whose objects are typically marked by *ni* (=ia). Interestingly, some of such *ni*-marked objects can be marked by *to* alternatively (=ib). In the same way, some transitive verbs like *tayor* in (ic) allows the alternation between *wo* and *ni* regarding the case marking of their objects. I shall not go into any more details on this point. As to such a variation of case markers of internal argument, see Kuno (1973), Inoue (1976a, 1976b), Kuroda (1992), Sugimoto (1991), Nitta (1993), Tsujimura (1996), Gunji (1997c), and Masuoka (1997), among many others.

Table 1: Verb Classes and List Value of ARG-ST

INT \ EXT	empty		non-empty	
empty	*argless*		*unergative*	
non-empty	*unaccusative*		*transitive*	
	1	2	1	2
	monounac	*diunac*	*monotrans*	*ditrans*

2.4 Argument Structure and Valence

As I have seen so far, one of the basic assumptions held in this dissertation is that the distinction between external (EXT) and internal (INT) argument(s) are lexically specified with respect to each verb class as in (28). Nevertheless, it does not mean that they are idiosyncratic in nature. Rather, I assume that ARG-ST is regularly constrained by semantic information. The correspondence between the structural realization of arguments (i.e., EXT or INT) and their semantic properties (i.e., agent, patient, theme etc.), namely, the problem of linking, has been the issue of controversy in the study of syntax-semantics interface, and a large number of studies have been made in answer to the traditional question whether the argument structures of verbs are predictable from their meanings. For instance, Levin and Rappaport Hovav (1995) have proposed a set of LINKING RULES, which regulate the mapping relations between semantic representation and argument structure.[17] On the other

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[17] Specifically, Levin and Rappaport Hovav (1995) have suggested four linking rules as follows.

(33) a. IMMEDIATE CAUSE LINKING RULE:
          The argument of a verb that denotes the immediate cause of the eventuality described by that verb is its external argument.
      b. DIRECTED CHANGE LINKING RULE:
          The argument of a verb that corresponds to the entity undergoing the directed change described by that verb is its direct internal argument.
      c. EXISTENCE LINKING RULE:
          The argument of a verb whose existence is asserted or denied is its direct internal argument.
      d. DEFAULT LINKING RULE:
          An argument of a verb that does not fall under the scope of any of the other linking rules is its direct internal argument.
          (Levin and Rappaport Hovav 1995: ch. 4)

See Levin and Rappaport Hovav (1995) for further details.

hand, Davis (1996) has proposed a formal account of linking based on word classes and its semantic representations (also see Davis and Koenig (2000)). Nevertheless, the applicability of their rules still remains to be tested. Firstly, as I have briefly noted above, it is not so clear whether such linking relationships can be posited as a set of lexical rules rather than the general tendencies such that 'proto-agent' is more readily connected to the external argument and 'proto-patient' properties with the internal argument. Moreover, although 'thematic role labels provide convenient terminology for *describing* many lexico-syntactic problems' (Grimshaw 1990: 43-44), it is extremely difficult to find independently justified criteria to identify these roles (see Dowty 1991; Wechsler 1995).

Thus, I will not further classify arguments beyond the external/internal distinction in ARG-ST. Rather, following the observations in previous works such as Perlmutter's (1978) Unaccusative Hypothesis, Burzio's Generalization (Burzio 1986) and Grimshaw's (1990) A-Structure constructed in accordance with the thematic hierarchy, I will propose that the generalization as in (34):

(34) When an ARG-ST list and a VAL list are specified as follows, the following equation holds:

$$\begin{bmatrix} \text{VAL} & \begin{bmatrix} \text{SUBJ} & \boxed{1} \\ \text{COMPS} & \boxed{2} \end{bmatrix} \\ \text{ARG-ST} & \begin{bmatrix} \text{EXT} & \boxed{3} \\ \text{INT} & \boxed{4} \end{bmatrix} \end{bmatrix}$$
$$\boxed{1} \oplus \boxed{2} = \boxed{3} \oplus \boxed{4}$$

More specifically, such generalization as (34) leads to the realization of arguments as follows:

(35) a. For verbs with an empty EXT list in ARG-ST, the least oblique internal argument will be associated with the grammatical subject (SUBJ). In case there is a remaining argument, it will be associated with the grammatical object (COMPS).

$$\begin{bmatrix} \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \boxed{2} \end{bmatrix} \\ \text{ARG-ST} & \begin{bmatrix} \text{INT} & \langle \boxed{1} \rangle \oplus \boxed{2} \end{bmatrix} \end{bmatrix}$$

⊕ is an operator which concatenates two lists.

b. For verbs with a non-empty EXT list in ARG-ST, the external argument will be associated with the grammatical subject (SUBJ) and the internal argument(s) will be associated with the grammatical object(s) (COMPS).

$$
\begin{bmatrix}
\text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \boxed{2} \end{bmatrix} \\
\text{ARG-ST} & \begin{bmatrix} \text{EXT} & \langle \boxed{1} \rangle \\ \text{INT} & \boxed{2} \end{bmatrix}
\end{bmatrix}
$$

Given that the external argument is less oblique than the internal argument(s), the constraints in (35) can be regarded as a general constraint which associates the least oblique entity in ARG-ST to the grammatical subject. Thus, the valence feature of the five classes of verbs listed above (i.e., *unergative*, *unaccusative* (e.g., *monounac* and *diunac*) and *transitive* (i.e., *monotrans* and *ditrans*) will be specified as follows:

(36) a.
$$
\begin{bmatrix}
\textit{unergative} \\
\text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle\ \rangle \end{bmatrix} \\
\text{ARG-ST} & \begin{bmatrix} \text{EXT} & \langle \boxed{1} \rangle \\ \text{INT} & \langle\ \rangle \end{bmatrix}
\end{bmatrix}
$$

b.
$$
\begin{bmatrix}
\textit{unaccusative} \\
\text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \boxed{2} \end{bmatrix} \\
\text{ARG-ST} & \begin{bmatrix} \text{EXT} & \langle\ \rangle \\ \text{INT} & \langle \boxed{1} \rangle \oplus \boxed{2} \end{bmatrix}
\end{bmatrix}
$$

In case $\boxed{2} = \langle\ \rangle$, VAL specification of *monounac* will be obtained.

c. $\begin{bmatrix} \textit{transitive} \\ \\ \text{VAL} \quad \begin{bmatrix} \text{SUBJ} & \langle\, \boxed{1}\, \rangle \\ \text{COMPS} & \boxed{2} \end{bmatrix} \\ \\ \text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle\, \boxed{1}\, \rangle \\ \text{INT} & \boxed{2} \end{bmatrix} \end{bmatrix}$

In case $\boxed{2} = \langle\, \boxed{3}\,, \boxed{4}\, \rangle$, VAL specification of *ditrans* will be obtained.

In this way, VAL is automatically obtained from the information about verb classes and its ARG-ST; thus, I will use the abbreviated representation, omitting VAL, in the following for the sake of simplicity.

So far, I have proposed that verbs are classified in terms of their value of ARG-ST and that their valence properties will be determined systematically from the specification of the verb classes and their ARG-ST. Such a mechanism seems to justify the representation of argument structures *without* thematic labels. Actually, if one adopts the idea proposed in the predicate decomposition approach (e.g., Jackendoff 1976, 1987, 1990; Rappaport and Levin 1988; Pinker 1989; Levin and Rappaport Hovav 1995; among others), where the lexical representation of verbal semantics takes the form of the predicate decomposition, the thematic roles can be read off from the particular argument positions associated with these predicates, thus labeling of arguments with thematic roles leads to undesirable redundancy. In the following section, I will briefly review the literature on the predicate decomposition approach and move on to the proposals that I will make in this dissertation.

2.5 Theoretical Assumptions

2.5.1 The Predicate Decomposition Approach

The predicate decomposition approach towards the verbal semantics goes back to generative semantics, where the surface structures were 'derived' from the hierarchical semantic structure of verbs consisting of a set of predicates such as DO, CAUSE, or BECOME (McCawley 1971 etc.). Nevertheless, such a generative semantics scheme itself had obvious limitations, the most serious of which was that it considered that such 'underlying structures' should be directly connected to the 'surface structure' via derivational constraints. As Fodor (1970) and others noted (also see Chierchia

and McConnell-Ginet 1990: ch. 8), the lexical item (e.g., *kill*) is not necessarily equivalent to the complex expression corresponding to the decomposition (e.g., *cause to die*). Moreover, the generative semanticists were not successful in giving independent motivation for these predicates, which also seems to have led to the collapse of the framework (also see Gunji 1998).[18]

The idea of predicate decomposition itself has been recently modified and elaborated, particularly in the field of lexical semantics (e.g., Jackendoff 1976, 1983, 1987, 1990; Levin and Rappaport Hovav 1995; Pustejovsky 1995 etc.), formal semantics (Dowty 1979 etc.), and language acquisition (Pinker 1989). Dowty (1979), for instance, has regarded the predicates CAUSE and BECOME as logical operators. By adopting the Montague semantics framework, Dowty has given formal definitions to the set of operators and proposed that various aspectual properties of verbs should be explained by referring to these predicates.

On the other hand, Jackendoff (1990) and Levin and Rappaport Hovav (1995), among others, have assumed the level of lexical representations where the semantic information of each verb is decomposed into a set of semantic predicates and their arguments, which is generally referred to as Lexical Conceptual Structure (LCS). By taking into account the richness of lexical information and assuming an independent level of representation for it, they have been pursuing various problems of meaning, and offered significantly elaborate analyses, especially for the behavior of verbs in word formation (both derivational and compounding) as well as various alternation phenomena (e.g., locative alternation involving the verbs like *spray* or *load*). In particular, their approach has clarified the systematic aspects of lexical knowledge that has been neglected for a long time under the 'common' view that regards the lexicon merely as 'a list of basic irregularities' (Bloomfield 1933: 274).

Although the detailed notations vary depending on scholars, the predicates such as CAUSE are assumed to specify the causal relationship between two events, GO or MOVE for motions, BECOME for change of state/location, and BE (AT) for state. Levin and Rappaport Hovav (1995), for instance, illustrate the causative and non-causative use of the verb *break* as follows:

---

[18]For the development of a componential approach to semantics in general, see Cruse (2000), where he discusses what essentially motivates lexical decomposition approach as well as its problematic aspects.

(37) a. John broke the window.

Causative *break*: [[x DO-DOMETHING] CAUSE [y BECOME *BROKEN*]]

b. The window broke.

Noncausative *break*: [y BECOME *BROKEN*]

(Levin and Rappaport Hovav 1995: 23, 83)

To take another example, Jackendoff (1990: 45–46) assumes, to be more precise, CONCEPTUAL STRUCTURE in his framework such as (38b) for the sentence involving the motion verb *run*:

(38) a. John ran into the room.

b. [Event GO([Thing JOHN], [Path TO([Place IN([Thing ROOM])])])]

(Jackendoff 1990: 45)

The lexical entry for the two elements *run* and *into* in (38a) are further specified as follows:

(39) a. into

$$\begin{bmatrix} \text{into} \\ \text{P} \\ \underline{\quad} \text{NP}_j \\ [\text{Path TO}([\text{Place IN}([\text{Thing} \quad]_j)])] \end{bmatrix}$$

b. run

$$\begin{bmatrix} \text{run} \\ \text{V} \\ \underline{\quad} \langle \text{PP}_j \rangle \\ [\text{Event GO}([\text{Thing} \quad]_i, [\text{Path} \quad]_j)] \end{bmatrix}$$

(Jackendoff 1990: 45)

Such specifications effectively capture the meaning incorporated in the verb *enter*, whose lexical entry is specified as follows:

(40)   enter

$$\begin{bmatrix} \text{enter} \\ \text{V} \\ \underline{\qquad}\langle \text{NP}_j \rangle \\ [_{\text{Event}} \text{ GO}([_{\text{Thing}} \quad]_i, [_{\text{Path}} \text{ TO}([_{\text{Place}} \text{ IN } ([_{\text{Thing}} \quad]_j)])])] \end{bmatrix}$$

(Jackendoff 1990: 46)

As I have mentioned above, one of the advantages of assuming the predicate decomposition approach is that the set of semantic roles can be defined structurally over LCS. Certainly, without independent criteria to determine the set of 'primitive' predicates themselves (as well as the notion of 'primitiveness'), the approach will suffer from exactly the same sort of problems as thematic-role dependent approaches. The more extensive the decomposition is intended to be, the larger the number of predicates grows. As Levin (1993) has noted, one of the common criteria is entailment relations, but it seems to be an area for further research.

Nevertheless, there is further evidence in favor of the lexical representation as taking the form of predicate decomposition. Levin (1993) has classified over three thousand verbs according to the syntactic behavior (i.e., alternations) that each verb shows. Her classification is based on the important assumption that 'various aspects of the syntactic behavior of verbs are tied to their meaning' (Levin 1993: 5) and makes it explicit that a native speaker's lexical knowledge is expected to include the notion of semantically coherent verb classes which determine each verb's behavior, as well as its argument selection, i.e., the 'natural classes' of verbs. For instance, the common syntactic properties of denominal verbs like *pocket* and *butter* can be effectively captured by assuming that they share the same decompositional template. Thus, LCS of a verb of putting specified as follows:

(41)   Verb of putting: [x CAUSE [y BECOME P$_{loc}$ z]]

    a.   *butter*: [x CAUSE [*BUTTER* P$_{loc}$ z]]

    b.   *pocket*: [x CAUSE [y [BECOME P$_{loc}$ *POCKET*]]

(Levin and Rappaport Hovav 1995: 24)

Moreover, Levin and Rappaport Hovav (1995: 25–30) note that LCS sheds light on the problems of regular polysemy, that is, the ways more than two meanings are associated with a single phonological form. To take a simple example, a verb *stay* in (42a) describes the spatial relationship whereas the verb in (42b) refers to the identificational relationship. Such a polysemic aspect of the verb *stay* can readily be analyzed by assuming a single LCS with the distinct semantic field such as Spatial or Identificational. The semantic field is a feature which "designates the field in which the Event or State is defined" (Jackendoff 1990: 26). The basic idea of a semantic field is introduced in Gruber (1965) and adopted in Jackendoff (1976, 1983, 1990 etc.). By assuming a set of semantic fields (e.g., Spatial, Possessional, Temporal, Identificational etc.), the lexical parallelism of two usages of the verb *stay* in (42) is neatly captured:

(42) a.　He stayed at home.
　　　　　stay₁: [BE ₛₚₐₜᵢₐₗ x [AT y]]
　　 b.　He stayed in power.
　　　　　stay₂: [BE ᵢ𝒹ₑₙₜ x [AT y]]

Although this area is said to be relatively unexplored, it has been observed that verbs which fall into the same natural class show the same range of multiple meanings. Further exploration of semantics of words on this line has been given in the framework of generative lexicon by Pustejovsky (1995), where the componential approach is further extended towards the semantics of nouns, which are cumulatively defined in relation with the lexical information of the predicates with considerable generative capacity.

Finally, as has been suggested since Levin (1985), cross-linguistic investigation has offered further grounds for the validity of a lexical decomposition approach. This dissertation is meant to be one investigation in this area. Through the closer examination of a set of voice alternation phenomena in Japanese and the proposal of lexical representations to express their regularities, I would like to explore the general principles which constrain the information provided by lexical entries for verbs.

2.5.2　Lexical Conceptual Structure

I will now turn to the predicates that I will use here. As I have seen above, the predicates assumed here are semantic primitives which consist of a function and its

argument(s). Firstly, I will assume three functions which characteristically specify a relation between two events or a relation between an individual and an event:[19]

(43) a. Volition (VOL):

$$\begin{bmatrix} \textit{volition} \\ \text{ACTOR} \quad \boxed{1} \\ \text{ACTED} \quad \boxed{2} \end{bmatrix}$$

    b. Causation (CAUSE):

$$\begin{bmatrix} \textit{cause} \\ \text{CAUSING} \quad \boxed{1} \\ \text{CAUSED} \quad \boxed{2} \end{bmatrix}$$

    c. Affectedness (AFFECTED):

$$\begin{bmatrix} \textit{affected} \\ \text{AFFECTEE} \quad \boxed{1} \\ \text{AFFECTING} \quad \boxed{2} \end{bmatrix}$$

I assume that VOL in (43a) is a function which specifies the relation between an individual ('actor') and the event initiated by the intentional actor in the same way as the functions such as DO introduced by McCawley (1971), Dowty (1979) and Foley and Van Valin (1984), CONTROL by Kageyama (1993) or DO AN ACT OF VOL by Maruta (1998), among others. This function takes the volitional actor as its first argument ($\boxed{1}$) and the event invoked by the actor as the second argument ($\boxed{2}$).

Next, I assume that CAUSE in (43b) is a function for specifying the relation between two events. As discussed in a number of studies (see Jackendoff 1983, 1987, 1990; Pustejovsky 1991, 1995; Kageyama 1993, 1996; Levin and Rappaport Hovav 1995, Van Voost 1995; Van Valin and Wilkins 1996, among others), CAUSE denotes the inherently active relationship between the causing event (typically initiated by an active causer) and the caused event which occurs as a result, thus the function CAUSE

---

[19]For the sake of space, I will use the abbreviated notation as in (i) in the following:

(i) a. [VOL($\boxed{1}$, $\boxed{2}$)]
    b. [CAUSE($\boxed{1}$, $\boxed{2}$)]
    c. [AFFECTED($\boxed{1}$, $\boxed{2}$)]

is a two-place predicate.[20]

In addition, I will introduce the novel function AFFECTED in (43c) for the specification of the relation between an individual ('affectee') being influenced by an event and the event which affects the individual. The approach taken in this dissertation is different from previous studies in that it proposes as a primitive such 'inherently passive' relationship which is denoted by the function AFFECTED (I will shortly return to this point in the following section).

Additionally, I also assume that there are some cases where these functions (i.e., VOL, CAUSE and AFFECTED) are embedded as arguments of one another.

Besides the three functions in (43), I will posit the following four functions as follows which can be embedded as arguments of the functions in (43) as well as being able to constitute the LCS as the main predicates themselves:

(44) a. Change of state (BECOME):
         [BECOME($\boxed{1}$)]

     b. State (BE):
         [BE($\boxed{1}$,[AT $\boxed{2}$])]

     c. Movement (MOVE):
         [MOVE($\boxed{1}$,[PATH $\boxed{2}$])]

     d. Application (APPLY):
         [APPLY($\boxed{1}$, $\boxed{2}$)]

[21] Finally, note that APPLY in (44d) simply specifies the relation between two entities, which has nothing to do with the volitionality of the first argument ($\boxed{1}$). When such an 'application' relation is initiated by the volitional actor, APPLY will be embedded as the second argument of the function VOL as in (45):

---

[20]Note that the arguments of semantic predicates are not necessarily coincident with the syntactic realization of the arguments. For instance, Alsina (1992: 521) and many others have argued that causative morphemes in many languages are analyzed as three-place predicates, which take causer, causee and caused event. Sells (1996), Gunji (1999), and Manning et al. (1999) have also adopted this assumption. As to the detailed discussion on causee encodings, see Ackerm and Moore (1999).

[21]More precisely, the functions BE and MOVE should be specified as follows:

(i) a. State (BE):
        [BE($\boxed{1}$, $\boxed{2}$ $[^{at}$])]
    b. Movement (MOVE):
        [MOVE($\boxed{1}$, $\boxed{2}$ $[^{path}$])]

I will use the notation as in (44b) and (44c) for the sake of simplicity.

(45) [VOL([1] ,[APPLY([1] , [2])])]

Given that the volitional reading is not always a default semantic property of many verbs, it seems reasonable to assume that the LCS such as (45) is obtained through the application of the lexical rule which introduces VOL as follows:

(46) Volition Lexical Rule:
[F([1] ,...)] ⇒ [VOL([1] ,[F (..., G(... [1] ...), ...)])]
[1] : the entity which is pragmatically coherent with the notion of 'volitionality'

One advantage of assuming the distinct two functions for volitionality and application respectively (as well as the volitional lexical rule such as (46)) is that the potential ambiguity found in the transitive verbs which typically denote causal relationship will be properly explained. The following serves as an example to illustrate this point.

(47) Ken-ga   kabin-wo wat-ta.
Ken-NOM vase-ACC break-PAST
'Ken broke the vase.'

1. Ken accidentally broke the vase (while he was practicing batting in the room).

2. Ken intentionally broke the vase (because it was owned by his aunt whom he hated).

Note that the sentence in (47) allows (at least) two interpretations if some adequate contexts are provided. Thus, the LCS for *war* in (47-1) will be specified as (48a) while *war* in (47-2) is expected to have the LCS as (48b):

(48) a. [CAUSE([VOL([1] ,[APPLY([1] , [2])])],[BECOME([BE([3] ,[AT *BROKEN*])])])]
b. [VOL([1] ,[CAUSE([VOL([1] ,[APPLY([1] , [2])])],[BECOME([BE([3] ,[AT *BROKEN*])])])])]

Such distinct lexical specifications like (48a) and (48b) gives rise to lexical ambiguity. Certainly, the action of breaking the vase includes some intentional activity leading to the happening where the vase breaks, but further information of the actor, that is, whether the actor originally has an intention of breaking the vase or not is usually

obtained contextually. Assuming the prototypical causal structure (see Croft 1991, 1993 among others), the first argument of VOL is typically identified with the first argument of APPLY, and the second argument of APPLY with the first argument of BECOME respectively, unless otherwise specified. Therefore, the distinction between the two interpretations as in (47), that is, the distinction between the LCS's above should not be so clear-cut without particular contextual support.

If the appearance of the function VOL outside of the function CAUSE necessarily implies the appearance of VOL in the causing subevent, the LCS representation assumed in (48b) can be much simplified. The problem is whether there exists a case in which VOL appears outside of CAUSE, but not in the causing event. I will employ the LCS in (48b) as the default lexical specification of the transitive verbs selecting the volitional actor and the entity which undergoes the change of state. In the following, for the sake of brevity of representation, I will utilize the abbreviated notation as in (49b) for the LCS as in (49a):

(49) a. [VOL(x, [CAUSE([VOL(a,F(a))],G)])]

b. CAUSE([F(a)],[G])

That is, I will use the function and the argument printed in sans serif font as shorthand for the LCS where VOL takes CAUSE as its second argument and CAUSE involves VOL in its first argument. Thus, the LCS of the transitive verbs which are associated with a volitional initiator of the action and the entity which undergoes the change of state/location caused by this action is assumed to be of the form LCS as in (50):

(50) [CAUSE([APPLY($\boxed{3}$, $\boxed{5}$)],[BECOME([BE($\boxed{4}$,[AT $\boxed{6}$])])])]

Moreover, I will assume the LCS as constituting the part of SEMANTIC features, thus, the lexical entry of monotransitive verb of change of state will be specified as follows:

(51)
$$
\begin{bmatrix}
\textit{monotrans} \\
\\
\text{ARG-ST} \quad
\begin{bmatrix}
\text{EXT} & \langle\, \boxed{1} : \boxed{3}\, \rangle \\
\text{INT} & \langle\, \boxed{2} : \boxed{4}\, \rangle
\end{bmatrix} \\
\\
\text{SEM} \quad
\begin{bmatrix}
\text{LCS} & [\text{CAUSE}([\text{APPLY}(\,\boxed{3}\,,\,\boxed{5}\,)],[\text{BECOME}([\text{BE}(\,\boxed{4}\,,[\text{AT}\ \boxed{6}\,])])])]
\end{bmatrix}
\end{bmatrix}
$$

The notation such as ①:③ shows that the semantic value (i.e., denotation) of the external argument (①) corresponds to ③. Namely, it is the shorthand for the representation as follows:

(52)   ① [SEM   ③]

To sum up, the LCS in (51) represents that the denotation of the external argument (③) intentionally acts on something (⑤), which leads to the resultant state where the denotation of the internal argument (④) exists in a certain state or location (⑥).[22]

2.5.3   The Notion of Affectedness

As I have noted above, one of the characteristics of the approach taken in this dissertation is that it proposes the function AFFECTED to specify 'inherently passive' relationship. Although causative relations have been an object of study for a long time, little attention has been given to the relations of the opposite direction. Nevertheless, the notion of 'affectedness' itself is not so novel, but rather has been utilized in various ways. The earliest reference to this notion is found in Kuroda (1979, also available in 1992), where he has proposed that the distinction between so-called *ni*-passive form as in (53a) should be semantically distinguished from *ni yotte*-passive form as in (53b) with respect to a connotation of 'affectivity'.[23]

(53) a.   John-wa   moo sukosi de ki-wo   usinau tokoro-wo
           John-TOP almost   consciousness-ACC lose   moment-ACC
           Bill-ni   tasuke-rare-ta.
           Bill-DAT rescue-PASS-PAST
           'John was rescued by Bill when he was about to lose consciousness.'

      b.   John-wa   moo sukosi de ki-wo   usinau tokoro-wo
           John-TOP almost   consciousness-ACC lose   moment-ACC
           Bill-ni yotte tasuke-rare-ta.
           Bill-POSTP   rescue-PASS-PAST

---

[22] Such a correspondence between the arguments of the LCS (i.e., ③ and ④) and the ARG-ST observes Levin and Rappaport Hovav's (1995: 134–146) general linking rules like IMMEDIATE CAUSE LINKING RULE and DIRECTED CHANGE LINKING RULE. Hence, the immediate causer of the event described by the verb will be linked to the external argument and the entity which undergoes the change of state/location described by the verb will be linked to the internal argument. See also fn. 17.

[23] I have taken the examples in (53) from Kuroda (1992: 195) with minor changes in the gloss.

'John was rescued by Bill when he was about to lose consciousness.'

Based on the earlier observation by Inoue (1976a), Kuroda has noted that *ni*-passives more readily describe the attitudes of the subject of the sentence (i.e., 'John'), that is, John's feeling of relief, whereas *ni yotte*-passives are suitable for describing the situation 'objectively'. This point is clarified by comparing the acceptability of the following pair of sentences:

(54) a. ?John-wa ki-wo usinattei-ta tokoro-wo Bill-ni tasuke-rare-ta.
   John-TOP was lying unconscious moment-ACC Bill-DAT rescue-PASS-PAST
   'John was rescued by Bill when he was lying unconscious.'

   b. John-wa ki-wo usinattei-ta tokoro-wo Bill-ni yotte tasuke-rare-ta.
   John-TOP was lying unconscious moment-ACC Bill-POSTP rescue-PASS-PAST
   'John was rescued by Bill when he was lying unconsciousness.'

The oddity of (54a) naturally follows if *ni*-passives are characterized by their 'affective' interpretation. If John was lying unconscious, it would be impossible that he was aware of, hence appreciative of, Bill's rescue. Rather the only possibility would be that John subsequently learned about the incident involving himself through the report by others who witnessed the incident. Thus, only *ni-yotte* form, which is more appropriate for 'objective' description of the fact shows higher acceptability. Note that such a contrast is further clarified in the following examples in which John is already dead, thus, cannot appreciate Bill's activity (p.c., Takao Gunji):

(55) a. *John-no itai-ga Bill-ni hakkens-are-ta.
   John-GEN corpse-NOM Bill-DAT find-PASS-PAST

   b. John-no itai-ga Bill-niyotte hakkens-are-ta.
   John-GEN corpse-NOM Bill-POSTP find-PASS-PAST
   'John's corpse was found by Bill.'

Kuroda (1979, 1992), however, has not given further explanation for the semantic content of 'affectivity'.[24]

---

[24]Kuroda (1992: 221) has noted that the same sort of approach to Japanese passives has already been proposed in an unpublished manuscript by Epstein. Kuroda says that Epstein has also suggested the distinction between the two passive constructions in Japanese, which he has termed *affective* and *neutral*. It is not clear, however, if Epstein has given further clarification of these terms as I have not yet seen this manuscript.

One of the earliest proposals for formalizing such relationship held between the individual as an 'affectee' and the affecting event can be found in Gunji (1981a), where the notion of affectedness has been introduced for the GPSG analysis for so-called 'indirect' passive constructions as in (56), which are often referred to as 'adversity passives' in Japanese.[25].

(56) a. Ken-wa Naomi-ni nak-are-ta.
Ken-TOP Naomi-DAT cry-PASS-PAST
'Ken was (adversely) affected by Naomi's crying.'

b. Ken-wa Naomi-ni piano-wo hik-are-ta.
Ken-TOP Naomi-DAT piano-ACC play-PASS-PAST
'Ken was (adversely) affected by Naomi's playing the piano.

c. Susan-wa Naomi-ni keisatu-ni denwas-are-ta.
Susan-TOP Naomi-DAT police-DAT phone-PASS-PAST
'Susan was (adversely) affected by Naomi's calling the police.'

Specifically, in the rule for adversity passives, he has posited a predicate AD which intuitively means 'be adversely affected by the happening of' (Gunji 1981: 21, also see section 5.6. for further discussions), hence, it expresses a relationship between the individual and the event.

In his JPSG analysis for indirect passives in Gunji (1987a), the predicate AD has been replaced by a more general term, R, 'a contextually specified relation between an individual and a proposition' (Gunji 1987: 65). In his analysis, passive suffix *-rare*, which appears in the indirect passives as in (56) has the lexical structure (57a), and its semantics PASS$_i$' (intransitive passive suffix) is decomposed as in (57b):

(57) a. PASSIVE SUFFIX
rare: {POS V; SUBCAT {PP[SBJ], PP[OBJ; **ni**], VP}; PAS –; SEM PASS$_i$'}
b. SEMANTICS OF THE INTRANSITIVE PASSIVE SUFFIX
PASS$_i$' $\equiv \lambda\gamma\lambda\beta\lambda\alpha \ \alpha(\lambda x R(x, \gamma(\beta)))$

Again, the formula $R(x, \phi)$ is "intuitively understood as meaning 'x is in some (adverse) relation to ϕ'"(Gunji 1987: 64).[26]

---

[25]For further details of the analysis of 'adversity passive', see Shibatani (to appear). I will return to this point in chapter 5

[26]As to the exact content of the relation R, Gunji (1987: 93, fn. 59) has regarded it rather difficult to specify, suggesting that it might be essentially pragmatic. The predicate AFFECTED, which I have

Furthermore the relation R appears as a RELATION (RELN) value of the attribute **sem** in his analysis of indirect passives in the HPSG framework in Gunji (1994). Specifically, he has used the function AFFECTED which specifies the relation between the event and the individual who is affected by it.

(58)   *rare: indirect passive*

$$
\begin{bmatrix}
\textbf{head} & [\textbf{pos } \mathsf{v}] \\[6pt]
\textbf{sem} & \begin{bmatrix} \textbf{relation} & \mathsf{AFFECTED} \\ \textbf{affected} & \boxed{1} \\ \textbf{event} & \boxed{3} \end{bmatrix} \\[18pt]
\textbf{subcat} & \{\mathsf{p[sbj]}{:}\,\boxed{1}\,,\ \mathsf{p[obj]}{:}\,\boxed{2}\,\} \\[6pt]
\textbf{adjacent} & \left\{ \mathsf{v}\begin{bmatrix} \textbf{subcat} & \mathsf{p[sbj]}{:}\,\boxed{2} \\ \textbf{sem} & \boxed{3} \end{bmatrix} \right\}
\end{bmatrix}
$$

(Gunji 1994: 180)

The notion of 'affectedness' has been thus introduced in Gunji (1981a) and has been developed in his JPSG and HPSG versions of analyses.

It is noteworthy that a detailed descriptive grammars such as Greenbaum and Quirk (1990) has referred to the importance of the notion such as 'affectedness' in an analysis for existential sentences with *have* exemplified as follows.[27]

(59) a.   I have two buttons missing on my jacket. (Greenbaum and Quirk 1990: 429)

   b.   You have a taxi ready. (ibid.)

---

posited as one of the primitive functions in LCS can be intuitively regarded as the same sort of notion as this, but it may be explained more concretely as suggested by Gunji (p.c.):

(i) x is AFFECTED by y when

   0. y happens.

   1. x perceives the happening of event y.

   2. x considers the happening of event y as either good or bad.

[27] As to the detailed analysis of English verb *have*, which appears both in causative and passive constructions, also see Washio (1997).

c. My friend had a valuable watch stolen. (ibid.)

d. I have a brother working in Chicago. (ibid.)

The following is what Greenbaum and Quirk (1990: 429) have to say about these examples:

> ... we can see that the thematic noun phrase can vary sharply in its relation to the rest of the sentence. Indeed, beyond saying that it has considerable involvement in the existential proposition, we cannot specify what that involvement will be ... Calling it 'affected' seems perhaps to state the involvement with a degree of generality that satisfactorily accounts for most cases.
> (Greenbaum & Quirk 1990: 429)

Thus, I will adopt the affectedness relationship and propose to reintroduce it as one of the functions constituting the primitive predicates in LCS. At first glance, it might seem to be unmotivated to hypothesize a novel function. However, I will show that the predicate AFFECTED gives a unified explanation for a wide range of grammatical phenomena, yielding a sort of natural class of verbs which has been overlooked so far. Furthermore, in the following chapters, I will show that aspectual properties and syntactic behaviors shared among these verbs are well predicted and regulated by assuming the function AFFECTED.

2.5.4 Event structure and Head Event

The second proposal in this dissertation is the incorporation of the notion of HEAD EVENT in Pustejovsky's (1995) 'extended event structure' into LCS. As Pustejovsky (1996: 67) has noted, the role of events in verbal semantics has become widely acknowledged. The event variable for a verb within an event-based semantics is conventionally listed as a single argument along with the logical parameters in a lexical representation for verbs. For instance, in Davidson's (1967) analysis [cited from Pustejovsky (1995: 68)], a lexical representation for the verb *build* has been formalized as follows:

(60) $\lambda y \lambda x \lambda e \ [build(e, \ x, \ y) \wedge \theta_1(e, \ x) \wedge \theta_2 \ (e, \ y)]$
    (Pustejovsky 1995: 68)

On the other hand, Pustejovsky (1991, 1995) has pointed out a shortcoming of such an atomic view of event structure, that is, internal aspects of the event are left inaccessible. Instead, he has proposed a mechanism to represent "the subeventual structure associated with lexical items while expressing the necessary relation between events and the arguments of the verb" (Pustejovsky 1995: 68), thus, argument structures and event structures are represented as independent parameter lists as follows:

(61) $[\text{ARGSTR} = \text{ARG}_1, \text{ARG}_2, \ldots, \text{ARG}_n]$
      $[\text{EVENTSTR} = \text{EVENT}_1, \text{EVENT}_2, \ldots, \text{EVENT}_n]$

Basically, a generative lexicon as a computational system involves the following four levels of representation:

(62) a.   ARGUMENT STRUCTURE ($\mathcal{A}$)

   b.   EVENT STRUCTURE ($\mathcal{E}$)

   c.   QUALIA STRUCTURE ($\mathcal{Q}$)

   d.   LEXICAL INHERITANCE STRUCTURE ($\mathcal{I}$)

Thus, a lexical item α is defined as a structure as follows:

(63) $\alpha = < \mathcal{A}, \mathcal{E}, \mathcal{Q}, \mathcal{I} >$

$$
\begin{bmatrix}
\alpha \\
\text{ARGST} = \begin{bmatrix} \text{ARG1} = \ldots \\ \text{ARG2} = \ldots \\ \ldots \end{bmatrix} \\
\text{EVENTST} = \begin{bmatrix} \text{E}_1 = \ldots \\ \text{E}_2 = \ldots \end{bmatrix} \\
\text{QUALIA} = \begin{bmatrix} \text{CONST} = \ldots \\ \text{FORMAL} = \ldots \\ \text{TELIC} = \ldots \\ \text{AGENTIVE} = \ldots \end{bmatrix}
\end{bmatrix}
$$

The argument structure specifies the number and type of arguments a lexical item carries. The event structure, as I will shortly review in detail below, defines the event type: the basic event type of a lexical item as well as its internal, i.e., subeventual, structure. The qualia structure represents "the different modes of predication possible

with a lexical item" (Pustejovsky 1995: 58) such as CONSTITUTIVE which defines
the relation between an object and its constituent parts), FORMAL for specifying
what distinguishes it within a larger domain), TELIC corresponding to its purpose
and function) and AGENTIVE which characterizes factors involved in its origin (ibid.,
76).[28] In addition, the lexical inheritance structure identifies the interaction of each
level of representation.

Here let us turn to review the nature of his event structures. As noted above,
his analysis is based on the assumption that "events have at most a binary event
structure" (Pustejovsky 1995: 73) and that "the most prominent subevent in the
event structure of a predicate, which contributes to the 'focus' of the interpretation"
(ibid., 72) is specified as a HEAD EVENT.

The binary event structures are further classified into three temporal ordering
relations realized in language. Specifically, the symbol $<_\propto$ specifies the relation of
"exhaustive ordered part of", which is defined as the relation of two subevents of e^σ
(i.e., e_1 and e_2) where e_1 temporally precedes e_2, and there is no other event which
is part of e^σ. On the other hand, he defines the symbol $\circ_\propto$ as the relation called
"exhaustive overlap part of", where two subevents occur simultaneously. Finally, the
symbol $< \circ_\propto$ specifies the relation "exhaustive ordered overlap", where two subevents
occur simultaneously, but the one starts before the other. He has listed examples of
several types of verbs as in (64), where *head* is marked by an asterisk.

(64) a. $[e^\sigma \; e_{1*} \quad <_\propto \quad e_2]$ — *build*

 b. $[e^\sigma \; e_1 \quad <_\propto \quad e_{2*}]$ — *arrive*

 c. $[e^\sigma \; e_{1*} \quad <_\propto \quad e_{2*}]$ — *give*

 d. $[e^\sigma \; e_1 \quad <_\propto \quad e_2]$ — UNDERSPECIFIED

 e. $[e^\sigma \; e_{1*} \quad \circ_\propto \quad e_2]$ — *buy*

 f. $[e^\sigma \; e_1 \quad \circ_\propto \quad e_{2*}]$ — *sell*

 g. $[e^\sigma \; e_{1*} \quad \circ_\propto \quad e_{2*}]$ — *marry*

 h. $[e^\sigma \; e_1 \quad \circ_\propto \quad e_2]$ — UNDERSPECIFIED

 i. $[e^\sigma \; e_{1*} \quad < \circ_\propto \quad e_2]$ — *walk*

 j. $[e^\sigma \; e_1 \quad < \circ_\propto \quad e_{2*}]$ — *walk home*

---

[28] For further details of the nature of qualia structures and motivation for them, see mainly chapter
5 and 6 in Pustejovsky (1995).

k. $[e^\sigma \; e_{1*} \quad < \circ_\propto \quad e_{2*}]$ — *??*

l. $[e^\sigma \; e_1 \quad < \circ_\propto \quad e_2]$ — UNDERSPECIFIED
   (Pustejovsky (1995: 73))

In the 'headless' structures such as (64d), (64h) and (64l), the possibility of either event being a head is left open.

To sum up, in a generative lexicon schema, the event structure of a lexical item α is given the representation as follows:

(65)
$$\begin{bmatrix} \alpha \\ \\ \text{EVENTSTR} = \begin{bmatrix} \text{E}_1 = \dots \\ \text{E}_2 = \dots \\ \text{RESTR} = \dots \\ \text{HEAD} = \text{E}_i \end{bmatrix} \end{bmatrix}$$

Pustejovsky (1995: 68) has assumed that events are classified into (at least) three sorts: PROCESS, STATES and TRANSITIONS, thus, each of E_1 and E_2 in the event structure in (65) is specified as of one of these sorts. The attribute RESTR specifies the ordering restriction listed in (64), and HEAD specifies the head event. To take a specific example, the event structure of the verb *build* is specified as follows:

(66)
$$\begin{bmatrix} \textbf{build} \\ \\ \text{EVENTSTR} = \begin{bmatrix} \text{E}_1 = \textbf{e}_1\textbf{:process} \\ \text{E}_2 = \textbf{e}_2\textbf{:state} \\ \text{RESTR} = <_\propto \\ \text{HEAD} = \textbf{e}_1 \end{bmatrix} \\ \dots \end{bmatrix}$$

As one of the motivations for hypothesizing the notion of HEAD, he has noted the fact that heads seem to regulate the occurrence of certain types of prepositional or adverbial modifiers:

(67) a. John ran home <u>for an hour</u>. (Pustejovsky 1995: 74)

b. My terminal died <u>for two days</u>. (ibid.)

c. Mary left town <u>for two weeks</u>. (ibid.)

Although the sentences in (67) all denote telic events, they allow the occurrence of durative adverbials, which modify the duration of the resultant state (i.e., John spent

an hour at home in (67a) etc.). Pustejovsky (1995: 74) has suggested that such a seemingly irregular phenomenon can be readily explained by assuming that these adverbials modify the designated head event rather than the entire event structure.

By adopting his analysis, I will assume that certain subevents which constitute the complex events represented by LCS should be specified as HEAD in the lexicon.[29] Following Pustejovsky (1995: 73–74), I will also assume that event headedness can be left unspecified, yielding headless event structures as above. The following pair of sentences serves as an example:

(68) a. Ken-ga   kagu-wo   heya-kara soto-ni   dasi-ta.
        Ken-NOM furniture-ACC room-from outside-DAT put out-PAST
        'Ken put the furniture out of the room.'

    b. Ken-ga   kagu-wo   heya-kara soto-ni   hakon-da.
        Ken-NOM furniture-ACC room-from outside-DAT carry-PAST
        'Ken carried the furniture from the room to the outside'

The verbs *das* and *hakob* in (68) both denote the event where the volitional action initiated by the agent (e.g., Ken) causes the resultant state that the theme (e.g., furniture) is placed outside. Thus they are expected to have LCS consisting of complex events as in (69):

$$(69) \quad \begin{bmatrix} monotrans \\ \\ \text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle\, \boxed{1}:\boxed{3}\,\rangle \\ \text{INT} & \langle\, \boxed{2}:\boxed{4}\,\rangle \end{bmatrix} \\ \\ \text{SEM} \quad \begin{bmatrix} \text{LCS} & [\text{CAUSE}([\text{APPLY}(\,\boxed{3}\,,\,\boxed{4}\,)],[\text{BECOME}([\text{BE}(\boxed{4}\,,[\text{AT}\ \boxed{5}\,])])])] \end{bmatrix} \end{bmatrix}$$

Nevertheless, while the sentence (68a) allows the durative adverbial *itizitekini* ('temporarily') to modify the duration of the state where the theme exists outside, some speakers find (68b) odd without certain contextual support:

(70) a. Ken-ga   kagu-wo   heya-kara soto-ni   itizitekini dasi-ta.
        Ken-NOM furniture-ACC room-from outside-DAT temporarily put out-PAST
        'Ken temporarily put the furniture out of the room.'

---

[29]The idea of introducing the notion of 'salience' or 'foregrounding/backgrounding' to LCS has also been suggested in Kinsui (1994), Kageyama (1997a) and Ono (1997), among others.

    b. ?*Ken-ga   kagu-wo   heya-kara soto-ni   itizitekini   hakon-da.
       Ken-NOM furniture-ACC room-FROM outside-DAT temporarily carry-PAST

In addition, note the different interpretations given to the adverbial *maruitiniti* ('all day long') in the following examples. The adverbial modifies the duration of the resultant state where the furniture was outside in (71a), whereas the adverbial is interpreted as modifying how long Ken was engaged in the activity of carrying the furniture in (71b):

(71) a.   Ken-ga   maruitiniti kagu-wo   heya-kara soto-ni   dasi-ta.
         Ken-NOM all day long furniture-ACC room-from outside-DAT put out-PAST
         'Ken put the furniture out of the room all day long.'

     b. ?*Ken-ga   maruitiniti kagu-wo   heya-kara soto-ni   hakon-da.
         Ken-NOM all day long furniture-ACC room-FROM outside-DAT carry-PAST

Such a contrast in the interpretation given to the temporal adverbial can be captured by assuming the notion of headedness in LCS, that is, while the caused event is specified as the head event in the LCS of *das*, headedness is kept unspecified in the LCS of *hakob*. Here and throughout this dissertation, I will indicate the head event by the underline as in the following:

(72) a.   *das*: [CAUSE([APPLY($\boxed{3}$, $\boxed{4}$)],[BECOME([BE($\boxed{4}$,*OUT*)])])]

     b.   *hakob*: [CAUSE([APPLY($\boxed{3}$, $\boxed{4}$)],[BECOME([BE($\boxed{4}$,*OUT*)])])]

Thus, I will assume that the notion of event headedness is included as a part of the lexical entry.

2.6   Summary

In this chapter, I have presented the theoretical framework assumed throughout this dissertation. Firstly, I have overviewed the structure of the lexicon whose internal structure is hierarchically organized (2.2). Mainly based on the framework developed in Sag and Wasow (1999), I have outlined the fundamental properties and technical apparatus of HPSG (i.e., Feature Structures and Well-Formed Definitions (2.2.1), Lexical Types and Type Hierarchy (2.2.2), and Lexical Rules (2.2.3)). Based on this idea of the hierarchical lexicon, I have proposed the classification of Japanese verbs, where

the verbs are classified into six distinct type in terms of their ARG-ST (2.3). I have also proposed a couple of general constraints which regulate the relationship between ARG-ST and VALENCE in accordance with the relative obliqueness of each argument, thus, once the value of ARG-ST is specified, the value of VALENCE is automatically obtained (2.4). Another characteristic of ARG-ST whose value is specified by EXT and INT list is that it does not refer to the specific label of thematic roles. Instead, I have employed the predicate decomposition approach (2.5.1), and proposed a set of primitive predicates which constitute LCS (2.5.2). Specifically, I have presented two proposals which will play an essential role in the following chapters. First, I have introduced the novel function AFFECTED to specify the relation between the individual (i.e., 'affectee') and the affecting event (2.5.3). Second, I have incorporated the notions of HEAD EVENT in Pustejovsky's (1995) 'extended event structure' into the LCS representations (2.5.4). In the following chapters, I will show how this view of LCS and HEAD EVENT offers the explanation for the various behaviors of verbs, as well as constraints on a wide range of voice alternation phenomena as a whole.

Chapter 3   Complex Event Structures of Lexical Compound Verbs in Japanese

3.1   Overview

In the previous chapter, I have outlined the theoretical framework assumed and developed in this dissertation. The following two chapters will show the applicability of my theoretical assumptions to various grammatical phenomena. In this chapter, I will present the analysis of lexical compound verbs in Japanese. As has been discussed in Kageyama (1993), Yumoto (1996), Matsumoto (1996, 1998) and Himeno (1999), among many others, Japanese is known to have a large number of Verb + Verb compounds (abbreviated as V1-V2 compounds hereafter). Since Kageyama (1993), it has been widely accepted that Japanese V1-V2 compounds are classified into two groups with respect to the pattern whereby two verbs are compounded. Some have been assumed to be compounded in the lexicon (i.e., presyntactically), thus, V1 and V2 are regarded as constituting a lexically single word, while others have been assumed to be compounded in the syntactic component, thus, V1 and V2 are regarded as distinct words in the lexicon. Therefore, the former have been termed as lexical compounds, whereas the latter as syntactic compounds. Such syntactic compounds have been observed to present a sharp contrast to lexical compounds in their productivity. In the formation of syntactic compounds, a variety of verbs are allowed to appear as V1, but lexical compounds posit stricter restrictions on the type of verbs available in the V1 position.

In this chapter, I will deal with one type of such lexical compounds where the transitive verbs *das* and its intransitive counterpart *de* appear in the position of V2. These verbs typically denote certain outward movement: while the transitive *das* typically denotes the action of pulling/putting/taking out something, the intransitive *de* is regarded as denoting the action of going out or turning up. Nevertheless, closer observation will reveal that their distribution is far more complicated than it looks.

This is why I have chosen this pair of verbs for further investigation. For one thing, as I will shortly discuss in the following section, the verbs *das* and *de* can be further classified into various subtypes with respect to their ARG-ST. What is more, these subtypes show a systematic interrelationship in accordance with the highly universal voice alternation patterns such as causativization, passivization and reflexivization. One final point is that we can examine the various types of V1 selected by each of these subtypes when they participate in V1-V2 compounding, which proves to be helpful in elucidating the system of general principles that constrain lexical compounding as a whole.

This chapter is organized in the following way. Section 3.2 will examine the distinction between lexical compounds and syntactic compounds, which is motivated through the five diagnostic tests proposed by Kageyama (1993). I will also offer further evidence for such a distinction by noting the scope of adverbial modifiers. Section 3.3 will examine various subtypes of the verbs *das* (3.3.1) and *de* (3.3.2). By giving the LCS for each subtype, I will show that these subtypes systematically interact with each other along with the general voice alternation patterns. Section 3.4 will deal with formation of V1-V2 compounds which take *das* or *de* in the position of V2. It will be shown that such lexical compound verbs are formed through the application of the Lexical Rules, which are also classified into several types corresponding to the subtypes of *das* and *de*. Finally, a general constraint on the applicability of such Lexical Rules will be examined.

3.2 Lexical Compounds and Syntactic Compounds

Before moving on to the main task, however, it is essential to clarify the distinction between lexical and syntactic compounds. As Teramura (1984) has noted, V1-V2 compounds with *das* appearing in V2 position are classified into several groups with respect to their interpretation exemplified as follows:[1]

(73) a. Kare-wa sono musi-wo   hako-kara tumami-dasi-ta.
       he-TOP   the   insect-ACC box-from   pick-DAS-PAST
       'He picked out that insect from the box.'

---

[1]Only in this section, I will use the notation DAS in the gloss to make it easier to contrast two different usages of *das*.

b. Tora-ga   ori-kara   nige-dasi-ta.
   tiger-NOM cage-from escape-PAST
   'The tiger escaped from the cage.'

c. Akanboo-ga naki das-ita.
   baby-NOM   cry-DAS-PAST
   'The baby started to cry.'
   (Teramura 1984: 169)

The compound verb *tumami-das* in (73a) denotes the volitional action which causes the change of location of the entity (i.e., 'that insect'). Although *nige-das* in (73b) also denotes a certain volitional action, it is slightly different from *tumami-das* in that it does not imply such causal relationship. As Teramura (1984) has noted, such difference can be attributed to the semantic differences between V1's (i.e., *tumam* ('pick out') and *nige* ('escape')) of these compounds. On the other hand, the compound verb *naki-das* in (73c) does not denote such outward movement at all, hence completely distinct from these two. Rather *das* in this example functions as an aspectual marker, which marks the beginning of the event.

Based on such observations, it has been suggested that there are two kinds of *das* appearing in V2 position in compound verbs: the one denoting certain outward movement and the other functioning as an aspectual marker. Further examples are given as follows:

(74) a.   MOVEMENT type:

    1. Imo-wo   hori-das-u
       potato-ACC dig-DAS-PRES
       'to dig out potatoes'

    2. Kyoositu-wo   tobi-das-u
       classroom-ACC fly-DAS-PRES
       'to rush out of the classroom'

    3. Namida-ga nagare-das-u
       tears-NOM pour-DAS-PRES
       'Tears pour out.'

b.   ASPECT type:

1. Uta-wo   utai das-u

   song-ACC sing-DAS-PRES

   'to start to sing'

2. Isseini   hasiri das-u

   all together run-DAS-PRES

   'to start to run all together'

3. Minna-ga   dotto   warai dasi-a

   the party-NOM with a rush laugh-DAS-PAST

   'The party burst into laughter.'

Among the previous studies which have noted the existence of two kinds of *das* in V1-V2 compounds, Kageyama (1993) has suggested that the distinction between two kinds of *das* comes from their different patterns of compounding. Specifically, Kageyama has proposed that V1 and *das* of MOVEMENT type (e.g., *das* in (73a), (73b) and (74a)) is compounded in the lexicon, hence, behave as a single word, while compounding of V1 and *das* of ASPECTUAL type (e.g., *das* in (73c) and (74b)) takes place in the syntactic component, thus, V1 and *das* separately exist as two words in the lexicon. Kageyama (1993: 75-96) has offered a number of tests to support his proposal. He has presented the following five tests to distinguish the compound verbs as a lexically single word (i.e., lexical compounds) from the compound verbs consisting of two distinct words (i.e., syntactic compounds).

3.2.1 Anaphoric Relations

Firstly, he has referred to a universal constraint on the unit of word that 'part of a word cannot hold an anaphoric relationship with another item elsewhere' (Shibatani and Kageyama 1988: 472). If there exist two kinds of V1-V2 compounds, this constraint is expected to apply to lexical compounds but not to syntactic compounds. The following contrast justifies the distinction of the two kinds of compound verbs:

(75) a. MOVEMENT type:

   *Ken-ga   imo-wo   hori-dasi-ta. Naomi-mo soo si-dasi-ta.

   Ken-NOM potato-ACC dig-DAS-PAST Naomi-also do so-DAS-PAST

   'Ken dug out the potatoes. So did Naomi.'

b. ASPECTUAL type:

Ken-ga utai dasi-ta. Naomi-mo soo si-das-ita.

Ken-NOM sing-DAS-PAST Naomi-also do so-DAS-PAST

'Ken started to sing. So did Naomi.'

The part of the MOVEMENT type compound as in (75a) cannot hold an anaphoric relationship with substituting form *soo*, but the part of the ASPECTUAL type compound as in (75b) can. It reflects the fact that the former is an indivisible unit (i.e., lexical compound), while the latter consists of two separate words (i.e., syntactic compound).

3.2.2 Honorification

Secondly, he has noted the rule of Subject Honorification, which attaches the honorific marker *go/o ... (ni naru)* to a verb if its subject designates a person to be respected (Shibatani and Kageyama 1988: 474). It has been observed that such a rule does not apply to the lexically derived compound words such as *sinkon-ryokoo* ('honeymoon trip') or *yama-nobori* ('mountain climbing'):

(76) a. *Sensei-wa   sinkon-go-ryokoo-ni   dekake-rareta.

teacher-TOP newly.wed-HON-travel-to went out

'The teacher went for his honeymoon.'

b. *Itu   yama-o-nobori ni   dekake-rare-masu-ka

when mountain-HON-climbing-to go out-Q

'When (are you) going to go mountain climbing?'

(Shibatani and Kageyama 1988: 474)

Thus, again, if there exist two kinds of V1-V2 compounds, such subject honorification is expected to be prohibited inside of the lexical compounds while it is permitted to occur inside of the syntactic compounds. Note the following contrasts:

(77) a. MOVEMENT type:

*Sensei-ga   imo-wo   o-hori-ni nari dasi-ita.

teacher-NOM potato-ACC HON-dig-DAS-PAST

'lit.: The teacher dug out the potatoes.'

b. ASPECTUAL type:

Sensei-ga   o-utai-ni nari das-ita.

teacher-NOM HON-sing-DAS-PAST

'The teacher started to sing.'

While the MOVEMENT type such as *hori-das* as in (77a) is incompatible with the subject honorification form *o (ni naru)*, the ASPECTUAL type as in (75b) can. It reflects the fact that the former is a lexical compound verb, while the latter is regarded as a syntactic compound verb.

3.2.3 Passivization

The third evidence presented by Kageyama (1993: 87) concerns the passive form: *-(r)are*. He has noted the fact that the passive form cannot appear inside of the lexical compound words:

(78) a.   kaki-nuki

write-extract

'an extract'

b.   *kak-are-nuki

write-PASS-extract

(79) a.   yaki-mono

bake-thing

'pottery'

b.   *yak-are-mono

bake-PASS-thing

Thus it is predicted that the passive form is expected to be prohibited inside of the lexical compounds while it readily appears inside of the syntactic compounds. Again, let me compare the MOVEMENT type compound verb with the ASPECTUAL one:

(80) a.   MOVEMENT type:

*Imo-ga   hor-are-dasi-ta.

potato-NOM dig-PASS-DAS-PAST

b. ASPECTUAL type:

Uta-ga   utaw-are-dasi-ta.

song-NOM sing-PASS-DAS-PAST

'The song started to be sung.'

The ungrammaticality of (80a) shows that the passive form *-(r)are* cannot appear inside of the MOVEMENT type such as *hori-das*. On the other hand, (80b) shows that it freely occurs inside of the ASPECTUAL type such as *utai-das*. Such a contrast further confirms that the former is a lexical compound verb, while the latter is a syntactic compound verb.

3.2.4 Compounding with the Light Verb

Let me turn to the fourth test given by Kageyama (1993). In Japanese, the light verb form (i.e., *–suru* form) is assumed to be derived through the incorporation of the *wo*-marked direct object into this V (*suru*):

(81)   syoomei-wo suru. → syoomei-suru

      proof-ACC   LV

Namely, the light verb form constitutes the verbal phrase itself, thus, it is expected that such a form does not appear inside of the single word. Actually, it is impossible to substitute the equivalent light verb form for the verb which occurs inside of the lexical compound word such as *tobi-bako* ('box horse') :

(82) a.   tobi-bako

      jump-box

      'box horse'

   b.   *jampusi-bako

      jump-LV-box

Given this contrast, it is expected that the light verb form should be prohibited inside of the lexical compounds while it freely occurs inside of the syntactic compounds. Let me substitute the equivalent light verb forms (i.e., *saisyu-su* in (83a) and *gassyoo-su* in (83b)) for *tor* and *utaw* respectively:

(83) a.   Movement type:

      *saisyu-si-das

      picking-LV-DAS

      cf. tori-das

         pick-DAS

   b.   Aspectual type:

      gassyoo-si-das

      chorus-LV-DAS

      'start to chorus'

      cf. utai-das

         sing-DAS

Note the incompatibility of such light verb form with Movement type, which presents the sharp contrast to the case of Aspectual type. Thus, such contrast reflects the status of *tori-das* as a lexical compound verb and that of *utai-das* as a syntactic compound verb.

3.2.5   V-*ni*-V Expression

Finally, Kageyama (1993) has referred to the expression of the repeated activities which is marked with *-ni* as follows:[2]

(84) a.   nomi-ni-nom

      drink-drink

      'drink and drink'

   b.   hasiri-ni-hasir

      run-run

      'run and run'

The crucial point here is that, as Kageyama has noted, the passive form *-(r)are* can appear inside of this expression:

(85)   Ken-wa   nagur-are-ni-nagur-are-ta.

     Ken-TOP beat-PASS-beat-PASS-PAST

     'Ken was beat repeatedly.'

---

[2]For a further discussion on this expression and its status as a word, see Kageyama (1993: 89–92).

As has been noted above, considering that the passive form is compatible only with the syntactic compound words (see (80) above), V-*ni*-V expression is also expected to serve as the diagnostic to distinguish the lexical compound from the syntactic one. Again, see whether the MOVEMENT type compound and the ASPECTUAL type compound allow such an expression inside of them:

(86) a. MOVEMENT type:

*Oogata rikisi-ga   kohyoo-no rikisi-wo

large built sumo wrestler-NOM small-statured sumo wrestler-ACC

osi-ni-osi-dasi-ta.

push-push-DAS-PAST

b. ASPECTUAL type:

??Naomi-wa   uta-wo   utai-ni-utai-dasi-ta.

Naomi-TOP song-ACC sing-sing-DAS-PAST

'Naomi started to sing songs repeatedly.'

Again, the incompatibility with V-*ni*-V expression suggests that the MOVEMENT type compound verb should be regarded as a lexical compound. What should be noted here is that the ASPECTUAL type compound is not perfectly compatible with V-*ni*-V expression. Nevertheless, it seems that the oddness of these examples results from different reasons. While (86a) is regarded as unacceptable because V-*ni*-V expression illegally appears inside of a lexically single word, (86b) is regarded as odd for semantic reason. As has been shown in the examples so far, V-*ni*-V expressions are used to emphasize the repetition of activities and the repetition is readily recognized only after a range of activities have been conducted. On the other hand, the ASPECTUAL type DAS marks the beginning of the activity/event. Thus, the oddity of (86b) seems to be due to such a mismatch of aspectual properties of the V-*ni*-V expression and *das*. What is crucial here, however, is that (86a) is unacceptable.

To sum up, it seems reasonable to assume that a group of the syntactic compound verbs which take *das* as V2 should be divided into two groups and that the one which typically denotes the outwards movement should be regarded as the lexical compound, while the one as the aspectual marker as the syntactic one. In the following, I will show that such two kinds of compounds have distinct syntactic structures by noting the scope of the adverbial modifiers.
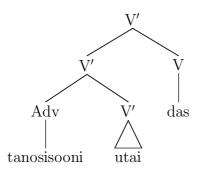
3.2.6 Scope of the Adverbial Modifiers

Here I will assume that the compound verb phrase headed by V2 (i.e., *das*) has a complement structure, taking the verb phrase headed by V1 as its complement. Thus, if the ASPECTUAL type *utai-das* above is modified by the adverb *tanosisooni* ('joyfully'), it will yield the possibility of two distinct interpretations. Namely, when the verb phrase headed by V1 (i.e., *utai*) enters into the scope of this adverbial, it will be interpreted as in (87a). When the entire compound verb phrase headed by *utai-das* enters its scope, the interpretation in (87b) will be given:

(87)   Ken to Naomi-wa   tanosisooni utai-dasi-ta.
         Ken and Naomi-TOP joyfully   sing-DAS-PAST
         'Ken and Naomi started to sing joyfully.'

     a.   What Ken and Naomi started to do was to sing joyfully (and they sang joyfully.)

     b.   What Ken and Naomi did joyfully was to start the activity of singing (but they might not have sung joyfully).

The interpretations (87a) and (87b) correspond to the distinct syntactic structures as follows respectively:[3]

(88) a.   [tanosisooni utai] das (= (87a))

---

[3]Here, V′ simply shows the projection of V and it is not crucial whether it is the maximal projection or not.

b.   tanosisooni [utaidas] (= (87b))

```
                    V′
                   /  \
                Adv    V′
                 |    /  \
           tanosisooni V′   V
                      /\    |
                   utai    das
```

By assuming the syntactic structures as (88), it is naturally predicted that an adverb which is semantically incompatible with the compound verb phrase headed by *utai-das* gives an unacceptable sentence. Thus, the only interpretation available will be the one corresponding the structure like (88a). For instance, note that the adverbs such as *koe-wo awasete* 'in chorus' or *hudoo-no siseide* 'without moving an inch ' can modify only V1, but are not coherent with the semantic property of the compound verb *utai-das* as a whole.[4] Therefore, it will be obligatorily given the interpretation corresponding to the structure (88a):

(89) a.   Ken to Naomi ga   [koe-wo awasete utai]-dasi-ta.
            Ken and Naomi-NOM [sing in chorus]-DAS-PAST
            'Ken and Naomi started to sing all the time.'

      b.   Ken ga   [hudoo-no siseide swari]-dasi-ta.
            Ken-NOM [sit without moving an inch]-DAS-PAST
            'Ken started to sit quietly.'

(90) a.   ♯Ken to Naomi ga   koe-wo awasete [utai-dasi-ta].
            Ken and Naomi-NOM in chorus   [sing-DAS-PAST]

      b.   ♯Ken ga   hudoo-no siseide   [suwari-dasi-ta].
            Ken-NOM without moving an inch [sit-DAS-PAST]

On the other hand, when it comes to lexical compound verbs, they cannot have the syntactic structure such as (88a) where V1 and V2 are structurally separated. Consequently, its interpretation is restricted to the one based on (88b), that is, the

---

[4]The examples in (90) are semantically (rather than grammatically) odd, which will be indicated by ♯ here and throughout this dissertation.

V1+*das* sequence as a whole enters into the scope of the adverb. Thus, it is predicted
that the lexical compound *hori-das* (i.e., MOVEMENT type compound above) will be
incompatible with the adverb such as *hukaku* 'deeply' which can only modify V1:

(91) ♯Imo-wo   hukaku [hori-das].
        potato-ACC deeply [dig-DAS].

(91) shows that the adverb *hukaku* can modify the verb *hor* 'dig', but that it is
prohibited to modify *hor* when it appears inside of the lexical compound *hori-das.*

On the contrary, there is a case where a phrase which is incompatible with V1 is
allowed to cooccur with the compound verb. The following is a good illustration of
this point:

(92) a. ♯Ken-ga   [kyoositu-wo   ton]-da
             Ken-NOM [classroom-ACC fly]-PAST
       b. Ken-ga   [kyoositu-wo   tobidasi] -ta.
             Ken-NOM [classroom-ACC fly-DAS]-PAST
             'Ken ran out of the classroom.'

While the noun phrase *kyoositu-wo* ('the classroom'-ACC) cannot cooccur with the
verb *tob* 'fly', it serves as a direct object of the compound verb *tobi-das* 'run out of'.

In this way, by noting the scope of the adverbial modifiers, it has been made
explicit that the MOVEMENT type compound verbs and ASPECTUAL type compound
verbs have distinct syntactic structures. The latter consists of two words, which are
lexically independent, hence compounded at the syntactic structure. Thus, it freely
allows the adverb to modify V1 and V2 separately, which sometimes provokes scopal
ambiguity. On the other hand, the lexical compound is regarded as a single word in
the modification relationship, thus, the adverb cannot modify part of it (i.e., V1 or
V2), hence ambiguity never occurs.

In addition, note that only *das* of the ASPECTUAL type is allowed to follow the
coordinated verb phrases:

(93) a. Gakuseitati-ga [[atumari][sawagi]] dasi-ta.
             students-NOM   [gather-and-make a fuss]-DAS-PAST
             'The students started to gather and make a fuss.'

    b.   Karera-wa [sekiyu-wo maki][hi-wo tuke] dasi-ta.

        they-NOM [oil-ACC-and-fire-ACC-put]-DAS-PAST

        'They started to sprinkle the oil and fire it.'

    c. *Gakuseitati-ga   [[imo-wo hori][hatake-kara tobi]] dasi-ta.

        the students-NOM [potato-ACC dig-and-field-ACC fly]-DAS-PAST

To sum up, V1 + V2 compound verbs which take *das* as V2 are classified into two subtypes: MOVEMENT type to denote the outwards movement and ASPECTUAL type to mark the starting of the event. The former is regarded as the lexical compound verbs and the latter as the syntactic compound verbs. Given the syntactic structures as (88) above, the latter is supposed to select the verb phrase which is the projection of V1 rather than to select V1 itself directly. Thus, it follows that *das* of ASPECTUAL type is highly independent from V1, which naturally explains why it shows greater productivity than the lexical compounds.

In the following section, I will examine the semantic structures of the transitive verb *das* and its intransitive counterpart *de* when they occur as independent words.

3.3   Transitivity Alternation: the case of *das/de*

This section examines the semantic structures of the transitive verb *das* and its intransitive counterpart *de*. I will demonstrate that these verbs specify various events even when they occur as independent words (i.e., not as V2 of the lexical compound verbs), which strongly indicates that the transitive/intransitive distinction is not enough. Instead, I will propose to further classify these verbs into subtypes with respect to the volitionality of the event denoted by these verbs.

3.3.1   Subtypes of Transitive *das*

3.3.1.1   Causative *das_c*

The transitive *das* basically denotes the volitional activity exemplified as below:

(94) a.   Ken-ga   kagu-wo   heya kara dasi-ta.

         Ken-NOM furniture-ACC room-from put out-PAST

         'Ken put the furniture out of the room.'

      b.   Kantoku-ga   sinzin-wo   siai-ni   dasi-ta.

         manager-NOM rookie-ACC game-DAT let (someone) participate-PAST

         'The manager let the rookie participate in the game.'

    c.   Geizyutuka-ga kuroo-no-sue sakuhin-wo tenrankai-ni dasi-ta.

          artist-NOM with an effort work-ACC exhibition-DAT exhibit-PAST

          'The artist exhibited his work with an effort.'

I will term the transitive *das* of such an agentive use as das_c (i.e., CAUSE type), assuming it has the semantic structure as follows:[5]

(95) das_c (CAUSE type)

$$
\begin{bmatrix}
\textit{monotrans} \\[6pt]
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle\, \boxed{1} : \boxed{3}\, \rangle \\ \text{INT} & \langle\, \boxed{2} : \boxed{4}\, \rangle \end{bmatrix} \\[12pt]
\text{LCS} \qquad [\text{CAUSE}([\text{APPLY}(\,\boxed{3}\,,\,\boxed{4}\,)], \underline{[\text{BECOME}([\text{BE}(\,\boxed{4}\,,\textit{OUT})])]})]
\end{bmatrix}
$$

The LCS of das_c specifies a causal relationship. Namely, the denotation of the external argument ($\boxed{3}$) intentionally applies to the denotation of the internal argument ($\boxed{4}$), which invokes the resultant state where the theme/patient ($\boxed{4}$) comes to be outside of something, or comes to appear, etc. Here the caused event (i.e., the second argument of CAUSE) is specified as the head event, which can be made explicit by the adverbial phrases which modify the duration of such resultant state:

(96) a.   Ken-ga kagu-wo heya-kara soto-ni itizitekini dasi-ta.

          Ken-NOM furniture-ACC room-from outside-DAT temporarily put out-PAST

          (=(70a))

          'Ken temporarily put the furniture out of the room.'

    b.   Kantoku-ga sinzin-wo siai-ni sanzyuppun dake

          manager-NOM rookie-ACC game-DAT thirty minutes only

          dasi-ta.

          let (someone) participate -PAST

          'The manager let the rookie participate in the game only for thirty minutes.'

    c.   Geizyutuka-ga sakuhin-wo issyuukan dake tenrankai-ni dasi-ta.

          artist-NOM work-ACC one week only exhibition-DAT exhibit-PAST

          'The artist exhibited his work only for a week'

---

[5]The abbreviated notation CAUSE is [VOL(x, [CAUSE([VOL(a,F(a))],G)])] in full. For the sake of space, I will also use 'LCS' for an abbreviation for 'SEM|LCS' here and throughout this dissertation.

The adverbs in these examples must be regarded as modifying the duration of the final state, but not of the causing event: *itizitekini* 'temporarily' in (96a) refers to the period when the furniture was outside of the room, but not how long it took for Ken to put the furniture outside. Similarly, *sanzyuppun* 'for thirty minutes' in (96b) and *issyuukan* 'for one week' in (96c) refer to the duration of the resultant state where the rookie was participating in the game or the artist's work was exhibited. The following is another illustration of the same point:

(97) a. Yooyaku Ken-ga kagu-wo heya kara dasi-ta.
finally Ken-NOM furniture-ACE room-from put out-PAST
'Finally Ken put the furniture out of the room.'

b. Tootoo kantoku-ga sinzin-wo siai-ni dasi-ta.
at last manager-NOM rookie-ACC game-DAT let (someone) participate-PAST
'At last the manager let the rookie participate in the game.'

c. Yooyaku geizyutuka-ga daisansakume-wo tenrankai-ni dasi-ta.
finally artist-NOM the third work-ACC exhibition-DAT exhibit-PAST
'Finally, the artist exhibited his third work.'

It has been observed that the adverbials such as *yooyaku* or *tootoo* typically focus upon the final state of the event. In these examples, the available interpretation given to these adverbs refers to how long it took until the realization of the resultant state. Thus, one may say that LCS of das_c has a complex event structure, where the caused event is specified as the head event. (Also see the comparison with the action verb *hakob* in (70) in chapter 2.)

3.3.1.2 Affective das_a

Let me turn to another type of transitive *das*. The transitive *das* sometimes denotes an event in which no volitional activity is concerned:

(98) a. Ken-ga hitai-kara ti-wo dasi-teiru.
Ken-NOM forehead-from blood-ACC shed-PROG
'Ken shed blood from his forehead.'

b. Kodomo-ga kaze-wo hii-te netu-wo dasi-teiru.
child-NOM cold-ACC catch and fever-ACC have-PROG
'The child has caught a cold and has a fever.'

c. Kakoo-ga   kemuri-wo das-u.

crater-NOM smoke-ACC emit-PRES

'The crater emits the smoke.'

d. Tyuurippu-ga me-wo   dasi-ta.

tulip-NOM   sprouts-ACC put out-PAST

'Tulips put out sprouts.'

I will assume the following lexical structure for such nonvolitional *das*, which will be termed das_a (AFFECTED type):

(99) das_a (AFFECTED type)

$$
\begin{bmatrix}
monotrans \\
\text{ARG-ST} \quad
\begin{bmatrix}
\text{EXT} & \langle\; \boxed{1} : \boxed{3}\; \rangle \\
\text{INT} & \langle\; \boxed{2} : \boxed{4}\; \rangle
\end{bmatrix} \\
\text{LCS} \qquad [\text{AFFECTED}(\; \boxed{3}\,,[\text{BECOME}([\text{BE}(\; \boxed{4}\,,OUT)])])]
\end{bmatrix}
$$

In (99), I have assumed that LCS of das_a is characterized by the function AFFECTED. By assuming this, the difference between the grammatical subjects in (94) and (98) is naturally accounted for. Compare (94a) and (98a) for instance. Both sentences have two arguments, i.e., 'Ken' as grammatical subject and 'furniture' or 'blood' as grammatical objects. However, they are different with respect to the relationship between 'Ken' and the event described by the whole sentence. In (94a), the grammatical subject is identified as the agent whose volitional activity brings about the change of location of the theme from inside to outside. On the other hand, in (98), 'Ken' ($\boxed{3}$) is not agent but rather corresponds to recipient (or experiencer) who suffers from the event in which his forehead is bleeding, i.e., blood ($\boxed{4}$) comes out from inside of his body. That is, while das_c denotes the causative relationship initiated by the volitional agent, das_a denotes the relation between the individual who experiences, and is thus affected by a certain happening, and the event where the happening occurs. As I will show shortly below, the LCS of one subtype of the intransitive *de* is also assumed to have AFFECTED as the main predicate, which will explain the similarity between such nonvolitional transitive *das* with 'affectee' subject and the intransitive verb *de* as in (100a) in the below:

(100) a. Ken-wa hitai-kara ti-ga de-teiru.

        Ken-TOP forehead-from blood-NOM come out-PROG

        'As for Ken, blood came out of his forehead.'

        (=His forehead is bleeding.)

    b. Ken-ga hitai-kara ti-wo dasi-teiru. (=(98a))

        Ken-NOM forehead-from blood-ACC shed-PROG

        'Ken shed blood from his forehead.'

In the following section, I will turn to the subtypes of the intransitive *de*, which also denotes the outwards movement.

3.3.2 Subtypes of Intransitive *de*
3.3.2.1 Reflexivized Causative de_{cr}

In the same way as the volitional transitive *das* (i.e., das_c), the intransitive *de* often denotes a volitional activity:[6]

(101) a. Ken-ga niwa-ni de-te mizu-wo mai-ta.

        Ken-NOM garden-DAT go out-and water-ACC sprinkle-PAST

        'Ken went out into the garden and sprinkled the water.'

    b. Sinzin-ga siai-ni de-ta.

        rookie-NOM game-DAT participate-PAST

        'The rookie participated in the game.'

    c. Watasi-wa ziritu-suru-tame-ni tokai-ni de-ta.

        I-TOP become independent-in order to city-DAT go out (into)-PAST

        'I left the home for the large city to become independent.'

---

[6]The subject *sinzin* ('rookie','a new member') in (101b) is more readily interpreted as a volitional actor when *siai* ('game') does not denote the team sports like baseball or football, where the manager normally lets him/her participate in the game rather than the player participates in the game of his/her own will. Note the subject is more easily interpreted as a volitional actor in (i) because it is normally a new member himself/herself that decides to take part in the contest:

(i) Sinzin-ga kontesuto-ni de-ta.

    new member-NOM contest-DAT take part in-PAST

    'The new member took part in the contest.'

    d.   Naomi-ga   isoide   denwa-ni de-ta   ga kire-tei-ta.
        Naomi-NOM in a hurry phone-DAT answer-PAST butcut off-STAT-PAST
        'Naomi answered the phone in a hurry, but it was already cut off.'

Here, the intransitive *de* denotes a volitional action which is initiated by the agent.
Thus, it seems reasonable to regard that such intransitive *de* as the unergative verb,
which takes only one entity in EXT list in the ARG-ST list.

(102) de_{cr} (CAUSE type—REFLEXIVIZED)

$$\begin{bmatrix} \textit{unergative} \\[2pt] \text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle\, \boxed{1} : \boxed{3} \,\rangle \\ \text{INT} & \langle\, \rangle \end{bmatrix} \\[2pt] \text{LCS} \quad [\text{CAUSE}([\text{APPLY}(\,\boxed{3}\,,\,\boxed{3}\,)],\underline{[\text{BECOME}([\text{BE}(\,\boxed{3}\,,\textit{OUT})])])}] \end{bmatrix}$$

Here, I will assume that the caused event is specified as the head event as in the case
of das_c. Again, such specification is reflected in the scope of the durative adverb as
in (103a) or the cooccurrence with the result-oriented adverb as in (103b):

(103) a.   Ken-ga   sanzyuppun dake niwa-ni   de-ta.
          Ken-NOM thirty minutes only garden-DAT participate-PAST
          'Ken went out into the garden and stayed there only for thirty minutes.'

      b.   Yooyaku Naomi-ga   denwa-ni de-ta.
          finally   Naomi-NOM phone-DAT answer-PAST
          'Finally Naomi answered the phone.'

    Moreover, I will assume that the ARG-ST of de_{cr} is parallel to that of das_c except
that it lacks the entity in the INT list. In this respect, de_{cr} can be regarded as the
so-called 'medial (or middle)' in the traditional term. Thus, to be more precise,
the class of de_{cr} might be *reflexive* rather than *unergative* which originally lacks the
internal argument. That is, it might be possible to assume another intransitive verb
class whose internal argument is obligatorily unified with its external argument. The
ARG-ST and VAL will be specified as follows:

(104)
$$
\begin{bmatrix}
\textit{reflexive} \\[4pt]
\text{VAL} \quad
\begin{bmatrix}
\text{SUBJ} & \boxed{1} \\
\text{COMPS} & \langle\,\rangle
\end{bmatrix} \\[10pt]
\text{ARG-ST} \quad
\begin{bmatrix}
\text{EXT} & \boxed{1} \\
\text{INT} & \boxed{1}
\end{bmatrix}
\end{bmatrix}
$$

Since the external argument and internal argument are unified, this type of verb is expected to have only the grammatical subject, but not the complement.[7] Noticeably, some verbs in Japanese explicitly marks the identity of the external and internal arguments by taking the complement *mi* ('one's own body'):

(105) a. Ken-ga   mi-wo   kakusi-ta.
          Ken-NOM body-ACC hide-PAST
          'Ken hid (himself).'

     b. Naomi-ga   mi-wo   noridasi-ta.
          Naomi-NOM body-ACC lean forward-PAST
          'Naomi leaned forward.'

These verbs will be analyzed as the transitive verbs whose external and internal arguments are realized by the distinct forms but semantically identical. Their lexical structure might be specified as follows:

(106)
$$
\begin{bmatrix}
\textit{transitive} \\[4pt]
\text{VAL} \quad
\begin{bmatrix}
\text{SUBJ} & \langle\,\boxed{1}\,\rangle \\
\text{COMPS} & \langle\,\boxed{2}\,\rangle
\end{bmatrix} \\[10pt]
\text{ARG-ST} \quad
\begin{bmatrix}
\text{EXT} & \langle\,\boxed{1}:\boxed{3}\,\rangle \\
\text{INT} & \langle\,\boxed{2}:\boxed{3}\,\rangle
\end{bmatrix}
\end{bmatrix}
$$

---

[7]Note the semantic structure of *reflexive* does not obey the argument realization principle proposed in (34) in chapter 2, i.e., SUBJ⊕COMPS≠EXT⊕INT. Thus, it might be the case that the principle (34) should be regarded as a default constraint as follows, hence can be overridden in this case:

(i)
$$
\begin{bmatrix}
\text{VAL} \quad
\begin{bmatrix}
\text{SUBJ} & / & \boxed{1} \\
\text{COMPS} & / & \boxed{2}
\end{bmatrix} \\[10pt]
\text{ARG-ST} \quad
\begin{bmatrix}
\text{EXT} & / & \boxed{3} \\
\text{INT} & / & \boxed{4}
\end{bmatrix}
\end{bmatrix}
$$

Thus, in (102), the volitional causer is linked to the external argument and the theme/patient who undergoes the outwards movement, hence the change of location also corresponds to the denotation of the external argument. For instance, as has been seen in das_c, the example in (94a) denotes the causal relation such that the manager's volitional application to the rookie brings about the caused event where the rookie participates in the game. On the other hand, the example in (101a) denotes the reflexive relation where Ken's volitional action leads to the event where Ken himself is in the garden, which corresponds to the specification of the agent's volitional action.

It may be worth pointing out in passing that de_{cr} seems to allow the occurrence of the accusative marked object as follows:

(107)　Ken-ga　ie-wo　　de-ta.
　　　　Ken-NOM home-ACC leave-PAST
　　　　'Ken left home.'

In this example, *wo* marks the starting point from which Ken moved outwards. Thus, it seems reasonable to regard the *wo*-marked entity here as corresponding to PATH, i.e., an extra information added to *OUT*, rather than internal argument. Actually, the subject 'Ken' does not apply to 'ie' ('home'), which does not undergo any change of state or location. Similar examples are abundant:

(108) a.　Tori-ga　　sora-wo tob-u.
　　　　　bird-NOM sky-ACC fly-PRES
　　　　　'Birds fly across the sky.'

　　　b.　Naomi-ga　hasi-wo　　watar-u.
　　　　　Naomi-NOM bridge-ACC cross-PRES
　　　　　'Naomi crosses the bridge.'

Since I assume that the entity which undergoes certain change of state/location will be linked to the internal argument (also see fn. 17 in chapter 2), I will not regard such a *wo*-marked expression of PATH as an internal argument. Namely, I will assume that the occurrence of a *wo*-marked object and the existence of an internal argument in the ARG-ST list is not necessarily coincident.[8]

---

[8]For the analysis which treats such a *wo*-marked path expression as an internal argument, see Miyake (1996). He has assumed a sort of transformational process in LCS and configurationally define the internal argument.

3.3.2.2 Demoted Causative de_{cd}

What should be noted here is that there exist several examples of *de*, where the reflexive relation discussed in the previous section does not hold. Suppose, for instance, that Ken is pushed out of an overcrowded train against his will.[9]

(109) Ken-ga   manin densya-de   os-are-te   sotoni de-tesimat-ta.
       Ken-NOM overcrowded train-in push-PASS-and outside go-PERF-PAST
       'Ken was pushed out of the overcrowded train.'

Since this case does not seem to be identified with the nonvolitional *de* which will shortly be discussed in the following section, I will assume the unaccusative *de*, whose LCS is obtained by demoting (or suppressing) the external argument of das_c:

(110) de_{cd} (CAUSE type—DEMOTION OF THE EXTERNAL ARGUMENT)

$$\begin{bmatrix} monounac \\ \text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \ \rangle \\ \text{INT} & \langle \boxed{2} : \boxed{4} \rangle \end{bmatrix} \\ \text{LCS} \quad [\text{CAUSE}([\text{APPLY}(\boxed{5},\boxed{4})],\underline{[\text{BECOME}([\text{BE}(\boxed{4},OUT)])])})] \end{bmatrix}$$

3.3.2.3 Demoted Affective de_{ad}

Next, let me turn to the intransitive *de*, which typically denotes the nonvolitional event exemplified as follows:

(111) a. Hitai-kara   ti-ga   de-teiru.   (=(100a))
          forehead-from blood-NOM come out-PROG
          'As for Ken, blood came out of his forehead.'
          (=His forehead is bleeding.)

     b. Kaze-wo hii-te   netu-ga   de-teiru.
         cold-ACC catch and fever-NOM rise-PROG
         'Owing to the cold, (my) fever has risen.'

     c. Kankiwamat-te   namida-ga de-ta
         deeply moved-and tears-NOM come to (one's) eyes-PAST
         'Deeply moved, tears came to my eyes.'

---

[9]I am grateful to Kazuhiko Fukushima (p.c., 1998) for suggesting this possibility.

In the case of the transitive *das*, the entity which comes out (e.g., blood, fever, smoke, sprout etc.) are realized as the grammatical object. On the other hand, in (111), these entities are realized as the grammatical subject. Note that the grammatical subject of *das*, which denotes the 'affectee' is no longer realized (see (111b) and (111c)). Even if it appears, it is marked by the topic marker *-wa* as in (111a). Thus, I will assume that the semantic structure of such intransitive *de* is obtained by demoting (or suppressing) the external argument of the nonvolitional transitive *das*:

(112) de_{ad} (AFFECTED type)

$$\begin{bmatrix} monounac \\ \\ \text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \ \rangle \\ \text{INT} & \langle \, \boxed{2}:\boxed{4} \, \rangle \end{bmatrix} \\ \\ \text{LCS} \qquad [\text{AFFECTED}(\, \boxed{5} \,,[\text{BECOME}([\text{BE}(\, \boxed{4} \,,OUT)])])] \end{bmatrix}$$

The main predicate AFFECTED in the LCS will account for the semantic similarity between the nonvolitional *das* and *de* (see (100) above). On the other hand, I assume that the intransitive *de* belongs to the monounaccusative class, which only takes the internal argument. The first argument of the function AFFECTED is pragmatically determined, thus, it is no longer realized as the syntactic argument.[10]

3.3.2.4   Simplex Event Case de_0

Finally, I will take up the case where *de* seems to lack its transitive counterpart. The following serves as an example:

(113) a.   Tuki-ga   de-ru.
            moon-NOM come up-PRES
            'The moon comes up.'

   b.   *Tuki-wo   das-u.
            moon-ACC take out-PRES

---

[10]I assume that such pragmatically determined entity as the first argument of AFFECTED in (112) corresponds to what Pustejovsky (1995: 63) has referred to as "default argument" in his framework of generative lexicon. Thus, I assume that such an argument only participates in LCS but not mapped onto ARG-ST.

The example such as (113a) seems to be different from the other examples of the nonvolitional *de* (i.e., de_{cd} or de_{ad}) in that it is very difficult to assume the individual or element which is affected by the appearance of the moon. Compare (113a) with the typical example of de_{ad} such as *ti-ga de* ('blood comes out'; see (111a) above). When one says 'blood comes out', the individual who is bleeding is obligatorily presupposed. On the contrary, when it comes to *tuki-ga de* ('the moon comes up'), it is possible to assume the location where the moon appears (e.g., the sky), but it is not obligatory. Actually, the expression of such a location cannot be marked by the topic marker *-wa* without the locative marker *-ni* as in (114b), which also seems to reflect the absence of the implicit affectee:

(114)   a.   Sora-ni-(wa)   tuki-ga   der-u.
             sky-DAT (-TOP) moon-NOM come up-PRES
             'In the sky, comes up the moon.'

        b.   *Sora-wa tuki-ga   der-u.
             sky-TOP moon-NOM come up-PRES

Thus, I assume that LCS of this kind of *de*, which does not necessarily require the existence of some affectee, will consist of the simplex event which denotes the change of state, taking BECOME as the main predicate:[11]

---

[11]Actually, the distinction between de_{ad} and de_0 does not seem so clear-cut. Note that there exist some cases where *de* has its counterpart *das*, yet the 'affectee' is not so strongly required:

(i)   a.   Zisin-de   tasuu-no hisaisya-ga   de-ta.
           earthquake-because of a lot of   victims-NOM come out-PAST
           'The earthquake brought about a lot of victims.'
      b.   Zisin-ga   tasuu-no hisaisya-wo   dasi-ta.
           earthquake-NOM a lot of   victims-ACC bring about-PAST
           'The earthquake brought about a lot of victims.'

(ii) a.   Ronbun-ga yo-ni   de-ru.
           paper-NOM world-DAT come out-PRES
           'The paper comes out.'
      b.   Ronbun-wo yo-ni   das-u.
           paper-ACC world-DAT publish-PRES
           '(I/We/You/He/She/They) publish the paper.'

It is debatable whether *de* in (ia) and (iia) should be analyzed as de_{ad} or de_0. Moreover, the analysis of *das* in (ib) and (iib) also remain to be examined. If it is analyzed as das_c, it would be difficult to assume that the second argument of APPLY is identical with the first argument of BE, i.e., the element which comes out as a result. Particularly, in the case of (iib), the element which comes out

Table 2: Various Subtypes of *das* and *de*

Verb	Class	LCS
de_0	*unaccusative*	[BECOME([BE(I,*OUT*)])]
das_c	*transitive*	[CAUSE([APPLY(E,I)],[BECOME([BE(I,*OUT*)])])]
de_{cr}	*unergative*	[CAUSE([APPLY(E,E)],[BECOME([BE(E,*OUT*)])])]
de_{cd}	*unaccusative*	[CAUSE([APPLY(D,I)],[BECOME([BE(I,*OUT*)])])]
das_a	*transitive*	[AFFECTED(E,[BECOME([BE(I,*OUT*)])])]
de_{ad}	*unaccusative*	[AFFECTED(D,[BECOME([BE(I,*OUT*)])])]

(115) de_0 (SIMPLEX EVENT type)

$$
\begin{bmatrix}
\textit{unaccusative} \\[4pt]
\text{ARG-ST} \quad
\begin{bmatrix}
\text{EXT} & \langle\ \rangle \\
\text{INT} & \langle\ \boxed{2}:\boxed{4}\ \rangle
\end{bmatrix} \\[10pt]
\text{LCS} \qquad [\text{BECOME}([\text{BE}(\boxed{4},\textit{OUT})])]
\end{bmatrix}
$$

3.3.3 Summary of 3.3: Interaction of Causative, Affectives and Reflexives

So far, I have examined the various subtypes of the verb *das* and *de*. By assuming the LCS-based classification of such subtypes, the interrelation between *das* and *de* has been clarified. In particular, the introduction of the semantic functions CAUSE and AFFECTED into the semantic structures of verbs makes it possible to array all of these subtypes of *das* and *de* in the systematic way as schematically shown in Table 2. Particularly, the semantic similarity between the transitive *das* with 'affectee' subject (i.e., das_a) and the unaccusative *de* (i.e., de_{ad}) is neatly captured.

In Table 2, the denotation of the external argument is abbreviated as E, the internal argument as I, and the demoted (or suppressed) argument as D for simplicity

---

(i.e., 'ronbun') is newly created, thus, it cannot be involved in the causing event (p.c. Hiroshi Mito, 1998). I will leave the matter open for further research.

Also note the following example:

(iii)   Yuusyoosya-ni-wa syookin   zyuuman-en-ga   de-ru.
        winner-DAT-TOP   prize money hundred thousand-yen-NOM be offered-PRES
        'The winner will be offered hundred thousand yen in prize money.'

The status of *ni*-marked noun, that is, whether it should be analyzed as a locative adjunct or as an argument, requires further investigation. I am grateful to Asako Uchibori (p.c., 1998) for suggesting this example.

of the representation. As the table indicates, each of the subtypes of *das* and *de* is based on the LCS of de_0, in which the simplex event specifies the appearance of the argument (i.e., [BECOME([BE(I,*OUT*)])]). The LCS of das_c is obtained by causativizing this simplex event, while das_a corresponds to the passivized (to be more precise, 'affectivized') version of this simplex event. On the other hand, de_{cr} is obtained by the combination of causativization and reflexivization of the simplex event, de_{ad} by the combination of passivization and demotion, and de_{cd} by the combination of causativization and demotion. Among the causative group (i.e., das_c, de_{cr} and de_{cd}), de_{cr} seems to be different from the others in that it contains E in its resultant event. Nevertheless, as has been seen above, E is the sole argument of this verb, thus corresponding both the first and the second argument of APPLY, thus, virtually the same with the other two types.[12]

In the following section, I will move on to the semantic structures of lexical compound verbs with *das* and *de* in their V2 positions.

3.4 Lexical Compound Verbs in Japanese

3.4.1 Compound Lexical Rule

This section examines the semantic structures of verbs *das* and *de* when they appear as V2 in the V1-V2 compound verbs. As I have seen earlier, V2 in the syntactic compound takes the verb phrase as its complement. On the other hand, it has been shown that the lexical compound verbs are formed by combining the LCS of V1 with that of V2, which yields the LCS of the compound verb. Then, the compound verb is inserted into the syntactic representation as a single word. In this section, I will propose that such lexical compound verbs are formed through the application of the Lexical Rules, which are classified into several types corresponding to the subtypes of *das* and *de* (i.e., CAUSE type and AFFECTED type respectively). Before moving on to the discussion of each lexical rule, I will present the generalized form of the

---

[12]Of course, Table 2 presents the synchronic relation held between words, and it is not intended to illustrate how these words historically emerged. Nevertheless, it has been proved that *das*, more precisely, its archaic counterpart *idas*, was originated as the causativized form of the intransitive *id* and it is interesting to note the same relation is held between de_0 and das_c. From typological points of view, Shibatani (1997, to appear) and many others have suggested that various languages have a set of transitive verbs of such an intransitive origin, which undergo reflexivization (or medialization) and then, are re-intransitivized. It seems worth examining whether intransitive *das* and *de*, except for de_0, can be analyzed as an example of such a re-intransitivization.

FUNCTIONAL APPLICATION TYPE Lexical Rule as follows:[13]

(116)   FUNCTIONAL APPLICATION TYPE Lexical Rule

$$
\begin{bmatrix}
\alpha \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{1} \rangle \\ \text{INT} & \langle \boxed{2} \rangle \end{bmatrix} \\
\text{LCS} \qquad L
\end{bmatrix}
+
\begin{bmatrix}
\beta \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{5} \rangle \\ \text{INT} & \langle \boxed{6} \rangle \end{bmatrix} \\
\text{LCS} \qquad [\lambda x F(\dots, x, \dots)]
\end{bmatrix}
$$

$$
\Rightarrow
\begin{bmatrix}
\gamma \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{7} \rangle \\ \text{INT} & \langle \boxed{8} \rangle \end{bmatrix} \\
\text{LCS} \qquad [F(\dots, L, \dots)]
\end{bmatrix}
$$

In short, when the FUNCTIONAL APPLICATION TYPE Lexical Rule applies, one of the main predicates in the LCS of V2 will be identified with the LCS of V1 (indicated by [ ] in (116)), which yields the complex LCS of the compound verb. There is no constraint on the class and the ARG-ST of the compound verb thus derived, but the lexical rules involving *das* and *de* will add specific constraints on the formation of the lexical compound.

3.4.2   Causative das_c Compound Lexical Rule

When das_c undergoes the application of the lexical rule in (116) as V2, it is accompanied by the CLASS PRESERVING CONDITION on the verb class (i.e., $\gamma = \alpha$), which is generally formalized as follows:

(117)   CLASS PRESERVING CONDITION

$$
\begin{bmatrix}
\alpha \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{1} \rangle \\ \text{INT} & \langle \boxed{2} \rangle \end{bmatrix} \\
\text{LCS} \qquad L
\end{bmatrix}
+
\begin{bmatrix}
\beta \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{5} \rangle \\ \text{INT} & \langle \boxed{6} \rangle \end{bmatrix} \\
\text{LCS} \qquad [\lambda x F(\dots, x, \dots)]
\end{bmatrix}
$$

$$
\Rightarrow
\begin{bmatrix}
\alpha \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{7} \rangle \\ \text{INT} & \langle \boxed{8} \rangle \end{bmatrix} \\
\text{LCS} \qquad [F(\dots, L, \dots)]
\end{bmatrix}
$$

---

[13]This rule corresponds to the 'complement structure type' rule proposed in Yumoto (1996), Kageyama and Yumoto (1997).

It is also accompanied by the EXTERNAL ARGUMENT SHARING CONDITION on the ARG-ST (i.e., $\boxed{1} = \boxed{5} = \boxed{7}$), which is generally schematized as follows:

(118)   EXTERNAL ARGUMENT SHARING CONDITION

$$
\begin{bmatrix}
\alpha \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{1} \rangle \\ \text{INT} & \langle \boxed{2} \rangle \end{bmatrix} \\
\text{LCS} \qquad L
\end{bmatrix}
+
\begin{bmatrix}
\beta \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{1} \rangle \\ \text{INT} & \langle \boxed{6} \rangle \end{bmatrix} \\
\text{LCS} \qquad [\lambda x F(\ldots, x, \ldots)]
\end{bmatrix}
$$

$$
\Rightarrow
\begin{bmatrix}
\gamma \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{1} \rangle \\ \text{INT} & \langle \boxed{8} \rangle \end{bmatrix} \\
\text{LCS} \qquad [F(\ldots, L, \ldots)]
\end{bmatrix}
$$

In this way, CAUSE type das_c compound verbs will be obtained:

(119)   Causative das_c Compound Lexical Rule
    =   FUNCTIONAL APPLICATION TYPE Lexical Rule (116) $\wedge$
        (V2 $= das_c$) $\wedge$ CLASS PRESERVING CONDITION ($\gamma = \alpha$) $\wedge$
        EXTERNAL ARGUMENT SHARING CONDITION ($\boxed{1} = \boxed{5} = \boxed{7}$)

$$
\begin{bmatrix}
\alpha \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{1} \rangle \\ \text{INT} & \langle \boxed{2} \rangle \end{bmatrix} \\
\text{LCS} \qquad L
\end{bmatrix}
+
\begin{bmatrix}
\textit{transitive} \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{1} \rangle \\ \text{INT} & \langle \boxed{6} : \boxed{4} \rangle \end{bmatrix} \\
\text{LCS} \qquad [\text{CAUSE}([\ ], \underline{[\text{BECOME}([\text{BE}(\boxed{4}, OUT)])]})]
\end{bmatrix}
$$

$$
\Rightarrow
\begin{bmatrix}
\alpha \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{1} \rangle \\ \text{INT} & \langle \boxed{8} : \boxed{4} \rangle \end{bmatrix} \\
\text{LCS} \qquad [\text{CAUSE}(L, \underline{[\text{BECOME}([\text{BE}(\boxed{4}, OUT)])]})]
\end{bmatrix}
$$

The Causative das_c Compound Lexical Rule in (119) specifies that the LCS of the compound verb V1+ das_c is formed by inserting the LCS of V1 into the first argument of CAUSE in the LCS of das_c. Thus, the LCS of the compound verb is identical with that of das_c except for its class specification, which should be unified with that of V1. Namely, what the Causative das_c Compound Lexical Rule specifies should fall into the following four points:

(120) a. das_c compound verb preserves the class of V1.

b. das_c compound verb shares the external argument with V1.

c. das_c compound verb identifies its own internal argument, independent of V1.

d. das_c compound verb has the causative semantic structures which focuses upon the resultant state in the same way as das_c.

In the following, I will examine the Causative das_c Compound Lexical Rule from these four points.

3.4.2.1 Class Preserving Condition

Firstly, das_c compound verbs observe the CLASS PRESERVING CONDITION, thus, directly inherits the class of V1 (α). Namely, the class of the compound verb is always identical with that of V1:

(121) a. $transitive + das_c \rightarrow transitive$:

e.g., *hakobi-das* ('carry out'), *hori-das* ('dig out'), *osi-das* ('push out'), *tataki-das* ('strike out'), etc.

$$
\begin{bmatrix}
transitive \\
\\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{1} \rangle \\ \text{INT} & \langle \boxed{2} : \boxed{4} \rangle \end{bmatrix} \\
\\
\text{LCS} \quad [\text{CAUSE}(L,[\underline{\text{BECOME}}([\text{BE}(\boxed{4},OUT)])])]
\end{bmatrix}
$$

b. $unergative + das_c \rightarrow unergative$:

e.g., *nuke-das* ('slip out of'), *tobi-das* ('fly out of'), *nige-das* ('escape from'), etc.

$$
\begin{bmatrix}
unergative \\
\\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{1} : \boxed{3} \rangle \\ \text{INT} & \langle \ \rangle \end{bmatrix} \\
\\
\text{LCS} \quad [\text{CAUSE}(L,[\underline{\text{BECOME}}([\text{BE}(\boxed{3},OUT)])])]
\end{bmatrix}
$$

c. $unaccusative + das_c \rightarrow unaccusative$:

e.g., *nagare-das* ('flow/stream out'), *waki-das* ('gush forth/ooze out'), *huki-das* ('spout out/spurt out'), etc.

$$\begin{bmatrix} unaccusative \\[2ex] \text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \ \rangle \\[1ex] \text{INT} & \langle \ \boxed{2} : \boxed{4} \ \rangle \end{bmatrix} \\[3ex] \text{LCS} \qquad \ [\text{CAUSE}(L,[\underline{\text{BECOME}}([\text{BE}(\boxed{4},OUT)])])] \end{bmatrix}$$

It is noteworthy that das_c compound verbs thus obtained do not necessarily show the property of a head-final language. Also note that compounding pattern such as (121c) does not observe Kageyama's (1993: 117) ARGUMENT STRUCTURE HARMONY. Kageyama has argued that lexical compounding is characterized by the certain patterns in the compatibility of V1 and V2 in terms of their argument structures. Specifically, he has suggested that unaccusative verbs cannot be compounded with unergative or transitive verbs. Since Kageyama has regarded the argument structure and LCS as the distinct levels of representation, such a constraint on transitivity only affects compounding which, he has assumed, takes place at the level of argument structure, but not the LCS. In Kageyama's (1993) discussion, the examples such as *nagare-das* ('flow/stream out'), or *waki-das* ('gush forth/ooze out') in (121c) are classified as a group of verbs derived through the compounding of their LCS's. In this dissertation, I do not assume compounding of argument structures. Rather, the FUNCTIONAL APPLICATION TYPE LEXICAL RULE refers to both ARG-ST and LCS simultaneously.[14]

3.4.2.2 External Argument Sharing Condition

Next, in case V1 is a transitive verb or an unergative verb, the das_c compound verbs share the external argument with V1. For instance, in (122a) below, the external argument of V1 (i.e., *kohyoo-no rikisi* 'small-statured sumo wrestler') corresponds to the external argument of the compound verb. The same is true of the other examples in (122):

(122) a. Kohyoo-no rikisi-ga   oogata rikisi-wo

     small-statured sumo wrestler-NOM large built sumo wrestler-ACC

     osi-das-u.

     push out-PRES

     'The small-statured sumo wrestler pushes out the large built sumo wrestler.'

---

[14]Matsumoto (1996) has noted the problems of Kageyama's view of ARGUMENT STRUCTURE HARMONY and suggested alternative approaches in the LFG framework.

b. Ken-ga   tatami-kara hokori-wo tataki-das-u.

Ken-NOM tatami-from dust-ACC strike out-PRES

'Ken struck the *tatami* mat to get rid of the dust in it.'

c. Hitori-no rannaa-ga syuudan-kara nuke-das-u.

one runner-NOM   group-PASTP slip out-PRES

'One runner slips out the group.'

(=One runner is now leading the group)

Here I cannot say for certain whether it is subjects or external arguments that must be shared.[15] If V1 is either transitive or unergative, the External Argument Sharing Condition affects the external argument of the compound verb, thus, the subject of the compound verb is consequently identified. On the other hand, when V1 is unaccusative, it lacks an external argument, but owing to the Class Preserving Condition noted above, the compound verb itself does not have an external argument either. Hence, the subject of V1 is an internal argument and so is the subject of the compound verb. Therefore, V1 and the compound verbs do not always have to share their subjects, though they often share the subjects as a natural consequence of the semantic condition which will shortly be noted below, thus in such a case, the condition assumed here and the Obligatory Subject Sharing Principle by Yumoto (1996) might possibly lead to certain empirical differences. It also requires further investigation based on a wider range of data to decide whether sharing of an external argument is a universal constraint or specific to das_c compound verbs. I will leave this point for further studies.

3.4.2.3   Identification of the Internal Argument

As I have seen above, when V1 is of the type *unaccusative*, the compound verb itself will be specified as *unaccusative* observing the CLASS PRESERVING CONDITION examined in 3.4.2.1 above. Therefore when V1 is a transitive verb or an unaccusative

---

[15]Yumoto (1996) has suggested that sharing of external arguments follows from a couple of general principles which constrain formation of compound verbs in Japanese:

(i) a. Obligatory Subject Sharing Principle:
        V2 must share its subject with V1.
    b. Case Inheritance Principle:
        If V2 has a feature to assign accusative case, the compound verb must inherit the feature.

verb, thus having an internal argument, the compound verb is supposed to have the internal argument as well. In such a case, the compound verb takes the participant in the head event (i.e., the resultant event having BECOME as a main predicate) as its internal argument. In other words, the internal argument of the compound verb will correspond to the argument whose denotation undergoes the change of location provoked by the activity specified by the LCS of V1 (i.e., the causing event).[16]

When V1 is an unergative verb, V1 is semantically reflexivized, hence, the denotation of the argument which undergoes the outwards movement will be identified with the denotation of its external argument. Namely, in case of *tobi-das* ('fly out of'), the external argument of V1 *tob* is regarded as the agent as well as the theme, thus identified with the argument of BE in the LCS of V2 *das*.

Note that the internal argument of such a compound verb is not necessarily identical with that of V1. For instance, even though the compound verb *osi-das* in (122a) takes *oogata rikisi* ('large built sumo wrestler') as its internal argument, which happens to be identical with that of V1, such identification is expected to come from the semantic/pragmatic requirement in the real world.[17] Thus, in (122b), the internal argument of V1 *tatak* ('strike') is *tatami*, but what undergoes the change of state as a result of the agent's hitting will be *hokori* ('dust'), which serves as the internal argument of the compound verb *tataki-das*.[18]

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[16]This is a consequence of a general rule such as DIRECTED CHANGE LINKING RULE suggested by Levin and Rappaport Hovav (1995). Also see fn. 17 and fn. 22 in Chapter 2.

[17]It seems to reflect a general semantic constraint that complex events must share at least one common participant, as has been formalized as SHARED PARTICIPANT CONDITION by Matsumoto (1996: 230). It is obvious from an example like (122b) that such a constraint is not obligatory. (i) is another example in which V1 and V2 do not share the internal argument (p.c., Yoko Yumoto 1998):

(i) Ken-ga   tyuubu-kara   hamigakiko-wo   osi-das-u.
     Ken-NOM tube-from   tooth paste-ACC push out-PRES
     'Ken pushed the toothpaste out of the tube.'

[18]Compare (122b) and (i) below. (i) is the case in which the internal argument of V1 is identified with the one of V2:

(i) Karera-wa gesyukunin-wo tataki-dasi-ta.
     they-TOP   boarder-ACC   strike out-PAST
     'They kicked out the boarder.'

3.4.2.4 Focusing on the Resultant State

Finally, the Causative das_c Compound Lexical Rule specifies that the compound verb has the causative semantic structures which focuses upon the resultant state in the same way as das_c. For instance, V1 *os* ('push') in (122a) denotes only the application to the theme, but not the resultant state caused by such application. Once it is combined with V2 *das*, however, the compound verb behaves as the change of state verb. The contrast in the following example is a good illustration of this point:

(123) a.　Kohyoo-no rikisi-ga　　　　　oogata rikisi-wo
　　　　　small-statured sumo wrestler-NOM large-built sumo wrestler-ACC
　　　　　osi-ta　　　ga　oogata rikisi-wa　　　　　bikutomo sinakat-ta.
　　　　　push-PAST but large-built sumo wrestler-TOP did not move an inch.
　　　　　'The small-statured sumo wrestler pushed the large built sumo wrestler,
　　　　　the large wrestler did not move an inch.'

　　　b.　*Kohyoo-no rikisi-ga　　　　　oogata rikisi-wo
　　　　　small-statured sumo wrestler-NOM large-built sumo wrestler-ACC
　　　　　osi-dasi-ta　　　ga　oogata rikisi-wa　　　　　bikutomo sinakat-ta.
　　　　　push out-PAST but large-built sumo wrestler-TOP did not move an inch.

This contrast is naturally predicted from the LCS of the compound verb in (124b), where the second argument of the function CAUSE involves the change of location that the theme participant undergoes, and the caused event is specified as the head event.

(124) a.　LCS of V1: *os*

$$
\begin{bmatrix}
\textit{monotrans} \\[2mm]
\text{ARG-ST} \quad
\begin{bmatrix}
\text{EXT} & \langle \boxed{1} : \boxed{3} \rangle \\
\text{INT} & \langle \boxed{2} : \boxed{4} \rangle
\end{bmatrix} \\[4mm]
\text{LCS} \quad [\text{VOL}(\boxed{3}, [\text{APPLY}(\boxed{3}, \boxed{4})])]
\end{bmatrix}
$$

　　　b.　LCS of the Compound Verb: *osi-das*

$$
\begin{bmatrix}
\textit{monotrans} \\[2mm]
\text{ARG-ST} \quad
\begin{bmatrix}
\text{EXT} & \langle \boxed{1} : \boxed{3} \rangle \\
\text{INT} & \langle \boxed{2} : \boxed{4} \rangle
\end{bmatrix} \\[4mm]
\text{LCS} \quad [\text{CAUSE}([\text{APPLY}(\boxed{3}, \boxed{4})], [\underline{\text{BECOME}([\text{BE}(\boxed{4}, \textit{OUT})])}])]
\end{bmatrix}
$$

On the other hand, when V1 is a creation verb like *tukur* ('make', 'create') or *egak* ('draw'), its LCS already involves the function CAUSE, whose second argument specifies the appearance of the newly created theme participant. Thus, the difference between the LCS of V1 and that of the compound verbs is not as clear as the case of *os* in (124). Compare (125a) and (125b) in the following:[19]

(125) a. Gaka-ga   ikiikitosita zyookei-wo egak-u.
        painter-NOM vivid   scene-ACC draw-PRES
        'The painter draws the scene vividly.'
        LCS of *egak*:
        [CAUSE([APPLY(3 , 4)],[BECOME([BE(4 ,[AT 5])])])]

      b. Gaka-ga   ikiikitosita zyookei-wo egaki-das-u.
        painter-NOM vivid   scene-ACC draw-PRES
        'The painter draws the scene vividly.'
        LCS of *egaki-das*:
        [CAUSE([CAUSE([APPLY(3 , 4)],[BECOME([BE(4 ,[AT 5])])])],[BECOME([BE(4 ,*OUT*)])])]

It should be noted, however, that (125a) and (125b) do not denote exactly the same eventuality. The compound verb *egaki-das* is more readily used when the theme participant (i.e., the scene) appears outside:

(126) a. Kokoro-no naka-ni   zyookei-wo egak-u.
        mind-GEN inside-DAT scene-ACC draw-PRES
        'to picture the scene inside one's mind'

      b. ??Kokoro-no naka-ni   zyookei-wo egaki-das-u.
        mind-GEN inside-DAT scene-ACC draw-PRES

Again, such a subtle difference can be accounted for by assuming the compound lexical rule in (119), which specifies the resultant event of the LCS of the compound verb as a head event.

---

[19]It is probable that the LCS specification of (125b) should be further simplified as follows at semantic/pragmatic level:

(i) *egaki-das*:
     SEM: [CAUSE([APPLY(3 , 4)],[BECOME([BE(4 ,*OUT*)])])]

3.4.3   Reflexivized Causative de_{cr} Compound Lexical Rule

The intransitive verb *de* can also form the compound verbs such as *nuke-de* ('slip out of') or *tobi-de* ('fly out of') in the same way as the transitive verb *das*. Here, I will propose that one of these compounds taking *de* as V2 is formed by applying the FUNCTIONAL APPLICATION TYPE Lexical Rule to de_{cr}, which is specified as follows:

(127) de_{cr} Compound Lexical Rule

     = FUNCTIONAL APPLICATION TYPE Lexical Rule (116) ∧

       (V2 = de_{cr}) ∧ CLASS PRESERVING CONDITION ($\gamma = \alpha$) ∧

       EXTERNAL ARGUMENT SHARING CONDITION ($\boxed{1}$ = $\boxed{5}$ = $\boxed{7}$)

       DEFOCUSING THE RESULTANT STATE

$$
\begin{bmatrix} \alpha \\ \text{ARG-ST} \begin{bmatrix} \text{EXT} & \langle \boxed{1} \rangle \\ \text{INT} & \langle \boxed{2} \rangle \end{bmatrix} \\ \text{LCS} \qquad L \end{bmatrix}
+
\begin{bmatrix} ergative \\ \text{ARG-ST} \begin{bmatrix} \text{EXT} & \langle \boxed{1}:\boxed{3} \rangle \\ \text{INT} & \langle \ \rangle \end{bmatrix} \\ \text{LCS} \qquad [\text{CAUSE}([\ ],\underline{[\text{BECOME}([\text{BE}(\boxed{3},OUT)])])}] \end{bmatrix}
$$

$$
\Rightarrow
\begin{bmatrix} \alpha \\ \text{ARG-ST} \begin{bmatrix} \text{EXT} & \langle \boxed{1}:\boxed{3} \rangle \\ \text{INT} & \langle \boxed{8} \rangle \end{bmatrix} \\ \text{LCS} \qquad [\text{CAUSE}(L,[\text{BECOME}([\text{BE}(\boxed{3},OUT)])])] \end{bmatrix}
$$

The lexical rule (127) belongs to the same type as das_c Compound Lexical Rule examined above, that is, FUNCTIONAL APPLICATION TYPE. It is also constrained by the EXTERNAL ARGUMENT SHARING CONDITION, but here the individual/entity which undergoes the change of state, corresponds to its external argument in the same way as de_{cr}.

    What distinguishes such de_{cr} compound verbs from das_c compounds (or de_{cr} when it is used as an independent word) is that the function CAUSE introduced by the lexical rule in (127) does not specify the head event (i.e., DEFOCUSING THE RESULTANT STATE). Actually, de_{cr} compound verbs are less compatible with the result-oriented adverbs such as *itizitekini* 'temporarily' or *karoozite* 'barely':

(128) das_c compound verbs:

    a.   Ken-ga   itizitekini   nuke-dasi-ta.
          Ken-NOM temporarily slip out-PAST
          'Ken temporalily slipped out'

b. Ken-ga   karoozite tobi-dasi-ta.

Ken-NOM barely   run out-PAST

'Ken barely ran out'

(129) de_{cr} compound verbs:

a. *Ken-ga   itizitekini   nuke-de-ta.

Ken-NOM temporarily slip out-PAST

b. *Ken-ga   karoozite tobi-de-ta.

Ken-NOM barely   run out-PAST

Such a contrast reflects the headless semantic structure introduced by the lexical rule in (127). As I will shortly show below, such incompatibility with the result-oriented adverbs is due to the fact that the head event of the LCS of V1 is also regarded as the head event of the compound verb, which prohibits such adverbials to modify the second argument of CAUSE.

One of the characteristics of the complex event of the de_{cr} compound verbs is that causal relation between these two events is not so strong.[20] Rather it simply specifies two events happening in this order along the time sequence, or two overlapping events. Therefore, it is expected that two events of the de_{cr} compound verbs are relatively independent of each other. Actually, only this kind of compound verbs allows the conjunctive expressions such as *nagara* ('simultaneously'), which specifies an overlapping relation between two events, or *te(de)mo/nagaramo* ('yet'), which connects two events of opposite directions:

(130) das_c compound verb: hori-das ('dig out')

a. Ken-ga   Imo-wo   hori-das-ita.

Ken-NOM potato-ACC dig out-PAST

'Ken digs out potatoes'

---

[20]Here I assume that such weakness of causal relation follows from DEFOCUSING THE RESULTANT STATE Condition, and that both das_c compound verbs and de_{cr} compound verbs have the function CAUSE in their LCS. It might be possible, however, to introduce another function like PRECEDE for specifying occurrence of two events along the time sequence, or OVERLAP for two overlapping events. As to the overlapping events, Yumoto (1996: 110) has formalized the LCS of this kind of compound verbs by introducing the function WHILE to clarify the semantic contribution of V1 as a sort of modifier of the event described by V2.

b. *Ken-ga   Imo-wo   hori-nagara-das-ita.
   Ken-NOM potato-ACC dig-while-out-PAST

c. *Imo-wo   hot-tedemo-das-u
   potato-ACC dig-yet-out-PRES

d. *Imo-wo   hori-nagaramo-das-u
   potato-ACC dig-yet-out-PRES

(131)   *de*$_{cr}$ compound verb: suberi-de ('go out by slipping')

a. Ken-ga   suberi-de-ta
   Ken-NOM slip-out-PAST
   'Ken slipped outside.'

b. Ken-ga   suberi-nagara-de-ta
   Ken-NOM slip-yet-get out-PAST
   'Ken went outside while slipping.'

c. Ken-ga   subet-tedemo-de-ta
   Ken-NOM slip-yet-get out-PAST
   'Ken managed to go outside while he kept on slipping on his way.'

d. Ken-ga   suberi-nagaramo-de-ta
   Ken-NOM slip-yet-get out-PAST
   'Ken managed to go outside while he kept on slipping on his way.'

In (130a), the strong causal relationship is held between V1 (i.e., *hor* ('dig')) and *das*, thus, it is impossible that the resultant state occurs before the causing event is completed. In (130a), potatoes that appear on the ground are obtained only after Ken dug up the ground. Such two events neither occur simultaneously (130b) nor proceed to opposite directions (130c, d). On the contrary, in (131a), the resultant state (i.e., Ken is outside) can be completed while the event described by V1 is ongoing (i.e., slipping event). Also note the activity of 'slipping' cannot directly bring about the resultant event, rather it prevents the actor to go outside smoothly. Nevertheless, *de* allows the verb *suber* to participate in compounding as V1, which reflects the weakness of the causal relation involved in the complex event of the *de*$_{cr}$ compound verbs.

3.4.4   Lexical Compounding with Unaccusative Verbs

So far, I have examined the difference between das_c and de_{cr}, both of which serve as the inputs to the compound lexical rules as V2. What I would like to note here is the case where the semantic difference between das_c and de_{cr} becomes very little after the application of the compound lexical rule. Specifically, it occurs when unaccusative verbs are compounded with these verbs:

(132) a.   Namida-ga nagare-das-u./nagare-de-ru.
            tears-NOM flow out-PRES
            'Tears flow out.'

    b.   Kakoo-kara   siroi kemuri-ga   huki-das-u./huki-de-ru.
            crater-PASTP white smoke-NOM shoot out-PRES
            'The white smoke shoots out of the crater.'

    c.   Izumi-ga   waki-das-u./waki-de-ru.
            fountain-NOM spring out-PRES
            'The fountain springs out.'

Here I will assume that unaccusative verbs such as *nagare* in (132a) has the semantic structure as follows:

(133)   *nagare*

$$
\begin{bmatrix}
\textit{monounac} \\[4pt]
\text{ARG-ST} \quad
\begin{bmatrix}
\text{EXT} & \langle\ \rangle \\
\text{INT} & \langle\ \boxed{2}:\boxed{4}\ \rangle
\end{bmatrix} \\[12pt]
\text{LCS} \qquad \left[\text{MOVE}(\boxed{4},[\text{PATH}\ \boxed{5}])\right]
\end{bmatrix}
$$

Given that the LCS of unaccusative verbs has a simplex structure as in (133), they do not specify the head event. Therefore, after the application of das_c Compound Lexical Rule and de_{cr} Compound Lexical Rule respectively, the compound verbs thus obtained are supposed to have the LCS specified as follows:

(134) a.   *nagare-das*
            $[\text{CAUSE}([\text{MOVE}(\boxed{4},[\text{PATH}\ \boxed{5}])],\underline{[\text{BECOME}([\text{BE}(\boxed{4},\textit{OUT})])])}]$

    b.   *nagare-de*
            $[\text{CAUSE}([\text{MOVE}(\boxed{4},[\text{PATH}\ \boxed{5}])],[\text{BECOME}([\text{BE}(\boxed{4},\textit{OUT})])])]$

Note that the semantic structures of these verbs are nearly identical, differing only with respect to the specification of the head event. While the caused event is specified as the head in (134a), the head event is left unspecified in (134b). In this way, by positing the compound lexical rules based on das_c and de_{cr}, similarity between a pair of compounds with unaccusative V1 like *nagare-das* and *nagare-de* is correctly predicted.

Moreover, such difference in the specification of the head event as (134) readily accounts for the fact that some people find (135b) less acceptable when it cooccurs with the result-oriented adverb such as *sukkari* 'completely':

(135) a.   Sukkari   mizu-ga   nagare-das-ita.
            completely water-NOM flow out-PAST
            'The water completely flew out.'

    b.   ?Sukkari   mizu-ga   nagare-de-ta.
            completely water-NOM flow out-PAST
            'lit.: The water completely flew out.'

3.4.5   Unergative Verbs and 'Focus Continuity Constraint (FCC)'

As I have seen so far, the verbs *das* and *de* productively form the lexical compound verbs regardless of the ARG-ST of V1. Nevertheless, it is not the case that these verbs can be combined with any kind of V1. This section will examine the constraints on V1 which is compatible with these verbs. It will be shown that the constraints on the selection of V1 is based on the general principle which presumably applies to the Compound Lexical Rules as a whole.

Although there is slight difference in acceptability, both das_c and de_{cr} are normally combined with unergative verbs:

(136) a.   Hitori-no rannaa-ga syuudan-kara nuke-dasi-ta./?nuke-de-ta.
            one runner-NOM   group-PASTP slip out-PAST
            'One runner slips out the group.'
            (=One runner is now leading the group)

    b.   Seitotati-ga kyoositu-kara   tobi-dasi-ta./?tobi-de-ta.
            pupils-NOM classroom-PASTP ran out-PAST
            'The pupils ran out of the classroom.'

    c.   Syuuzin-ga   keimusyo-kara nige-dasi-ta./??nige-de-ta.
           prisoner-NOM gaol-PASTP   escape from-PAST
           'The prisoner escaped from the gaol.'

Nevertheless, it should not be overlooked that there exist a number of unergative verbs which cannot be lexically combined with das_c (i.e., they allow only syntactic compounding) as follows:

(137)   *hasiri-das ('run'), *ayumi-das ('walk'), *sinobi-das ('steal'), *odori-das ('dance'), *abare-das ('behave violently'), *nanori-das ('announce one's name'), *oyogi-das ('swim'), *susumi-das ('proceed'), *korogari-das ('roll'), *suberi-das ('slip'), *samayoi-das ('wander') etc.
        (Here, the asterisk indicates that they are acceptable only as the syntactic compound verbs, thus given only the aspectual reading 'start the activity denoted by V1')

On the other hand, these unergative verbs can be compounded with de_{cr}:

(138)   hasiri-de ('run'), ayumi-de ('walk'), sinobi-de ('steal'), odori-de ('dance'), abare-de ('behave violently'), nanori-de ('announce one's name), oyogi-de ('swim'), susumi-de ('proceed'), korogari-de ('roll'), suberi-de ('slip'), samayoi-de ('wander'), negai-de ('wish'), moosi-de ('say') etc.

The problem is what distinguish *nuke*-type unergatives which can be compounded with das_c (see (136) above) from *hasir*-type unergatives which prohibits the lexical compounding with das_c as in (137). In the rest of this section, I will present a plausible answer to this problem which is naturally predicted from the analyses so far.

Note that *nuke*-type unergatives and *hasir*-type unergatives are different with respect to their head event. Namely, while *nuke*-type focuses on the movement of the agent which is provoked as a result of his/her own volitional activity, *hasir*-type specifies the volitional activity itself as the head event. Again, this difference is made explicit by noting the compatibility with the result-oriented adverbial modifiers such as *itizitekini* 'temporarily' or *karoozite* 'barely':

(139)   *nuke*-type:

    a.   Ken-ga   itizitekini   syuudan-kara nuke-ta.
        Ken-NOM temporarily group-from   slipped out-PAST
        'Ken temporarily slipped out of the group.'

    b.   Gootoo-ga   keisatu-kara karoozite nige-ta.
        robber-NOM police-from barely   escape-PAST
        'The robber barely escaped from the police'

(140)   *hasir*-type:

    a. *Ken-ga   itizitekini   hasit-ta.
        Ken-NOM temporarily ran-PAST

    b. *Kodomotati-ga karoozite arui-ta.
        children-NOM   barely   walk-PAST

Thus, the group of unergative verbs should be further classified into subtypes as in (141) with respect to the position of the head event:

(141) a.   LCS of *nuke*-type: (result-oriented)
$$[\text{CAUSE}([\text{APPLY}(\boxed{4},\boxed{4})],[\underline{\text{MOVE}(\boxed{4},[\text{PATH }\boxed{5}])}])]$$
    b.   LCS of *hasir*-type: (manner-oriented)
$$[\text{CAUSE}([\underline{\text{APPLY}(\boxed{4},\boxed{4})}],[\text{MOVE}(\boxed{4},[\text{PATH }\boxed{5}])])]$$

When (141a) and (141b) are combined with the LCS of das_c, the LCS of the compound verbs thus obtained, should be specified as follows:

(142) a.   LCS of *nuke-das*
$$[\text{CAUSE}([\text{CAUSE}([\text{APPLY}(\boxed{4},\boxed{4})],[\underline{\text{MOVE}(\boxed{4},[\text{PATH }\boxed{5}])}])],[\underline{\text{BECOME}([\text{BE}(\boxed{4},OUT)])}])]$$
    b.   LCS of *hasiri-das*
$$[\text{CAUSE}([\text{CAUSE}([\underline{\text{APPLY}(\boxed{4},\boxed{4})}],[\text{MOVE}(\boxed{4},[\text{PATH }\boxed{5}])])],[\underline{\text{BECOME}([\text{BE}(\boxed{4},OUT)])}])]$$

The head event is regarded as the most salient one among the range of events which are chronologically ordered in the complex event structure. Given that the complex

event structures of compound verbs should be regarded as the single event as a whole, it seems reasonable to assume that they do not allow the head events to be scattered, that is, to occur at the both ends of the event structure as in the case of *hasiri-das* in (142b). In other words, it is expected that the compounding of the two verbs are prohibited when the head events are forced to be scattered in the complex event structure derived as a result of compounding of the event structures of V1 and V2.

On the other hand, de_{cr} does not specify the head event, thus it does not provoke the division of the head events even when it is combined with the manner-oriented LCS of *hasir*-type. This explains why the compounding with de_{cr} freely allows compounding with a wider range of unergatives as in (138).

Thus, if my analysis is on the right track, the formation of the lexical compound verbs should be prohibited only when the complex event structure derived by compounding of the event structures of V1 and V2 has several head events and such head events are forced to be scattered. So far, I have proposed two compound lexical rules: das_c Compound Lexical Rule, which introduces the function CAUSE with the resultant event specified as the head and de_{cr} Compound Lexical Rule, which introduces the function CAUSE without such specification of event headedness. Thus, the eight distinct patterns of the event structures in the following are expected as the possible combinatory patterns as a result of compounding:

(143) a. CAUSE(CAUSE(e_1, e_2),$\underline{e_3}$)

    b. CAUSE(CAUSE($e_1, \underline{e_2}$),$\underline{e_3}$)

    c. CAUSE(CAUSE($\underline{e_1}, e_2$),$\underline{e_3}$)

    d. CAUSE(CAUSE(e_1, e_2),e_3)

    e. CAUSE(CAUSE($e_1, \underline{e_2}$),e_3)

    f. CAUSE(CAUSE($\underline{e_1}, e_2$),e_3)

    g. CAUSE($e_1,\underline{e_2}$)

    h. CAUSE(e_1, e_2)

The possible event structure patterns and their examples are summarized in Table 3, where the position of the head event is marked by @.

Among the patterns listed in Table 3, the only case where lexical compounding is prohibited is case (c), where the head events are scattered. Thus, I would like

Table 3: The Patterns of the Combination of Head Events

Pattern	e_1	e_2	e_3	Example
(a). *transitive* + *das$_c$*	—	—	@	*hakobi-das*
(b). *unergative* + *das$_c$*	—	@	@	*nuke-das*
(c). **unergative* + *das$_c$*	@	—	@	**hasiri-das*
(d). *transitive* + *de$_{cr}$*	—	—	—	*moosi-de*
(e). *unergative* + *de$_{cr}$*	—	@	—	*nuke-de*
(f). *unergative* + *de$_{cr}$*	@	—	—	*hasiri-de*
(g). *unaccusative* + *das$_c$*	—	@		*nagare-das*
(h). *unaccusative* + *de$_{cr}$*	—	—		*nagare-de*

to propose that the general constraint in the following is working on the compound lexical rules:

(144)   FOCUS CONTINUITY CONSTRAINT (FCC):
When the complex event structures of the lexical compound verbs have more than two head events, they must occur continuously along the time sequence order.

In addition, I assume that (relatively) lower acceptability of *nuke-de* and *hasiri-de* in (e) and (f) above (also see (136)) is due to stricter constraint as follows:

(145)   FOCUS ON FINAL STATE CONSTRAINT:
When the complex event structures of the lexical compound verbs have more than two head events, they must occur in the final sequence of event structures.

The constraint in (145) is not as absolute as FCC, but rather it seems to concern the degree of acceptability.

3.4.6   Unification-based Lexical Rules

3.4.6.1   Affective *das$_a$* Compound Lexical Rule

In 3.3.1.2 and 3.3.2.3 above, I have examined the semantic structures of *das$_a$* and *de$_{ad}$*, both of which characteristically take nonvolitional participant as their subjects and introduced the function AFFECTED. The compound verbs in the following examples given by Kageyama (1996) seem to take such *das$_a$* as V2:

(146) a.   Kakoo-ga   siroi kemuri-wo   hukidas-u.
crater-NOM white smoke-ACC send out-PRES
'The crater sends out the white smoke.'

b.   Kakoo-kara siroi kemuri-ga   hukidas-u.   (=(132b))
crater-from white smoke-NOM shoot out-PRES
'The white smoke shoots out of the crater.'

(147) a.   Kizuguti-ga ti-wo   hukidas-u.
wound-NOM blood-ACC spout-PRES
'The wound spouts blood.'

b.   Kizuguti-kara ti-ga   hukidas-u.
wound-from   blood-NOM spout-PRES
'Blood spouts from the wound.'

(146a) and (147a) are different from the 'unaccusative verb+das_c' compound verbs
in (146b) and (147b) in that the location where the outward movement of the theme
element takes place (i.e., *kakoo* ('crater'), *kizuguti* ('wound')) is realized as its sub-
ject, while the accusative marked theme element (i.e., *kemuri* ('smoke'), *ti* ('blood'))
appears as a grammatical object. Here I will assume that these examples are derived
through the application of the following lexical rule:

(148)   Affective das_a Compound Lexical Rule

$$
\begin{bmatrix}
\textit{transitive} \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{1} : \boxed{3} \rangle \\ \text{INT} & \langle \boxed{2} : \boxed{4} \rangle \end{bmatrix} \\
\text{LCS} \qquad [\text{AFFECTED}(\boxed{3}, [\text{BECOME}([\text{BE}(\boxed{4}, [\text{AT}\ \boxed{9}])])])]
\end{bmatrix}
$$

$$
+ \begin{bmatrix}
\textit{transitive} \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{5} : \boxed{3} \rangle \\ \text{INT} & \langle \boxed{6} : \boxed{4} \rangle \end{bmatrix} \\
\text{LCS} \qquad [\text{AFFECTED}(\boxed{3}, [\text{BECOME}([\text{BE}(\boxed{4}, OUT)])])]
\end{bmatrix}
$$

$$
\Rightarrow \begin{bmatrix}
\textit{transitive} \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{1} : \boxed{3} \rangle \\ \text{INT} & \langle \boxed{2} : \boxed{4} \rangle \end{bmatrix} \\
\text{LCS} \qquad [\text{AFFECTED}(\boxed{3}, [\text{BECOME}([\text{BE}(\boxed{4}, OUT)])])]
\end{bmatrix}
$$

In the Affective *das$_a$* Compound Lexical Rule in (148), both the LCS and the ARG-ST of V1 are inherited as they are, except that the resultant state of the LCS of V1 is further specified through the unification with the LCS of *das$_a$* (i.e., [AT $\boxed{9}$] $\rightarrow$ *OUT*). In addition, both arguments of *das$_a$* are unified with the corresponding arguments of V1. Consequently, the ARG-ST of the compound verb is identical with that of V1. In this way, *huki-das* in (146a) and (147a) are derived through the unification of the lexical information of V1 and V2, thus, the lexical information of compound verbs thus obtained is characteristically more specific.

Here, I assume that there exists another type of compound lexical rule, namely, the UNIFICATION TYPE Lexical Rule formalized as follows:

(149) UNIFICATION TYPE Lexical Rule

$$
\begin{bmatrix} \alpha \\ \text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{1} \rangle \\ \text{INT} & \langle \boxed{2} \rangle \end{bmatrix} \\ \text{LCS} \qquad L1 \end{bmatrix}
+
\begin{bmatrix} \beta \\ \text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{5} \rangle \\ \text{INT} & \langle \boxed{6} \rangle \end{bmatrix} \\ \text{LCS} \qquad L2 \end{bmatrix}
$$

$$
\Rightarrow
\begin{bmatrix} \gamma \\ \text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{7} \rangle \\ \text{INT} & \langle \boxed{8} \rangle \end{bmatrix} \\ \text{LCS} \qquad L1 \wedge L2 \end{bmatrix}
$$

The Affective *das$_a$* Compound Lexical Rule is regarded as such a UNIFICATION TYPE Lexical Rule, which takes *das$_a$* as V2 and is further constrained by the CLASS PRESERVING CONDITION ($\gamma = \alpha$) as well as EXTERNAL ARGUMENT SHARING CONDITION ($\boxed{1} = \boxed{5} = \boxed{7}$):

(150) Affective *das$_a$* Compound Lexical Rule
$=$ UNIFICATION TYPE Lexical Rule (149) $\wedge$
(V2 = *das$_a$*) $\wedge$ CLASS PRESERVING CONDITION ($\gamma = \alpha$) $\wedge$
EXTERNAL ARGUMENT SHARING CONDITION ($\boxed{1} = \boxed{5} = \boxed{7}$)

3.4.6.2 Demoted Affective *de$_{ad}$* Compound Lexical Rule

Note the following examples, which are very similar to (146a) and (147a) except for V2:

(151) a. Kakoo-kara siroi kemuri-ga   hukide-ru.

      Kakoo-from white smoke-NOM shoot out-PRES

      'The white smoke shoots out of the crater.'

    b. Kizuguti-kara ti-ga   hukide-ru.

      wound-from   blood-nom spout out-PRES

      'Blood spouts from the wound.'

Given the Affective das_a Compound Lexical Rule discussed in the previous section, it is naturally expected that these examples are derived through the application of the UNIFICATION TYPE LEXICAL RULE, which takes de_{ad} as V2, that is, the Demoted Affective de_{ad} Compound Lexical Rule formalized as follows:

(152)　Demoted Affective de_{ad} Compound Lexical Rule

    = UNIFICATION TYPE Lexical Rule (149) $\wedge$

      (V2 $= de_{ad}$) $\wedge$ CLASS PRESERVING CONDITION ($\gamma = \alpha$) $\wedge$

      EXTERNAL ARGUMENT SHARING CONDITION ($\boxed{1} = \boxed{5} = \boxed{7}$)

$$
\begin{bmatrix}
\textit{unaccusative} \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle\,\rangle \\ \text{INT} & \langle\,\boxed{2}:\boxed{4}\,\rangle \end{bmatrix} \\
\text{LCS} \qquad [\text{AFFECTED}(\,\boxed{3}\,,[\text{BECOME}([\text{BE}(\boxed{4},[\text{AT}\;\boxed{9}])])])]
\end{bmatrix}
$$

$$
+ \begin{bmatrix}
\textit{unaccusative} \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle\,\rangle \\ \text{INT} & \langle\,\boxed{6}:\boxed{4}\,\rangle \end{bmatrix} \\
\text{LCS} \qquad [\text{AFFECTED}(\,\boxed{3}\,,[\text{BECOME}([\text{BE}(\boxed{4},OUT)])])]
\end{bmatrix}
$$

$$
\Rightarrow \begin{bmatrix}
\textit{unaccusative} \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle\,\rangle \\ \text{INT} & \langle\,\boxed{2}:\boxed{4}\,\rangle \end{bmatrix} \\
\text{LCS} \qquad [\text{AFFECTED}(\,\boxed{3}\,,[\text{BECOME}([\text{BE}(\boxed{4},OUT)])])]
\end{bmatrix}
$$

Since de_{ad} is unaccusative, V1 is restricted to unaccusative.

3.4.6.3　Simplex Event de_0 Compound Lexical Rule

Finally, consider the following examples:

(153) a. Atarasii kangae-ga umare-de-ru.

      new idea-NOM   come out-PRES

      'A new idea come to (one's) mind.'

b. Kootekisyu-ga araware-de-ta.
    rival-NOM   come out-PAST
    'The rival came out.'

Given that *de* in these examples are de_0, compound verbs such as *umare-de* or *araware-de* seems to be derived through the application of another SMALL CAPS UNIFICATION TYPE Lexical Rule, which takes de_0 as V2:

(154) Simplex Event de_0 Compound Lexical Rule
       = UNIFICATION TYPE Lexical Rule (149) $\wedge$
       (V2 $=de_0$) $\wedge$ CLASS PRESERVING CONDITION ($\gamma = \alpha$)

$$
\begin{bmatrix}
\textit{unaccusative} \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle\,\rangle \\ \text{INT} & \langle\, \boxed{2}:\boxed{4}\,\rangle \end{bmatrix} \\
\text{LCS} \qquad [\text{BECOME}([\text{BE}(\boxed{4},[\text{AT } \boxed{9}])])]
\end{bmatrix}
$$

$$
+ \begin{bmatrix}
\textit{unaccusative} \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle\,\rangle \\ \text{INT} & \langle\, \boxed{6}:\boxed{4}\,\rangle \end{bmatrix} \\
\text{LCS} \qquad [\text{BECOME}([\text{BE}(\boxed{4},\textit{OUT})])]
\end{bmatrix}
$$

$$
\Rightarrow \begin{bmatrix}
\textit{unaccusative} \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle\,\rangle \\ \text{INT} & \langle\, \boxed{2}:\boxed{4}\,\rangle \end{bmatrix} \\
\text{LCS} \qquad [\text{BECOME}([\text{BE}(\boxed{4},\textit{OUT})])]
\end{bmatrix}
$$

Again, V1 must be unaccusative.

Kageyama and Yumoto (1997) have suggested four possible patterns of lexical compounding, which seem to be classified into two groups. Some lexical compound verbs are obtained by compounding the LCS of V1 and V2 via certain conjunctions (e.g., V1 AND V2, V2 WHILE V1, V2 BY V1), while others are characterized by the complement structure, where the LCS of V1 is embedded in that of V2. Both of the Causative Type compound lexical rules (i.e., das_c Compound Lexical Rule, de_{cr} Compound Lexical Rule), discussed in 3.4.2 and 3.4.3 respectively, will belong to such a complement structure type. On the other hand, the Affective type lexical rules (i.e., das_a Compound Lexical Rule, das_{ad} Compound Lexical Rule, and de_0 Compound Lexical Rule in 3.4.6) belong to neither of them. Rather, they simply

function to further the specification of the information contained in the LCS of V1. Although only few attempts have been made at this sort of compounding so far, it may safely be assumed that there exist a unification-based compounding pattern in Japanese.

3.5 Summary

In this chapter, I have examined complex event structures of lexical compound verbs in Japanese by focusing on the transitive verb *das* and its intransitive counterpart *de*. First, I have examined the distinction between lexical compounds and syntactic compounds and shown that *das* compounds which denote outward movement (i.e., MOVEMENT type) should be analyzed as lexical compounds, while *das* compounds which marks the beginning of certain events (i.e., ASPECTUAL type) as syntactic compounds. The rest of the chapter has dealt with the former. Section 3.3 has examined various subtypes of the verbs *das* and *de* when they are used as independent words. Specifically, I have shown that the LCS's of das_c and de_{cr} which equally denote volitional activity share the function CAUSE, whereas the LCS's of das_a and de_{ad} which equally denote nonvolitional activity share the function AFFECTED. I have also discussed that all of these subtypes of *das* and *de* involve the LCS of de_0, namely, a simplex event which specifies the appearance of the entity (i.e., [BECOME([BE($\boxed{1}$,OUT)])]) in their LCS, and that they systematically interact with each other along with the general voice alternation patterns such as causativization, reflexivization (or medialization), or passivization (or affectivization). Section 3.4 has dealt with the case where such subtypes of *das* or *de* appear as V2 of lexical compounds. I have discussed that compound verbs which take causative das_c or de_{cr} as V2 are derived through the lexical rule of FUNCTIONAL APPLICATION type, where the LCS of V1 is embedded in that of V2. On the other hand, I have proposed that compound verbs which take affective das_a, de_{ad} or de_0 as V2 are derived through the lexical rule of UNIFICATION type, which further specifies the LCS of V1 (see Table 4).

Table 4: Summary of Lexical Rules

V1	V2	Type of the Lexical Rule	Main Predicate of LCS
unaccusative	de_0	UNIFICATION	BECOME
unspecified	das_c	FUNCTIONAL APPLICATION	CAUSE
unspecified	de_{cr}	FUNCTIONAL APPLICATION	CAUSE
transitive	das_a	UNIFICATION	AFFECTED
unaccusative	de_{ad}	UNIFICATION	AFFECTED

In addition, having observed the combinatory patterns allowed in V1+das/de compounds, I have proposed a general constraint on lexical compounding: when the complex event structures of the lexical compound verbs have more than two head events, they must occur continuously along the time sequence order (=FOCUS CONTINUITY CONSTRAINT (FCC)).

Chapter 4   Non-agentive Subject Constructions in Japanese

4.1   Overview

This chapter will deal with non-agentive subject constructions. In particular, constructions which take the recipient subject (e.g., *azukar*, *osowar* etc.) and the affectee subject (e.g., *mitukar*, *tukamar*) will be examined. It will be proposed that the characteristic behaviors of these verbs can also be accounted for by assuming the semantic predicate AFFECTED.

4.2   Dowty's (1991) Model of Thematic Proto-Roles

As has been noted above (Chapter 2, section 2.5.1), verbal semantics based on thematic-roles has suffered from the absence of the independent criteria for giving explicit definitions to the set of semantic roles as 'primitives'. Thus, the impact of Dowty's (1991) model of THEMATIC PROTO-ROLES cannot be emphasized too much. Dowty has suggested 'two cluster concepts' (Dowty 1991: 547), namely PROTO-AGENT and PROTO-PATIENT in place of a list of traditional roles such as Agent, Patient, Source, etc. Above all, it is notable that he has defined these concepts based on the verbal entailments summarized as below:

(155)   Contributing properties for the Agent Proto-Role:

    a.   volitional involvement in the event or state

    b.   sentience (and/or perception)

    c.   causing an event or change of state in another participant

    d.   movement (relative to the position of another participant)

    e.   (exists independently of the event named by the verb)

    (Dowty 1991: 572)

(156)   Contributing properties for the Patient Proto-Role:

      a.   undergoes change of state

      b.   incremental theme

      c.   causally affected by another participant

      d.   stationary relative to movement of another participant

      e.   (does not exists independently of the event, or not at all)

(ibid.)

Furthermore, he has suggested the principle as in (157), which regulates the 'linking' relationship between such proto-roles and the argument structure:

(157)   ARGUMENT SELECTION PRINCIPLE:
In predicates with grammatical subject and object, the argument for which the predicate entails the greatest number of Proto-Agent properties will be lexicalized as the subject of the predicate; the argument having the greatest number of Proto-Patient entailments will be lexicalized as the direct object. (Dowty 1991: 576)

This principle is followed by the two corollaries as follows:

(158)   COROLLARY 1:
If two arguments of a relation have (approximately) equal numbers of entailed Proto-Agent and Proto-Patient properties, then either or both may be lexicalized as the subject (and similarly for objects). (ibid.)

(159)   COROLLARY 2:
With a three-place predicate, the nonsubject argument having the greater number of entailed Proto-Patient properties will be lexicalized as the direct object and the nonsubject argument having fewer entailed Proto-Patient properties will be lexicalized as an oblique or prepositional object (and if two nonsubject arguments have approximately equal numbers of entailed P-Patient properties, either or both may be lexicalized as direct object). (ibid.)

As Dowty (1991: 576) has noted, such a principle and corollaries are not exhaustive. Obviously, the definition of such proto-roles are, more or less, the matter of degree.

Thus, it is natural that proto-roles 'do not classify arguments exhaustively ... or uniquely ... or discretely (576)'. This chapter will deal with a group of verbs which violate the lexicalization patterns in (158) and (159).[1]

4.3 The Recipient Subjects

4.3.1 *azuke/azukar* alternation

I will begin by considering the lexical representations for the pair of transitive and intransitive verbs given in the introductory chapter, which I will repeat in the following:

(160) a. Kyaku-ga uketukegakari-ni kityoohin-wo azuke-ta.
   customer-NOM receptionist-DAT valuables-ACC entrust-PAST
   'The customer entrusted valuables to the receptionist.'
   (Kageyama 1997)

  b. Uketukegakari-ga kyaku-kara kityoohin-wo azukat-ta.
   receptionist-NOM customer-from valuables-ACC be entrusted-PAST
   'The receptionist was entrusted valuables from the customer.'

The problem is that the relation held between the pair of verbs in (160) is slightly different from that of general transitive/intransitive pairs such as *sime* ('close') and *simar* ('close') in (161) or *tutae* ('notify') and *tutawar* ('be notified') in (162) below, although *azukar* in (160b) and the intransitive verbs in (161b) and (162b) are equally marked by the morpheme *-ar*:

(161) a. Ken-ga mado-wo sime-ta.
   Ken-NOM window-ACC close-PAST
   'Ken closed the window.'

  b. Mado-ga simat-ta.
   window-NOM close-PAST
   'The window closed.'

(162) a. Kyoozyu-ga gakusei-ni siken-no kekka-wo tutae-ta.
   professor-NOM students-DAT examination-GEN results-ACC notify-PAST
   'The professor notified students of the examination results.'

---

[1]Dowty (1991: 581) has also suggested a group of English verbs which show irregular lexicalization patterns such as *receive, inherit, undergo* etc. See section 8.4 in Dowty (1991).

    b.   Siken-no   kekka-ga   gakusei-ni   tutawat-ta.
         examination-GEN results-NOM students-DAT be notified-PAST
         'The examination results were notified to students.'

The verb *sime* in (161a) is a two-place predicate expressing the relation between the agent ('closer') and the theme ('closee'), while *tutae* in (162a) is a three-place predicate which takes the sender, the recipient and the information transmitted between them. What should be noted here is that the intransitive sentences in (161b) and (162b) are equally characterized by a decrease in valence, i.e., the suppression or demotion of the agent subject of the transitive sentences. In this respect, they have the same sort of effect as the passives in the following:

(163)   Mado-ga   (Ken-niyotte) sime-rare-ta.
       window-NOM (Ken-POSTP) close-PASS-PST
       'The window was closed (by Ken).'

(164)   Siken-no   kekka-ga   (kyoozyu-niyotte/-kara) gakusei-ni
       examination-GEN results-NOM (professor-from)   students-DAT
       tutae-rare-ta.
       notify-PASS-PAST
       'The examination results were notified to students (by the professor).'

The theme objects (i.e., 'window' or 'results') which are marked with accusative *wo* in the transitive sentences are realized as the grammatical subjects marked with nominative *-ga* in both intransitive and passive sentences.

    However, it should be noted in passing that the intransitive verb whose transitive counterpart is a two-place predicate, such as *simar*, is distinct from the syntactic passive sentence in (163) in that it prohibits the occurrence of the agent.[2] On the other hand, the intransitives whose transitive counterpart is a three-place predicate

---

[2]One of the differences between intransitive verbs with the suffix *-ar* and syntactically passivized forms with *-(r)are* has been analyzed as the degree of the (implicit) agentivity. The syntactic passive sentences in (163) and (164) are preferred when the existence of the volitional causer is strongly expected, while the intransitive sentences in (161b) and (162b) tend to focus on the resultant state rather than the causer's action. Nevertheless, considering that the intransitive sentence can readily be used even when the volitional causer is implied, the distinction between these sentences should not be so clear-cut. Here I shall make no further inquiry into this point, since this is irrelevant to the main subject . See Van Valin and Wilkins (1995) and Kageyama (1996) for further details of this point.

such as *tutawar*, allows the agent argument in its transitive counterpart to be realized in the form of the postpositional phrase in the same way as the passive sentence:

(165) a. *Mado-ga   Ken-niyotte simat-ta.
         window-NOM Ken-POSTP close-PAST

     b.   Siken-no   kekka-ga   (kyoozyu-kara) gakusei-ni
        examination-GEN results-NOM professor-from students-DAT
        tutawat-ta.
        be notified-PAST
        'The examination results were notified to students (by the professor).'

I will return to this issue shortly below and show that the contrast in (165) can be predicted from the semantic structures assumed below.

     I will now return to my main subject: alternation between *azuke* and *azukar* in (160). The first point to note is the difference between the intransitive form *azukar* in (160b) and *simar* in (161b) or *tutawar* in (162b). Note that *azukar* takes the recipient (indirect) object (i.e., 'receptionist') rather than the theme object (i.e., 'valuables') of its transitive counterpart *azuke* as its grammatical subject:

(166) a.   Uketukegakari-ga kyaku-kara   kityoohin-wo   azukat-ta.   (=(160b))
        receptionist-NOM customer-from valuables-ACC be entrusted-PAST
        'The receptionist was entrusted valuables from the customer.'
     b. *Kityoohin-ga   kyaku-kara   uketukegakari-ni azukat-ta.
        valuables-NOM customer-from receptionist-DAT be entrusted-PAST

Thus, it is rather similar to the so-called 'indirect' passive sentence with the recipient subject of a ditransitive verb as in (167b) rather than the typical direct passive sentence with the theme subject in (167a):

(167) a.   Kityoohin-ga   (kyaku-kara)   uketukegakari-ni azuke-rare-ta.
        valuables-NOM (customer-POSTP) receptionist-DAT entrust-PAST
        'The valuables were entrusted (by the customer) to the receptionist.'
     b.   Uketukegakari-ga (kyaku-kara)   kityoohin-wo   azuke-rare-ta.
        receptionist-NOM (customer-from) valuables-ACC entrust-PASS-PAST
        'The receptionist was entrusted valuables by the customer.'

In this respect, *azukar* presents a sharp contrast to the intransitive form of *tutawar* in (162b) above, which prohibits a recipient subject as in (168a). Such a recipient subject is only allowed in the indirect passive sentence in (168b):

(168) a. INTRANSITIVE

    *Gakusei-ga   (kyoozyu-kara) siken-no   kekka-wo

    students-NOM (prefessor-from) examination-GEN results-ACC

    tutawat-ta.

    be notified-PAST

  b. INDIRECT PASSIVE

    Gakusei-ga   (kyoozyu-niyotte/-kara) siken-no   kekka-wo

    student-NOM (professor-POSTP/from) examination-GEN results-ACC

    tutae-rare-ta.

    notify-PASS-PAST

    'The student was notified of the examination results (by the professor).'

Another point to note is that the intransitive form *azukar* retains its *wo*-marked theme object. In other words, the verb *azukar* is characterized by the intransitive morpheme *-ar* while it seems to retain the transitive case-marking, where the grammatical subject is marked by nominative case and the grammatical object is marked by accusative case. Nevertheless, the accusative object which *azukar* takes (i.e., 'valuables'), is crucially different from the one of *azuke* in that it cannot be passivized:

(169) a. passivization of (160a)=(167a)

    Kityoohin-ga   (kyaku-kara/-niyotte)   uketukegakari-ni azuke-rare-ta.

    valuables-NOM (customer-from/POSTP) receptionist-DAT entrust--PASS-PAST

    'The valuables were entrusted (by the customer) to the receptionist.'

  b. passivization of (160b)

    *Kityoohin-ga   (uketukegakari-niyotte) kyaku-kara

    valuables-NOM (receptionist-POSTP)   customer-POSTP

    azukar-are-ta.

    be entrusted-PASS-PAST

    'lit.: The valuables were entrusted (by the receptionist) from the customer.'

To sum up, the semantic structure of *azukar* is expected to explain the following three points:

(170) a.   the difference between *azukar* and other intransitive forms such as *simar* or *tutawar*.

     b.   the similarity between the sentence with *azukar* and the indirect passive sentence with the recipient subject.

     c.   the constraints on the passivization of the *wo*-marked argument which *azukar* takes.

To start with, I assume that the lexical entries for the transitive verbs *sime* and *tutae* are specified as follows:

(171) a.   *sime*

$$
\begin{bmatrix}
\textit{monotrans} \\[4pt]
\text{ARG-ST} \quad
\begin{bmatrix}
\text{EXT} & \langle \boxed{1} : \boxed{3} \rangle \\
\text{INT} & \langle \boxed{2} : \boxed{4} \rangle
\end{bmatrix} \\[12pt]
\text{LCS} \quad [\text{CAUSE}([\text{APPLY}(\boxed{3},\boxed{4})],[\text{BECOME}([\text{BE}(\boxed{4},\textit{CLOSED})])])]
\end{bmatrix}
$$

     b.   *tutae*

$$
\begin{bmatrix}
\textit{ditrans} \\[4pt]
\text{ARG-ST} \quad
\begin{bmatrix}
\text{EXT} & \langle \boxed{1} : \boxed{4} \rangle \\
\text{INT} & \langle \boxed{2} : \boxed{5},\ \boxed{3} : \boxed{6} \rangle
\end{bmatrix} \\[12pt]
\text{LCS} \quad [\text{CAUSE}([\text{APPLY}(\boxed{4},\boxed{5})],[\text{FROM}(\boxed{4},[\text{BECOME}([\text{BE}(\boxed{5},[\text{AT WITH}(\boxed{6})])])])])]
\end{bmatrix}
$$

The semantic representations above specify that both *sime* and *tutae* express the volitional activity by the agent (i.e., 'closer' : $\boxed{3}$ or 'sender': $\boxed{4}$), which leads to the event where the theme (i.e., 'closee': $\boxed{4}$ or 'information': $\boxed{5}$) undergoes the change of state (171a) or change of location from the sender to the recipient ($\boxed{6}$) in (171b). Here, I assume that FROM is a modifier of the function BECOME and that it specifies the source participant (='sender': $\boxed{4}$ in (171b)). Thus, the LCS in (171b) specifies that the event where the source argument does something, which causes the change of state/location of the theme participant from the source to the goal (='gakusei': $\boxed{6}$). Here WITH appearing in the second argument of BE specifies the possession relationship, i.e., $\boxed{5}$ belongs to $\boxed{6}$. I will shortly return to the problem of entailment of such possession relationship in the following subsection (4.3.2).[3]

---

[3]For a detailed discussion of the function BE taking WITH as its argument, see Kageyama (1997b), Kageyama and Yumoto (1997).

On the other hand, I assume that their intransitive counterparts, i.e., *simar* and *tutawar* have the following lexical entries respectively:

(172) a. *simar*

$$
\begin{bmatrix}
\textit{monounac} \\[4pt]
\text{ARG-ST} \quad
\begin{bmatrix}
\text{EXT} \quad \langle\ \rangle \\
\text{INT} \quad \langle\ \boxed{2}:\boxed{4}\ \rangle
\end{bmatrix} \\[12pt]
\text{LCS} \qquad [\text{CAUSE}([\text{APPLY}(\ \boxed{3}\ ,\ \boxed{4}\ )],[\text{BECOME}(\underline{[\text{BE}(\ \boxed{4}\ ,\textit{CLOSED})]})])]
\end{bmatrix}
$$

  b. *tutawar*

$$
\begin{bmatrix}
\textit{diunac} \\[4pt]
\text{ARG-ST} \quad
\begin{bmatrix}
\text{EXT} \quad \langle\ \rangle \\
\text{INT} \quad \langle\ \boxed{2}:\boxed{5}\ ,\ \boxed{3}:\boxed{6}\ \rangle
\end{bmatrix} \\[12pt]
\text{LCS} \qquad [\text{CAUSE}([\text{APPLY}(\ \boxed{4}\ ,\ \boxed{5}\ )],[\text{FROM}(\ \boxed{4}\ ,[\text{BECOME}(\underline{[\text{BE}(\ \boxed{5}\ ,[\text{AT WITH}(\ \boxed{6}\ )])]})])])]
\end{bmatrix}
$$

As we have seen above, intransitives in (172) are crucially different from their transitive counterparts in (171) in that the agent (i.e., the first argument of the function VOL) is suppressed (or demoted) and no longer realized as the grammatical subject. Here, I assume that this difference comes from the specification of the event headedness. While the semantic structures for transitive verbs such as *sime* or *tutae* are unspecified with respect to headedness (i.e., 'headless' in Pustejovsky's (1995: 74) terminology), the addition of the intransitive suffix *-ar*, which has the effect of focusing on the caused event (or backgrounding the causing subevent), brings about the specification of the head event, hence, the caused event is marked as the head event. Given that 'only arguments associated with the headed event are obligatorily expressed at surface structure (Pustejovsky 1995: 191)', such a head event argument serves as the input to the ARG-ST, thus, the first argument of the function BE is linked to the single argument of the lexical item.

Note that the semantic structure of *tutawar* in (172b) has the slot for the 'sender' in the form of the modifier (FROM($\boxed{4}$)), while that of *simar* does not have any slot for 'closer', which correctly predicts the difference in the constraints on the occurrence of the postpositional phrase corresponding to agent argument in (165) above.

My assumption here can be tested by modification phenomena. Specifically, headless semantic structures of transitive verbs as in (171) above predict that they allow

two types of adverbials, namely, modification over the causing subevent as well as over the caused subevent, whereas unaccusative verbs suffixed by -*ar* are predicted to license only the modification over the head event, i.e., the caused subevent. The following examples illustrate this point:

(173) a. Kyoozyu-ga   subayaku siken-no   kekka-wo   gakusei-ni
professor-NOM swiftly   examination-GEN results-ACC students-DAT
tutae-ta.
notify-PAST
'The professor swiftly notified students of the examination results.'

   b. Kyoozyu-ga   yooyaku siken-no   kekka-wo   gakusei-ni
prefessor-NOM finally   examination-GEN results-ACC students-DAT
tutaeta.
notify-PAST
'The professor finally notified students of the examination results.'

The adverb *subayaku* in (173a) modifies the manner in which the causer initiated the action, hence, it is regarded as the one licensed by the causing subevent which consists of the function VOL and APPLY. On the other hand, *yooyaku* in (173b) focuses on the resultant state provoked by the causing event (or the causer), thus is associated with the caused subevent. The examples in (173) are both perfectly acceptable, which reflects the headless event structures of *tutae*.

On the other hand, as the semantic structure in (172b) predicts, (174) shows that *tutawar* readily licenses such result-oriented adverb *yooyaku*, which modifies the caused event marked as head in its event structure:

(174) Siken-no   kekka-ga   yooyaku gakusei-ni   tuwat-ta.
examination-GEN results-NOM finally   students-DAT be notified-PAST
'The examination results were finally notified to students.'

What should be noted is that the adverb *subayaku* is also compatible with *tutawar*, but that the interpretation given to this modifier is slightly different from that in (173a) above. In (175), the adverb modifies the way in which the caused event (i.e., change of location) took place, rather than the causer's manner. Namely, (175) can be read as 'It did not take long until the transfer of the information was completed':[4]

---

[4]There might be some speakers who accept 'manner' reading of the adverb in (175) as well. It is possible that such speakers allow the modification of the event which is not head marked

(175)   Siken-no   kekka-ga   subayaku gakusei-ni   tutawat-ta.
        examination-GEN results-NOM swiftly   students-DAT be notified-PAST
        'The examination results were swiftly notified to students swiftly.'

This slight difference in interpretation is also accounted for by assuming the difference in specification of headedness assumed in (171b) and (172b) above.

Next, I will turn to the semantic structures of *azuke* and *azukar*:

(176) a.   *azuke*

$$
\begin{bmatrix}
ditrans \\[4pt]
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{1}:\boxed{4} \rangle \\ \text{INT} & \langle \boxed{2}:\boxed{5},\ \boxed{3}:\boxed{6} \rangle \end{bmatrix} \\[14pt]
\text{LCS} \quad [\text{CAUSE}([\text{APPLY}(\boxed{4},\boxed{5})],[\text{FROM}(\boxed{4},[\text{BECOME}([\text{BE}(\boxed{5},[\text{AT WITH}(\boxed{6})])])])])]
\end{bmatrix}
$$

   b.   *azukar*

$$
\begin{bmatrix}
diunac \\[4pt]
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle\ \rangle \\ \text{INT} & \langle \boxed{2}:\boxed{6},\ \boxed{3}:\boxed{5} \rangle \end{bmatrix} \\[14pt]
\text{LCS} \quad [\text{AFFECTED}(\boxed{6},[\text{FROM}(\boxed{4},[\text{BECOME}([\text{BE}(\boxed{5},[\text{AT WITH}(\boxed{6})])])])])]
\end{bmatrix}
$$

I assume that the difference between *azuke* and *azukar* is attributed to the appearance of the function AFFECTED in the LCS of *azukar*. The semantic structure of *azuke* in (176a) specifies that the agent ($\boxed{4}$) initiates the movement of the theme ($\boxed{5}$), which results in the transfer of the ownership of the theme ($\boxed{5}$) from the agent ($\boxed{4}$) to the recipient ($\boxed{6}$). On the other hand, the semantic structure of *azukar* in (176b) specifies that the recipient ($\boxed{6}$) is affected by the transfer of the theme ($\boxed{5}$) from the sender ($\boxed{4}$) to him/her. The function AFFECTED specifies the relation between the recipient ($\boxed{6}$) and the transfer of the theme, namely, the recipient is indirectly affected by the event in the sense that (s)he becomes in charge of the theme.

The essential point here is that *azuke/azukar* alternation is distinct from *sime/simar* or *tutae/tutawar* alternation in the nature. Both of them are characterized by decrease in valence, namely, the change of verb class. Such change is invoked by the

---

but implicitly exist in the lexical representation of the verb. I will leave this matter for further investigation.

specification of the head event in *sime/simar* and *tutae/tutawar* alternation. On the other hand, *azuke/azukar* alternation is characterized by the distinct main predicates in their semantic structures (i.e., CAUSE and AFFECTED). Given this assumption, the difference between *azukar* and other intransitive forms such as *simar* or *tutawar* (i.e., (170a)), in particular, the difference in their subjects, will be naturally explained.[5]

In the following subsection, I will give further supporting evidence for this assumption by examining another pair of verbs *osie* and *osowar*, which are basically similar to *azuke* and *azukar* but show subtle differences in the way the recipient is affected.

4.3.2 *osie/osowar* alternation

In this subsection, I will consider the following pair of verbs:

(177) a. Ken-ga Naomi-ni eigo-wo osie-ta. (=(3a))
Ken-NOM Naomi-DAT English-ACC teach-PAST
'Ken taught English to Naomi.'

b. Naomi-ga Ken-ni/-kara eigo-wo osowat-ta. (=(3b))
Naomi-NOM Ken-DAT/from English-ACC be taught-PAST
'Naomi was taught English from Ken.'

The relation between *osie* in (177a) and *osowar* in (177b) seems to parallel that of *azuke* and *azukar* in several respects. First, the pair of sentences in (177) is also characterized by the transfer of the theme object, marked with *wo* (i.e., *eigo*: 'English'). Second, (177b) shows that *osowar* also takes the 'recipient' subject retaining the *wo*-marked object even after the addition of the suffix *-ar*. Thus, it is expected that *osie/osowar* alternation should be characterized by the main predicate AFFECTED, rather than the specification of the head event.

Nevertheless, there is one point that should not be overlooked. Consider the following examples:

(178) a. ??Ken-ga Naomi-ni kagi-wo azuk-e-ta ga Naomi-wa sono kagi-wo
Ken-NOM Naomi-DAT key-ACC entrust-PAST but Naomi-TOP that key-ACC
mitakotoga-nakat-ta.

have seen-NEG-PAST

---

[5]I shall return to the second point (170b) later in this chapter (4.4.2) and the third point (170c) in the section 5.2.1 in chapter 5.

'lit.: Ken entrusted the key to Naomi, but she had not seen it before.'

b. ??Naomi-ga   Ken-kara kagi-wo azuk-at-ta   ga Naomi-wa

Naomi-NOM Ken-from key-ACC be entrusted-PAST but Naomi-TOP

sono kagi-wo mitakotoga-nakat-ta.

that key-ACC have seen-NEG-PAST

'lit.: Naomi was entrusted the key from Ken, but she had not seen it before.'

Note that both (178a) and (178b) are regarded as very odd (or even unacceptable). This oddness seems to reflect what is presupposed in these sentences, i.e., the ownership of the key is already transferred to Naomi.[6] Both *azuke* and *azukar* entail not only the movement of the theme object initiated by the sender towards the recipient, but also the change of the location of the theme (i.e., the change of its possessor). Thus, the fact denoted by the sentences after the conjunction *ga* ('but') that Naomi had never seen the key, is completely incompatible with such presupposition. Actually this constraint on the entailment relationship is predicted by the semantic structures of these verbs proposed above (176), where the function BECOME is embedded in the caused event (i.e., the second argument of CAUSE) and in the affecting event (i.e., the second argument of AFFECTED), respectively. The following is another illustration of the same point:

(179) a. Ken-ga   Naomi-ni   kagi-wo azuke-ta   ga Naomi-wa

Ken-NOM Naomi-DAT key-ACC entrust-PAST but Naomi-TOP

sono kagi-wo nakusi-tesimat-ta.

that key-ACC lose-PERF-PAST

'Ken entrusted the key to Naomi, but she lost it'

b. Naomi-ga   Ken-kara kagi-wo azukat-ta   ga Naomi-wa

Naomi-NOM Ken-from key-ACC be entrusted-PAST but Naomi-TOP

sono kagi-wo nakusi-tesimat-ta.

that key-ACC lose-PERF-PAST

'Naomi was entrusted the key from Ken, but she lost it'

---

[6]Here I assume the (informal) definition of 'presupposition' such as : "(an utterance of) a sentence S presupposes a proposition p if (the utterance of) S implies p and further implies that p is somehow already part of the background against which S is considered, that considering S at all involves taking p for granted" (Chierchia and McConnell-Ginet 1990: 280). For further details of this point, see Chierchia and McConnell-Ginet (1990: ch. 6).

It is impossible to 'lose' things without possessing them. The compatibility of the
sentence 'Naomi lost the key' shows that preceding sentences entail the resultant state
of the transitional event, i.e., 'Naomi had got the key'.

On the other hand, *osie* and *osowar* seem to lack such entailment:

(180) a. Ken-ga   Naomi-ni   eigo-wo   osie-ta   ga Naomi-wa
          Ken-NOM Naomi-DAT English-ACC teach-PAST but Naomi-TOP
          eigo-ga   wakara-nakat-ta.
          English-NOM learn-NEG-PAST
          'Ken taught English to Naomi, but she did not learn it.'

      b. Naomi-ga   Ken-kara eigo-wo   osowat-ta   ga Naomi-wa
          Naomi-NOM Ken-from English-ACC be taught-PAST but Naomi-TOP
          eigo-ga   wakara-nakat-ta.
          English-NOM learn-NEG-PAST
          'Naomi was taught English from Ken, but she did not learn it.'

Native speakers normally do not find contradiction in (180a) and (180b) , which re-
flects that these verbs express the transfer of the information (i.e., 'English') initiated
by the sender (i.e., 'teacher'), but they do not necessarily entail the change of the locus
of such information. The fact that the following sentences are regarded as acceptable
serves as another evidence of this point:

(181) a. Ken-ga   Naomi-ni   eigo-wo   osie-ta   ga Naomi-wa
          Ken-NOM Naomi-DAT English-ACC teach-PAST but Naomi-TOP
          eigo-wo   wasure-tesimat-ta.
          English-ACC forget-PERF-PAST
          'Ken taught English to Naomi, but she forgot it'

      b. Naomi-ga   Ken-kara eigo-wo   osowat-ta   ga Naomi-wa
          Naomi-NOM Ken-from English-ACC be taught-PAST but Naomi-TOP
          eigo-wo   wasure-tesimat-ta.
          English-ACC forget-PERF-PAST
          'Naomi was taught English from Ken, but she forgot it.'

Native speakers find these sentences acceptable, which seems to reflect the interpreta-
tion typically associated with them, i.e., 'Naomi has not necessarily acquired English.'

Again, the pair of sentences in (181) shows that *osie* and *osowar* do not entail the resultant state of the transfer, i.e., the change of the possessor of the information.

Thus, I will assume that the semantic structures of *osie* and *osowar* do not contain the function BECOME in the caused subevent, but rather they have the function MOVE which specifies the movement of the theme without referring to the resultant state of it. Specifically, I will assume the semantic structures in the following for *osie* and *osowar* respectively:

(182) a. *osie*

$$
\begin{bmatrix}
ditrans \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \boxed{1} : \boxed{4} \rangle \\ \text{INT} & \langle \boxed{2} : \boxed{5}, \ \boxed{3} : \boxed{6} \rangle \end{bmatrix} \\
\text{LCS} \quad [\text{CAUSE}([\text{APPLY}(\boxed{4}, \boxed{5})], [\text{FROM}(\boxed{4}, [\text{MOVE}(\boxed{5}, [\text{PATH TO}(\boxed{6})])])])]
\end{bmatrix}
$$

b. *osowar*

$$
\begin{bmatrix}
diunac \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \ \rangle \\ \text{INT} & \langle \boxed{2} : \boxed{6}, \ \boxed{3} : \boxed{5} \rangle \end{bmatrix} \\
\text{LCS} \quad [\text{AFFECTED}(\boxed{6}, [\text{FROM}(\boxed{4}, [\text{MOVE}(\boxed{5}, [\text{PATH TO}(\boxed{6})])])])]
\end{bmatrix}
$$

The semantic structure of *osie* in (182a) specify that the agent (i.e., the sender: $\boxed{4}$) initiates the movement of the theme (i.e., information: $\boxed{5}$) towards the recipient ($\boxed{6}$), but, unlike *tutae* or *azuke* above, it does not specify the resultant state that the theme is possessed (at least temporarily) by the recipient. On the other hand, (182b) specify that the agent ($\boxed{6}$) provokes the event where (s)he is affected as the recipient, i.e., the target of the agent's teaching. However, the semantic structure in (182b) predicts that the way (s)he is affected is even more indirect than the case of *azukar* above, because the function MOVE embedded in the affecting event does not entail any change of state.

Therefore, the function MOVE is crucially differentiated from BECOME in that it denotes atelic events. Consider the different interpretation given to the durative adverbial such as *itizikan* ('for one hour') in (183) and (184) in the following:

(183) a.   Kyaku-ga   uketukegakari-ni kityoohin-wo   itizikan
           customer-NOM receptionist-DAT valuables-ACC for one hour
           azuke-ta.
           entrust-PAST
           'The customer entrusted valuables to the customer for one hour'

   b.   Uketukegakari-ga kyaku-kara   kityoohin-wo   itizikan
        receptionist-NOM customer-from valuables-ACC for one hour
        azukat-ta.
        be entrusted-PAST
        'The receptionist was entrusted valuables from the customer for one hour'

(184) a.   Ken-ga   Naomi-ni   eigo-wo   itizikan   osie-ta.
           Ken-NOM Naomi-DAT English-ACC for one hour teach-PAST
           'Ken taught English to Naomi for one hour.'

   b.   Naomi-ga   Ken-kara eigo-wo   itizikan   osowat-ta.
        Naomi-NOM Ken-from English-ACC for one hour.ADV be taught-PAST
        'Naomi was taught English by Ken for one hour.'

When the adverbial modifies *azuke* and *azukar* as in (183), it is interpreted as specifying the length of the time during which the theme was in charge of the receiver, i.e., duration of the final state of the transitional event. On the other hand, the adverbial in (184) refers to how long Ken was teaching English, or how long Naomi was listening to Ken's lecture, i.e., duration of the movement of the information, but it has nothing to do with the resultant state of the information. Thus, this difference in interpretation given to the durative adverbial justifies the validity of the semantic structures in (182).

So far, I have examined the verbs which take a 'recipient' subject when they are suffixed by the morpheme -*ar*, and assumed that their semantic structures are characterized by the function AFFECTED. It has also been shown that constraints on their aspectual properties (i.e., telicity) are naturally explained by my assumption.

4.3.3   Further Examples

There are several other examples of *diunac* type verbs, which characteristically take 'recipient' subject.

iituke/iitukar alternation:

(185) a.   Hahaoya-ga kodomo-ni kaimono-wo   iituke-ta.
           mother-NOM child-DAT shopping-ACC tell-PAST
           'Mother told her child to go shopping.'

     b.   Kodomo-ga hahaoya-kara kaimono-wo   iitukat-ta.
           child-NOM   mother-from shopping-ACC be told-PAST
           'The child was told by his mother to go shopping.'

kotoduke/kotodukar alternation:

(186) a.   Sihainin-ga   hisyo-ni   kokyaku-e-no   tagami-wo
           manager-NOM secretary-DAT customer-to-GEN letter-ACC
           kotoduke-ta.
           ask (someone) to carry-PAST
           'The manager asked his secretary to carry the letter to the customer.

     b.   Hisyo-ga   sihainin-kara kokyaku-e-no   tegami-wo
           secretary-NOM manager-from customer-to-GEN letter-ACC
           kotodukat-ta.
           be asked to carry-PAST
           'The secretary was asked by her manager to carry the letter to the customer.'

sazuke/sazukar alternation:

(187) a.   Zyooo-ga   biitoruzu-no-menbaa-ni   kisi-no syoogoo-wo
           The queen-NOM the members of the Beatles-DAT kighthood-ACC
           sazuke-ta.
           confer-PAST
           'The Queen conferred knighthood on the members of the Beatles.'

     b.   Biitoruzu-no-menbaa-ga   zyooo-kara   kisi-no syoogoo-wo
           the members of the Beatles-NOM the queen-from kighthood-ACC
           sazukat-ta.
           be conferred-PAST
           'The members of the Beatles were conferred knighthood by the queen.'

It is worth pointing out, in passing, that *diunac* examples from (185b) to (187b) are slightly different from *azukar* and *osowar* (repeated in (188a,b) for convenience) with respect to the possibility of volitional reading of 'recipient' subject:

(188) a. Uketukegakari-ga kyaku-kara   kityoohin-wo azukat-ta.
      receptionist-NOM customer-from valuables-ACC be entrustedPAST
      'The receptionist was entrusted valuables from the customer.'

     b. Naomi-ga   Ken-ni/-kara eigo-wo   osowat-ta.
      Naomi-NOM Ken-DAT/from English-ACC be taught-PAST
      'Naomi was taught English from Ken.'

Note the 'recipient' subjects of *azukar* and *osowar* are given volitional reading, hence it is regarded as the agent as well as the recipient. Such agentivity of the recipient subject is tested by adverbials which refer to the attitudes of agents as in (189a), or volitional affix *-(y)o* as in (189b):

(189) a. Uketukegakari-ga sibusibu/susunde   kityoohin-wo azukat-ta.
      receptionist-NOM reluctantly/willingly valuables-ACC be entrusted-PAST
      'The receptionist was reluctantly/willingly entrusted valuables.'

     b. Uketukegakari-ga kityoohin-wo   azukar-oo-to-si-ta.
      receptionist-NOM valuables-ACC be entrusted-VOL-PART-do-PAST
      'The receptionist tried to be entrusted valuables.'

(190) a. Naomi-ga   sibusibu/susunde   Ken-ni/kara   eigo-wo
      Naomi-NOM reluctantly/willingly Ken-DAT/from English-ACC
      osowat-ta.
      be taught-PAST
      'Noami was reluctantly/willingly taught English from Ken.'

     b. Naomi-ga   Ken-ni/kara   eigo-wo   osowar-oo-to-si-ta.
      Naomi-NOM Ken-DAT/from English-ACC be taught-VOL-PART-do-PAST
      'Naomi tried to be taught English from Ken.'

Adverbials such as *sibusibu* or *susunde* in (189a) and (190a) modify the volitional activity conducted by the recipient subject. In the same way, compatibility with volitional affix in (189b) and (190b) reflects the fact that the recipient subjects of

azukar and *osowar* can be agent, whose volitional activity provokes the event which will affect him/herself. Given that the recipient subjects of *azukar* and *osowar* can be agentive, it follows that the subject must be human. The following examples also reflect such a constraint on the agentive recipient subject:

(191) a. Ginkoo-ga kyaku-kara   kityoohin-wo azukat-ta.
       bank-NOM customer-from valuables-ACC be entrusted-PAST
       'lit.: The bank was entrusted valuables from the customer.'

   b. *Kinko-ga kyaku-kara   kityoohin-wo azukat-ta.
       safe-NOM customer-from valuables-ACC be entrusted-PAST
       'lit.: The safe was entrusted valuables from the customer.'

While the subject 'bank' in (191a) can readily be personified, 'safe' in (191b) cannot, hence, it prohibits the agentive reading. This contrast in grammaticality in (191) reflects the agentivity of the recipient subject of *azukar* in these sentences. Thus, it is highly probable that the LCS's of *azukar* and *osowar* readily serve as the inputs to Volition Lexical Rule in (46), which I will repeat here :

(192) Volition Lexical Rule:
       $[\text{F}(\boxed{1},\dots)] \Rightarrow [\text{VOL}(\boxed{1},[\text{F}(\dots,\text{G}(\dots\boxed{1}\dots),\dots)])]$
       $\boxed{1}$: the entity which is pragmatically coherent with the notion of 'volitionality'
       (=46)

On the other hand, the other recipient subjects mentioned above cannot be agentive. Note that they are incompatible with the adverbs which modify the volitional activity:

(193) a. ??Kodomo-ga sibusibu/susunde   hahaoya-kara kaimono-wo   iitukat-ta.
        child-NOM   reluctantly/willingly mother-from shopping-ACC be told-PAST
        'lit.: The child was reluctantly/willingly told by his mother to go shopping.'

   b. ??Kodomo-ga hahaoya-kara kaimono-wo   iitukar-oo-to-si-ta.
        child-NOM   mother-from shopping-ACC be told-VOL-PART-do-PAST
        'lit.: The child tried to be told by his mother to go shopping.'

(194) a. ??Hisyo-ga   sibusibu/susunde   sihainin-kara   kokyaku-e-no

secretary-NOM reluctantly/willingly manager-from customer-POSTP-GEN

tegami-wo kotodukat-ta.

letter-ACC be asked to carry-PAST

'lit.: The secretary was reluctantly/willingly asked by her manager to carry

the letter to the customer.'

b. ??Hisyo-ga   sihainin-kara   kokyaku-e-no

secretary-NOM manager-from customer-POSTP-GEN

tegami-wo kotodukar-oo-to-si-ta.

letter-ACC be asked to carry-VOL-PART-do-PAST

'lit.: The secretary tried to be asked by her manager to carry the letter to

the customer.'

(195) a.   *Biitoruzu-no-menbaa-ga   sibusibu/susunde   zyooo-kara

the members of the Beatles-NOM reluctantly/willingly the queen-from

kisi-no syoogoo-wo sazukat-ta.

kighthood-ACC   be conferred-PAST

'lit.: The members of the Beatles were reluctantly/willingly conferred

knighthood by the queen.'

b.   *Biitoruzu-no-menbaa-ga   zyooo-kara

the members of the Beatles-NOM the queen-from

kisi-no syoogoo-wo sazukar-oo-to-si-ta.

kighthood-ACC   be conferred-VOL-PART-do-PAST

'lit.: The members of the Beatles tried to be conferred knighthood by the

queen.'

Thus, it seems to be the case that only some recipient subjects allow volitional reading.
It is not clear, however, whether there is any specific constraint on the applicability
of Volitional Lexical Rule to recipient subjects in general. I will leave this matter
open for further study.

In the next section, I will turn to another pair of verbs (*mituke/mitukar*='find/be
found'), which characteristically take an affectee subject ('patient' subject in tra-
ditional term), and show that a range of semantic constraints associated with the
expression of their arguments are also naturally explained by assuming the function
AFFECTED.

4.4 The Affectee Subjects

4.4.1 *mituke/mitukar* alternation

In this section, I will closely examine the intransitive verb *mitukar* in the following:

(196) a. Sensei-ga   iedesi-ta   gakusei-wo mituke-ta.
        teacher-NOM run away from home-PAST student-ACC find-PAST
        'The teacher found the student who ran away from home.'
        (Sugimoto 1991)

      b. Iedesi-ta   gakusei-ga   mitukat-ta.
        run away from home-PAST student-NOM be found-PAST
        'The student who ran away from home was found.' (ibid.)

At first glance, the alternation between *mituke* and *mitukar* looks similar to that of *sime* and *simar* or *tutae* and *tutawar* above in that it takes a 'patient' (or theme) subject. In (196b), the accusative marked object in the transitive counterpart (196a) is realized as the grammatical subject.

However, *mitukar* in (196b) is crucially different from *simar* or *tutawar* with respect to the realization of the agent (i.e, 'finder') which corresponds to the grammatical subject of (196a). As I have shown above, *simar* prohibits the realization of the agent (see (165a)), and *tutawar* can optionally take the postpositional phrase *-kara* to express the agent (see (165b)). On the contrary, *mitukar* can take the agent argument marked with dative *ni*:

(197) Iedesi-ta   gakusei-ga sensei-ni   mitukat-ta.
      run away from home-PAST student-NOM teacher-DAT be found-PAST
      'The student who ran away from home was found by the teacher' (ibid.)

Sugimoto (1991) has observed that there are two constraints associated with such *ni*-marked agent. First, when the *ni*-marked agent is syntactically realized as in (197), the grammatical subject marked with nominative *ga* must be human. (198c) in the following shows that the non-human subject is prohibited when such a *ni*-marked agent is realized:

(198) a. Ken-ga   sigoto-wo mituke-ta.
        Ken-NOM job-ACC   find-PAST
        'Ken found the job.'

    b.   Sigoto-ga mitukat-ta.

          job-NOM be found-PAST

          'The job was found.'

    c. *Sigoto-ga Ken-ni   mitukat-ta.   (cf. (197))

          job-NOM Ken-DAT be found-PAST

Second, it has been observed that the realization of the *ni*-marked agent is closely related to the 'adversative' interpretation given to the sentence with *mitukar*. While (196b) is read as a simple report of the fact that the missing student was found, (197), in which the *ni*-marked agent is realized, obligatorily triggers the adversative reading that the missing student was found by the teacher although (s)he did not want to. The semantic oddity of (199b) in the following also illustrates such a correlation between *ni*-marked agent and adversative reading:

(199) a.   Soonansi-ta   dansei-ga mitukat-ta.

            be in distress-PAST man-NOM be found-PAST

            'The man in distress was found.' (Sugimoto 1991)

      b.   ♯Soonansi-ta   dansei-ga soosakutai-ni   mitukat-ta.

            be in distress-PAST man-NOM rescue team-DAT be found-PAST

            'lit.: The man in distress was found by the rescue team.' (ibid.)

Although (199a) and (199b) are equally grammatical sentences, the latter is regarded as semantically (and pragmatically) odd (indicated by ♯), because the occurrence of the *ni*-marked agent (i.e., 'the rescue team') triggers the adversative reading, hence (199b) is given the interpretation that 'the man in distress was found by the rescue team in spite of his will'. If this adversative reading is forced by the *ni*-marked agent, the first constraint on animacy of the subject is naturally expected, because being human is a prerequisite to perceiving the adversative effect of the event (also see Kuno 1978).

    While Sugimoto (1991) has observed these semantic constraints on the grammatical subject of *mitukar* as well as the *ni*-marked agent that it takes, he has not given any explanation to them. Here I will assume that the semantic structure of *mitukar* is also characterized by the function AFFECTED and that the environment under which adversative reading is triggered is predicted from the semantic structure.

    Specifically, I propose that *mituke* has the following semantic structure:

(200) *mituke*

$$
\begin{bmatrix}
monotrans \\[4pt]
\text{ARG-ST} \quad
\begin{bmatrix}
\text{EXT} & \langle\, \boxed{1} : \boxed{3} \,\rangle \\
\text{INT} & \langle\, \boxed{2} : \boxed{4} \,\rangle
\end{bmatrix} \\[10pt]
\text{LCS} \quad [\text{CAUSE}([\text{APPLY}(\,\boxed{3}\,,\,\boxed{5}\,)],[\text{BECOME}([\text{BE}(\,\boxed{4}\,,\mathit{FOUND})])])]
\end{bmatrix}
$$

(200) specifies that the transitive verb *mituke* denotes the volitional activity of agent ($\boxed{3}$) which causes the discovery of the patient/theme ($\boxed{4}$). Although such an agentive reading can be regarded as the most unmarked, hence default interpretation, *mituke* sometimes denotes an event where the person finds things accidentally:

(201) Ken-ga   miti-de guuzen   saihu-wo mituke-ta.
       Ken-NOM street-at accidentally wallet   find-PAST
       'Ken happened to find the wallet on the street.'

In (201), the subject 'Ken' is not agent, but rather experiencer in that he recognizes the theme with his eyes, or recipient in that he is (at least indirectly) affected by his discovery of the theme. Such nonvolitional usage of *mituke* can be explained by assuming that the application of the Volitional Lexical Rule is optional.

On the other hand, I will assume (202) as the semantic structure of *mitukar*:

(202) *mitukar*

$$
\begin{bmatrix}
monounac \\[4pt]
\text{ARG-ST} \quad
\begin{bmatrix}
\text{EXT} & \langle\, \rangle \\
\text{INT} & \langle\, \boxed{2} : \boxed{4} \,\rangle
\end{bmatrix} \\[10pt]
\text{LCS} \quad [\text{AFFECTED}(\,\boxed{6}\,,[\text{BECOME}([\text{BE}(\,\boxed{4}\,,\mathit{FOUND})])])]
\end{bmatrix}
$$

Here, I assume that *mitukar* is specified as unaccusative verb, where 'findee' argument ($\boxed{4}$) is linked to INT, which correctly predicts affectee subject such as 'the student' in (196b) or 'theme' subject such as 'the job' in (198b).

On the other hand, I assume that the first argument of the function AFFECTED ($\boxed{6}$), i.e., the individual who is indirectly affected by such event, is not linked to ARG-ST, but rather pragmatically identified, hence, is not necessarily expressed syntactically. Note that such an individual can be introduced as the topic of the sentence:

(203) a. Ken-wa   sigoto-ga mitukat-ta.
Ken-TOP job-NOM   be found-TOP
'lit.: As for Ken, the job was found.'

    b. Sarii-wa   sagasi-tei-ta   kagi-ga   mitukat-ta.
Sally-TOP look for-PROG-PAST the key-NOM be found-PAST
'lit.: As for Sally, the key which she had been looking for was found.'

The topic marked nouns in (203) correspond to the people who are indirectly affected by the event where the job/key was found either by him/herself or someone else.[7] Note that the status of such topic marked nouns is similar to those in the so-called 'double-subject' construction in (204) in that they do not have specific case or grammatical function:

(204) a. Zo-wa   hana-ga   nagai.
elephant-TOP trunk-NOM long
'As for the elephant, its trunk is long.'

    b. Hana-wa   sakura-ga   itiban ii.
flower-TOP cherry-NOM first   good
'As for flowers, cherry blossoms are the best.' (Shitatani 1994)

The point is that the semantic structure of *mitukar* is different from that of typical unaccusatives (cf. *simar* ('close') in (172a) for instance) in that it has the function AFFECTED in its lexical specification. Compare the following sentences:

(205) a. ??Ken-wa   mado-ga   simat-ta.
Ken-TOP windwo-NOM close-PAST
'As for Ken, the window closed.'

---

[7]In this respect, topic marked nouns in (203) are similar to *ni*-marked nouns in the sentence below:

(i)   Ken-ni   sigoto-ga mitukat-ta.
     Ken-DAT job-NOM   be found-PAST
     'Ken came across the job.'

Nevertheless, while there is evidence to show that such *ni*-marked nouns are assigned the grammatical function as subject (see 5.2.3 in chapter 5), it is probable that topic marked nouns in (203) are not subcategorized for by the verb, but rather pragmatically identified.

    b.   Ken-wa   sigoto-ga mitukat-ta.   (=(203a))
        Ken-TOP job-NOM be found-PAST
        'lit.: As for Ken, the job was found.'

(205a) is semantically odd unless the particular relationship between the topic ('Ken') and the theme ('window') is made explicit as follows:

(206)   Ken-wa   koware-tei-ta   kare-no ie-no   mado-ga   yooyaku
        Ken-TOP broken-STAT-PAST he-GEN house-GEN window-NOM finally
        simat-ta.
        close-PAST
        'As for Ken, the window of his house, which had been broken, finally closed.'

On the other hand, *mitukar* in (205b) is perfectly acceptable without additional discourse specification. This contrast is attributed to the difference in the lexical entries, i.e., whether the semantic structure of the verb contains AFFECTED as default or not.

So far I have seen that *mitukar* belongs to the same verb class as *simar* (i.e., unaccusative) but that it is closer to *azukar/osowar* in that its LCS contains the function AFFECTED as the main predicate. At the same time, I have also noted that *mitukar* is different from *azukar/osowar* in that the first argument of AFFECTED is not linked to ARG-ST but rather pragmatically identified.

In the following section, I will turn to the remaining question, i.e., the correlation between *ni*-marked agent and adversative reading.

4.4.2 Another Subtype of *mitukar* and its Theoretical Implications

In this section, I will consider the triggers of the adversative reading of *mitukar*. In order to deal with this main task, it is important to note another aspect of *mitukar*. Consider the following example:

(207)   Ken-wa   sensei-ni   kakusimot-tei-ta   tabako-wo   mitukat-ta.
        Ken-TOP teacher-DAT keep secretly-STAT-PAST cigarette-ACC be found-PAST
        'Ken had his hidden cigarette found by his teacher.' (Sugimoto 1991)

(207) denotes the relation between Ken and the event that teacher found his (i.e., Ken's) cigarette. The point is that *mitukar* cooccurs with accusative marked theme

object (i.e., 'findee'), which indicates that *mitukar* also seems to behave as a two-place predicate (i.e., *diunaccusative*) in the same way as *azukar* (160b) or *osowar* (177b).

Nevertheless, the transitive *mitukar* in (207) is distinct from *azukar* or *osowar* with respect to the agentivity of the grammatical subject. In the previous section, I observed that the grammatical subject of *azukar* and *osowar* can be regarded as agent as well as recipient. On the other hand, the grammatical subject (i.e., 'Ken') of transitive *mitukar* is not agentive:

(208) a. *Ken-ga   sensei-ni   sibusibu   tabako-wo   mitukat-ta.
         Ken-NOM teacher-DAT reluctantly cigarette-ACC be found-PAST

   b. *Ken-ga   sensei-ni   tabako-wo   mitukar-oo-to-si-ta.
       Ken-NOM teacher-DAT cigarette-ACC be found-VOL-PART-do-PAST

Incompatibility with attitudinal adverbial such as *sibusibu* ('reluctantly') in (208a), or volitional affix *-(y)o* in (208b) reflects the fact that the grammatical subject of transitive *mitukar* cannot be agentive. Rather 'finder' of the theme, i.e., *ni*-marked noun apparently retains its agentivity. Compare the following sentences:

(209) a. Ken-ga   Naomi-kara/*-ni   kagi-wo azukat-ta.
         Ken-NOM Naomi-from/*DAT key-ACC be entrusted-PAST
         'Ken was entrusted the key from Naomi.'

   b. Ken-ga   Naomi-kara/-ni   eigo-wo   osowat-ta.
      Ken-NOM Naomi-from/DAT English-ACC be taught-PAST
      'Ken was taught English from Naomi.'

   c. Ken-ga   sensei-ni/*-kara   tabako-wo   mitukat-ta.
      Ken-NOM teacher-DAT/*from cigarette-ACC be found-PAST
      'Ken had his cigarette found by the teacher.'

While the agentive subject of ditransitive *azuke* (i.e., 'sender') must be realized as postpositional phrase marked by *-kara* (=(209a)), that of *osie* can be realized either as a dative marked noun or such a *kara*-marked postpositional phrase (=(209b)). On the other hand, the agentive subject of transitive *mituke* (i.e., 'finder') must be marked by dative *ni* and cannot be realized as a *kara*-marked postpositional phrase (=(209c)). Given that postpositions bear an inherent (or thematically more restricted) meaning, whereas the roles marked by case-particles are instead functionally determined within

the semantic structures of verbs (see Tsujimura, 1996: 135), it seems reasonable to assume that the contrast in (209) corresponds to the degree of agentivity which the agentive subjects of (di)transitives retain when they cooccur with *-ar*-marked verbs. Specifically, (209a) reflects the fact that the agentive subject of *azuke* retains least agentivity but is marked as the location from which the transfer of the theme starts. (209b) shows that the agentive subject of *osie* can bear either role when it cooccurs with recipient subject. Notably, (209c) indicates that the agentive subject of *mituke* retains full agentivity even when it cooccurs with *mitukar*.

The existence of such agentive 'finder' is made explicit in comparison with the monounaccusative *mitukar* examined in the previous section:

(210) a.   *monounaccusative*

  Ken-wa   tabako-ga   mitukat-ta.

  Ken-TOP cigarette-NOM be found-PAST

  'As for Ken, the cigarette was found.'

  b.   *diunaccusative*

  Ken-wa   tabako-wo   mitukat-ta.

  Ken-TOP cigarete-NOM be found-PAST

  'As for Ken, he had his cigarette found (by somebody).'

In (210a), as I have noted above, *mitukar* denotes the relation between the topic (i.e., Ken) and the event that the theme was found, but the 'finder' is unspecified. Unless such a 'finder' is syntactically realized as a *ni*-marked noun, (210a) is regarded as a neutral description of the relation between Ken and the appearance of the cigarette. On the contrary, (210b) is regarded as denoting the relation between the topic (i.e., Ken) and the event that the agentive 'finder', who is distinct from Ken, found Ken's cigarette. Thus, (210b) is crucially different from (210a) in two respects. First, an agentive participant must be introduced in the affecting event. Second, the way such an event affects the topic must be more direct than (210a) in that a specific relation between the topic and the theme (e.g., possessor-possessed thing etc.) is required.

Thus, based on the observations so far, I will assume that *mitukar* has a *triunaccusative* subtype with the semantic structure as follows (cf. (202) above):

(211) *mitukar*

$$\begin{bmatrix} triunac \\ \\ \text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle\ \rangle \\ \text{INT} & \langle\ \boxed{2}:\boxed{4}\,,\ \boxed{3}:\boxed{5}\,,\ \boxed{4}:\boxed{7}\ \rangle \end{bmatrix} \\ \\ \text{LCS} \quad [\textsc{affected}(\boxed{4}\,,\boxed{8}\,[\textsc{cause}([\textsc{apply}(\boxed{5}\,,\boxed{6}\,)],[\textsc{become}([\textsc{be}(\boxed{7}\,,\textit{found})])])])] \end{bmatrix}$$

Here, I assume that the semantic structure of triunaccusative *mitukar* is distinct from that of unaccusative in that the function CAUSE (i.e., VOL and CAUSE) is embedded as the second argument of AFFECTED (i.e., $\boxed{8}$). Namely, it has a slot for agent ($\boxed{5}$) whose volitional action provokes the change of state of the theme ($\boxed{7}$). Moreover, I assume that such two arguments (i.e., $\boxed{5}$, $\boxed{7}$) of the affecting event ($\boxed{8}$) are linked to the second and the third internal argument of ARG-ST, respectively. Thus by assuming (211), it is predicted that the existence of agent should always be implied. When it is syntactically realized, it is introduced as a *ni*-marked noun since the first argument of AFFECTED (i.e., 'affectee') is already marked by nominative -*ga*.

Another point to be noted here is that the first argument of AFFECTED is linked to the first internal argument of ARG-ST in (211). This predicts a different grammatical status of the topic in (210a) and (210b) above, that is, the former is a pure topic which is pragmatically introduced, while the latter is an argument which is subcategorized for by the verb. Compare the following sentences:

(212) a. Tabako-ga   mitukat-ta.
         cigarette-NOM be found-PAST
         'The cigarette was found.'

   b. Tabako-wo   mitukat-ta.
       cigarette-ACC be found-PAST
       'Someone had his/her cigarette found by somebody else.'

The default reading of (212a) is the change of state which the theme underwent, thus, without additional information obtained from the context, it is regarded as the simple report of the appearance/discovery of the cigarette, where either who found it (i.e., 'finder' of the cigarette), or who was affected by it (i.e., 'affectee' of the event) was left unspecified. On the other hand, such an interpretation is impossible in (212b), where the participation of 'finder' and 'affectee' in the event is presupposed as default even

when they are not syntactically realized. The only possible interpretation of (212b) is 'someone is affected by someone else's finding his/her cigarette.' Such a contrast is naturally explained by assuming the semantic structure in (211). This contrast is made explicit by noting the compatibility with the question *dare-ga?* ('Who?'), which presupposes the existence of the 'affectee'.

(213) a. Tabako-ga   mitukat-ta.   (=(212a))
           cigarette-NOM be found-PAST
         *—Dare-ga?
           who-NOM
           'The cigarette was found.'–*'Who?'

      b. Tabako-wo   mitukat-ta.   (=(212b))
           cigarette-ACC be found-PAST
           —Dare-ga?
           who-NOM
           '(Someone) had his cigarette found.'–'Who?'

As expected, only (212b) is compatible with such question, which further justify the semantic structure for triunaccusative *mitukar* above.

I am now in a position to consider the condition under which the adversative reading of *mitukar* is triggered. The important point to note is that the triunaccusative use of *mitukar* obligatorily requires an adversative reading regardless of the realization of the *ni*-marked agent:

(214) a. Ken-ga   sensei-ni   tabako-wo   mitukat-ta.
           Ken-NOM teacher-DAT cigarette-ACC be found-PAST
           'Ken had his cigarette found by the teacher.'

      b. Ken-ga   tabako-wo   mitukat-ta.
           Ken-NOM cigarette-ACC be found-PAST
           'Ken had his cigarette found.'

      c. Tabako-wo   mitukat-ta.
           cigarette-ACC be found-PAST
           'Someone had his/her cigarette found by somebody else.'

Both (214a) and (214b) must be interpreted that Ken was adversely affected by teacher's finding his cigarette, hence, it is implied that Ken wanted to keep his

cigarette secret, but it was found by the teacher in spite of Ken's will. Even (214c) must be read as denoting the situation where the subject, which will be identified from the context, was adversely affected by having his/her cigarette found. The fact that these sentences are equally given adversative interpretation strongly indicates that the semantic structure of the triunaccusative *mitukar* readily satisfies the condition that gives rise to such interpretation.

On the other hand, recall that monounaccusative *mitukar* has an adversative reading only when the 'finder' marked by *ni* is syntactically realized and the grammatical subject, i.e., 'findee', is human (also see (199) above):

(215) a.   Iedesi-ta   gakusei-ga   sensei-ni   mitukat-ta.
           run away from home-PAST student-NOM teacher-DAT be found-PAST
           'The student who ran away from home was found by the teacher'
           (=(197))

   b. *Booru-ga Ken-ni   mitukat-ta.
       ball-NOM Ken-DAT be found-PAST
       'lit.: The ball was found by Ken.'

In (202) above, I have assumed that LCS of the monounaccusative *mitukar* is specified as follows:

(216) $\begin{bmatrix} monounac \\ \dots \\ \text{LCS} \quad [\text{AFFECTED}(\boxed{6},[\text{BECOME}([\text{BE}(\boxed{4},FOUND)])])] \end{bmatrix}$
(=(202))

Here, I will make another assumption, namely that when the *ni*-marked agent is syntactically realized as in (215a), the semantic structure of the intransitive *mitukar* is further specified as follows:

(217)   *mitukar*

$\begin{bmatrix} monounac \\ \\ \text{ARG-ST} \quad \begin{bmatrix} \text{EXT} \quad \langle \ \rangle \\ \text{INT} \quad \langle \boxed{2}:\boxed{4} \rangle \end{bmatrix} \\ \\ \text{SEM} \qquad [\text{AFFECTED}(\boxed{6},\boxed{8}\ [\text{CAUSE}([\text{APPLY}(\boxed{5},\boxed{7})],[\text{BECOME}([\text{BE}(\boxed{4},FOUND)])])])] \end{bmatrix}$

In (217), I assume that the functions VOL is introduced into the second argument of AFFECTED. Consequently, the simplex affecting event in (216) is turned into complex one which involves the function CAUSE (i.e., VOL and CAUSE) and APPLY, which specifies a volitional activity initiated by agent. What should be noted here is the similarity between (217) and the semantic representation in (211) which, I have assumed, is characteristic of the triunaccusative *mitukar*. Considering that the triunaccusative *mitukar* is obligatorily given the adversative reading (see (214) above), it seems reasonable to assume that the adversative reading correlates with such a complexity of the second argument of AFFECTED. More specifically, I will hypothesize that the adversative reading is triggered under the condition specified as follows:

(218)   HYPOTHESIS 1:

   The adversative reading is triggered only when the function VOL is embedded as the second argument of the function AFFECTED.

Moreover, given that the function AFFECTED specifies the relation between the individual and the event which affects him/her in various ways, it naturally follows that such sense of 'affectedness' should be made more direct and strong when the affecting event involves the volitional activity, and that the affectee should be capable of perceiving such agentive influence.[8]

Thus, HYPOTHESIS 1 correctly predicts that the transitive and unaccusative sentences in the following have nearly the same interpretation:

(219) a.   *monounaccusative*

   Ken-wa   sensei-ni   tabako-ga   mitukat-ta.
   Ken-TOP teacher-DAT cigarette-NOM be found-PAST

---

[8]As has been noted above, the correlation between *ni* marking and the agentive influence has already been suggested by Inoue (1976b) in her analysis of syntactic passives in Japanese. Specifically, she has argued that the passive sentence in which the agent is marked with *ni*, is characterized by the direct influence of the agent onto the subject, thus, the passive sentence with inanimate subject which is incapable of perceiving such influence, does not allow a *ni*-marked noun. Kuroda (1979) has further developed her generalization by comparing two kinds of passive sentences, i.e., the one which marks the agent with *ni* and the other which marks it with *ni yotte*. Having observed that the subject of the former is crucially distinguished from that of the latter with respect to its consciousness of the influence by the agent, he has suggested that Japanese passives should be classified into two subtypes (i.e., *ni*-passive and *ni yotte*-passive) rather than direct and indirect passives. To discuss this matter as a whole is beyond the scope of this dissertation, but it is rather suggestive that he has used the term "affectivity" for such semantic difference between the two types of passives, and it is worth noting that the relation between *ni*-marked agent and 'affectee' interpretation was given much attention as early as the seventies.

'As for Ken, he had his cigarette found by the teacher.'

b. *triunaccusative*

Ken-ga   sensei-ni   tabako-wo   mitukat-ta.   (=(214a))

Ken-NOM teacher-DAT cigarette-ACC be found-PAST

'Ken had his cigarette found by the teacher.'

In this section, I have examined the semantic structure of the unaccusative and transitive *mitukar*. Especially, by noting the fact that the triunaccusative use is always given the 'adversative' reading, the correlation between the *ni*-marked agent and the adversative interpretation has been clarified. What should be noted here is that the adversative reading is one of the notable features of so-called 'indirect' or 'adversative' passives as follows (cf. (170b) above):

(220)   Ken-ga   sensei-ni   tabako-wo   mituke-rare-ta.

Ken-NOM teacher-DAT cigarette-ACC find-PASS-PAST

'Ken was adversely affected by the teacher's finding his cigarette.'

The passive sentence such as (220) has been termed 'indirect passive' because of its grammatical subject, which does not correspond to the direct object of the transitive counterpart, but rather is identified with the individual who is 'indirectly' affected by the event which is denoted by the rest of the sentence with the verb suffixed by *-(r)are*. Since such a subject is characteristically interpreted as the one who is adversely affected by the event, indirect passives are often termed as 'adversative' passives.

What should be noted here is that the indirect passive in (220) bears a close resemblance to the triunaccusative sentence in (219b) with respect to its argument realization (i.e., case marking) as well as its interpretation.

Both triunaccusative *mitukar* in (219b) and the transitive *mituke* suffixed by passive morpheme *-(r)are* subcategorize for the agent who finds the theme/patient (i.e., 'finder'), the theme/patient found by the agent (i.e., 'findee') and 'affectee', who is indirectly affected by the event where such 'finder' and 'findee' are involved. Moreover, in both sentences, 'affectee' and 'findee' are marked by the nominative and accusative respectively, while 'finder' is marked by dative *ni*. Thus, it is highly probable that the triunaccusative *mitukar* and *mituke-rare* in (220) are characterized in the same way to a considerable extent. In the following chapter, I will briefly mention this point.

Before coming on to that, however, I would like to demonstrate the further applicability of the function AFFECTED. In particular, it will be shown that the approach developed so far makes it possible to give a unified analysis to a range of 'affectee' subjects, which has been treated (rather unfairly) as idiosyncratic usage of verbs.

4.5 Further Prospect

4.5.1 The Possessor Subjects

In this section, I will examine the following sentences, where the grammatical subjects correspond to the possessors of the grammatical objects:

(221) a. Naomi-ga   yubi-wo   kit-ta.
         Naomi-NOM finger-ACC cut-PAST
         'Naomi cut her finger.'

   b. Ken-ga   tukue-ni   asi-wo   butuke-ta.
      Ken-NOM table-DAT foot-ACC hit-PAST
      'Ken hit his foot against the table.'

   c. Ken-ga   hitai-kara   ti-wo   nagasi-tei-ru.
      Ken-NOM forehead-POSTP blood-ACC bleed-PROG-PRES
      'Ken's forehead is bleeding.'

   d. Ken-ga   i-ni   kaiyoo-wo tukut-ta.
      Ken-NOM stomach-DAT ulcer-ACC make-PAST
      'Ken got a stomach ulcer.'

The sentences in (221) are all characterized by their 'unintentional' reading (in Levin's (1993) terminology). More precisely they are ambiguous (either intentional or unintentional), but at least, normally, the grammatical subjects in (221) are regarded as non-agentive without extra discourse specification. Some studies (see Nitta 1982, for instance) have treated them as reflexive constructions, because of their body-part objects.

However one may notice that the examples in the following are characterized by a similar interpretation, though accusative objects do not denote the body-parts of the subjects:

(222) Watasi-wa zibun-no uma-wo   korosi-ta.

       I-TOP   self-GEN horse-ACC kill-CAUS-PAST

       'I (intentionally) killed my own horse.' or

       'As for me, I had my own horse die (owing to my carelessness)'

Again, the subject in (222a) can be interpreted either as agentive causer who intentionally killed his/her own horse, or the possessor of the horse who had the horse die owing to his/her carelessness. In the latter interpretation, the subject corresponds to the individual who suffers from the loss. Thus, it seems to be the case that the sentences in (221) and (222) are all grouped together by a more general 'possessor-possessed thing' relationship between their subjects and objects. More precisely, they denote the relationship between the individual who is indirectly affected by events where his/her possessions (including one's body-parts) undergo some impact (e.g., (221a,b,c)) or change of state (e.g., (221d), (222)).

The relationship between the subject and the object, however, is actually much more complicated. For instance, there is a case where the same sort of relation is obtained even when the *wo*-marked object is neither body-part or possessed thing of the subject:

(223) Ken-ga   syuuto-wo hazusi-ta.

       Ken-NOM goal-ACC   miss-PAST

       'Ken missed a goal.'

The accusative marked object 'goal' in (223) corresponds to an activity conducted by the subject, thus, it might be possible to regard it as a 'possessed thing' in an abstract sense. As in the subjects in (221) and (222) above, the subject 'Ken' in (223) is regarded as an 'experiencer', i.e., the person who suffers from his own failure. What is crucial here is that 'shooting a goal' is an intentional activity, but that the result, i.e., success or failure, is beyond the control of one's intention, which yields such 'experiencer' reading. By assuming the function AFFECTED in the semantic structure of the verb *hazus*, its 'non-agentive' interpretation as in (223) can be analyzed in the same way.

A large number of studies have noted the existence of such transitive verbs which select non-agentive subjects. Inoue (1976) has termed the subjects of the sentences

such as (221) or (222) as 'experiencer' subjects and offered an analysis in the framework of transformational grammar. Amano (1991) has examined the same sort of phenomenon by focusing on the 'whole-part' relationship between subjects and objects. However, little attention has yet been given to formalizing their lexical representation. One possibility is to assume that these transitive verbs are also classified into two subtypes with respect to their semantic structures, i.e., CAUSE type and AFFECTED type, and that the latter corresponds to such 'possessor' subject constructions. Since my data on possessor subject constructions is still limited, I will leave the details for further research.

4.5.2 Idiomatic Expressions

Finally, I will turn to the transitive verbs which occur in idioms where transitive verbs also characteristically select affectee subjects.[9] Consider the following sentences for example:

(224) a. Ken-wa te-wo   komanei-tei-ru.
          Ken-TOP arm-ACC fold-STAT-PRES
          'Ken remains an idle onlooker.'

     b. Ken-ga   na-wo   age-ta.
         Ken-NOM name-ACC raise-PAST
         'Ken became famous.'

     c. Ken-ga   hinsyuku-wo ka-tta.
         Ken-NOM frown-ACC   buy-PAST
         'Ken was frowned at.

In (224a) , *te-wo komanek* (lit.: 'having one's arms folded') means 'to be in the position in which one can do nothing but looking on matters'. The phrase *na-wo age* (lit.: 'raise one's name') in (224b) describes the person who wins a higher reputation, including the case where (s)he did not intend to do so. Likewise, *hinsyuku-wo kau* (lit.: 'buy a frown') in (224c) refers to the situation where the person was frowned at for his/her behavior. In other words, the subjects in (224) correspond to those who are in a certain condition which results from the event specified by the rest of the sentence. Thus, the assumption based on the function AFFECTED seems to offer

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[9]I am grateful to Takao Gunji (p.c., 1998) for pointing out this fact.

the key to analyzing the usage of transitive verbs in such idiomatic expressions as well. Though the problem concerning lexical entries of idiomatic expressions is a very interesting issue to pursue (see Sag and Wasow 1999: 265–269), again , it requires more detailed observation of various data, and I have to leave this topic to further research.

4.6   Summary

This chapter has dealt with various types of non-agentive subject constructions. In particular, through the detailed examination of the constructions which take the recipient subject (e.g., *azukar*, *osowar* etc.) and the affectee subject (e.g., *mitukar*, *tukamar*), I have proposed that the characteristic behaviors of these verbs will equally be explained by assuming the semantic predicate AFFECTED. In particular, I have suggested another subtype of *unaccusative*, which takes triple internal arguments (i.e., *triunaccusative*). I have also presented supportive evidence for such a subtype of *unaccusative*, which points to the further applicability of the analysis towards a phrasal level. Finally, I have briefly mentioned the possibility that the LCS-based approach thus developed will offer a unified analysis to a wider range of affectee subject constructions such as possessor subject constructions and several idiomatic expressions.

Chapter 5   Final Remarks

5.1   Overview

In this chapter, I will briefly present several residual issues. In section 5.2, I will briefly discuss the semantic structure of indirect passives (5.2.1), a common property of transitive verbs which prohibit syntactic passivization (5.2.2), and the locative subject constructions (5.2.3), suggesting the possibility of extending the LCS-based analysis of lexical items (i.e., lexemes and words), particularly the function AFFECTED, towards verbal semantics of a phrasal level. In section 5.3, I will summarize the overall discussion of this dissertation and the future prospect of the analyses developed here.

5.2   Residual Issues

5.2.1   Semantic Structure of the Indirect Passive Morpheme *-(r)are*

As has been noted in numerous studies on voice alternation phenomena in natural languages (see Xolodovič 1974; Kuno 1978; Kuroda 1979; Teramura 1982; Shibatani 1985; Masuoka 1987; Jacobsen 1992, among many others. Also see Shibatani 1990, 1994, to appear), Japanese is well-known for having passive constructions which are formed on the basis of both transitive and intransitive verbs exemplified as follows:

(225) a.   INTRANSITIVE

Naomi-ga   sawai-da.

Naomi-NOM make a fuss-PAST

'Naomi made a fuss.'

b.   Ken-ga   Naomi-ni   sawag-are-ta.

Ken-NOM Nomi-DAT make a fuss-PASS-PST

'Ken was adversely affected by Naomi's making a fuss.

(226) a.   TRANSITIVE

Naomi-ga   piano-wo   hii-ta.

Naomi-NOM piano-ACC play-PAST

'Naomi played the piano.'

b. Ken-ga   Naomi-ni   piano-wo   hik-are-ta.
Ken-NOM Naomi-DAT piano-ACC play-PASS-PST
'Ken was adversely affected by Naomi's playing the piano.'

(225b) denotes that Ken was adversely affected by Naomi's making noise. Likewise, (226b) is interpreted as the description of Ken's annoyed feeling towards Naomi's playing the piano.

On the other hand, recall that the sentence in (220) in the previous section, which is repeated in (227b) below, is characterized by 'possessor-possessed thing relation' between the subject (i.e., Ken) and accusative marked object (i.e., cigarette). In this respect, it has often been termed a 'possessor raising' construction, which corresponds to the transitive sentence such as (227a), where the grammatical subject of the passive sentence in (227b) is marked by genitive *no*:[1]

(227) a. Sensei-ga   Ken-no tabako-wo   mituke-ta.
teacher-NOM Ken-GEN cigarettte-ACC find-PAST
'The teacher found Ken's cigarette.'

b. Ken-ga   sensei-ni   tabako-wo   mituke-rare-ta. (=(220))
Ken-NOM teacher-DAT cigarette-ACC find-PASS-PST
'Ken was adversely affected by the teacher's finding his cigarette.'

The point is that indirect passives such as (225b) or (226b) and possessor raising in (227b) are equally characterized by their valence-increasing effect. In these sentences, the suffixation of the passive morpheme *-(r)are* triggers the introduction of the new argument, which crucially distinguishes them from the typical syntactic passives in (228b), which is marked by a decrease in valence:

(228) a. Ken-ga   Naomi-wo   home-ta.   (=(1a))
Ken-NOM Naomi-ACC praise-PAST
'Ken praised Naomi.'

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[1]The treatment of such possessor raising constructions remains a matter for debate (see Shibatani 1994 among others). Particularly, it is not so clear whether there are some independent criteria which distinguish them from indirect passives as in (226). I shall make no further inquiry into this point since it is not the relevant for the subject here. The crucial point is that, in both constructions, the addition of the passive morpheme *-(r)are* triggers the increase of valency.

    b.   Naomi-ga   (Ken-ni)   home-rare-ta.   (=(1b))
        Naomi-NOM Ken-POSTP praise-PASS-PST
        'Naomi was praised by Ken.'

Thus, the treatment of indirect passives suffers from a sort of dilemma that Shibatani (to appear) has perceptively pointed out:

> The problem with the Japanese adversative passive is that, unlike derivational processes, it is completely regular applying to both intransitive and transitive verbal bases ... if we were to maintain that voice phenomena do not alter the basic propositional meaning, then we must divide Japanese passives into two types —one being voice and the other something else — disregarding the morphological unity. (Shibatani, to appear: 7)

As Shibatani has noted, considering that indirect passives are marked by increase in valence which affects the propositional meaning, it seems reasonable to assume that there exist two distinct bound morphemes *-(r)are*, though they are phonetically identical.[2]

    Specifically, I will propose that the semantic structure of the indirect passive morpheme *-(r)are* is specified as follows:

(229)   *-(r)are* (indirect)

$$
\begin{bmatrix}
morpheme \\
\text{ARG-ST} \quad \begin{bmatrix} \text{EXT} & \langle \, \rangle \\ \text{INT} & \langle \, \boxed{1} : \boxed{4} \, , \, \ldots \rangle \end{bmatrix} \\
\text{LCS} \quad \begin{bmatrix} \text{AFFECTED}(\, \boxed{4} \, , \, \boxed{5} \, [\text{event} \, \ldots \,)]) \end{bmatrix}
\end{bmatrix}
$$

I assume that the bound morpheme *-(r)are* which forms indirect passives, has the function AFFECTED in its semantic structure and that only its first argument (i.e., 'affectee': $\boxed{4}$), which is linked to the first entity in INT list, is specified. I also assume

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[2]The fuller study of Japanese passives including the comparison between direct and indirect passives as a whole is beyond the scope of my dissertation. Especially, how to formalize the lexical entry of the direct passive morpheme *-(r)are* is too involved a subject to be treated here in detail, thus, I will discuss only the indirect passive morpheme *-(r)are*. For the lexicalist treatments of (direct) passives, see Uda (1994) and Gunji (1994, 1999). Although Gunji (1999) has focused on the causatives and honorifics, it has also been suggested that the passive bound morpheme should be analyzed in exactly the same manner.

that the second argument of AFFECTED is left unspecified and the LCS of the verbal base will be inserted. The list of argument(s) of the verbal base will be linked to the second (and third) entity (entities) in INT list, hence, the n-place predicate suffixed by -(r)are will be specified as an (n+1)-place predicate. Thus, if -(r)are takes an unergative verbal base such as *sawag-* in (225b) above, the complex verb phrase *sawag-are* is expected to have the semantic structure as follows:

(230)   *sawag+(r)are*

$$
\begin{bmatrix}
\text{ARG-ST} & \begin{bmatrix} \text{EXT} & \langle\ \rangle \\ \text{INT} & \langle\ \boxed{1}:\boxed{3}\ ,\ \boxed{2}:\boxed{4}\ \rangle \end{bmatrix} \\
\text{SEM} & [\text{AFFECTED}(\boxed{3},[\text{VOL}(\boxed{4},[\text{APPLY}(\boxed{4},\dots)])])]
\end{bmatrix}
$$

In (230), the LCS of unergative *sawag-* is inserted into the second argument of AFFECTED. Its single argument ($\boxed{4}$) is linked to the second entity in the INT list, which will be syntactically realized as a *ni*-marked noun.

Likewise, the semantic structure of the complex verb phrase *mituke-rare* will be specified as follows:

(231)   *mituke+(r)are*

$$
\begin{bmatrix}
\text{ARG-ST} & \begin{bmatrix} \text{EXT} & \langle\ \rangle \\ \text{INT} & \langle\ \boxed{1}:\boxed{4}\ ,\ \boxed{2}:\boxed{5}\ ,\ \boxed{3}:\boxed{7}\ \rangle \end{bmatrix} \\
\text{SEM} & [\text{AFFECTED}(\boxed{4},[\text{CAUSE}([\text{APPLY}(\boxed{5},\boxed{6})],[\text{BECOME}([\text{BE}(\boxed{7},\textit{FOUND})])])])\ )]
\end{bmatrix}
$$

Two arguments of the transitive verbal base *mituke* are both specified as internal arguments of the complex verb. As in the case of unergative *sawag*, the first argument of VOL ($\boxed{5}$) is realized as a *ni*-marked noun, while the first argument of BE ($\boxed{7}$) is realized as the grammatical object.

What should be noted here is the constraint on the second argument of the AFFECTED in (229). In the previous section, I have examined the correlation between *ni*-marked agent and adversative reading, and hypothesized that this adversative reading is triggered only when the function VOL is embedded as the second argument of the function AFFECTED (see (218) above). As is reflected by the term 'adversative passives', one of the notable features of indirect passives is their adversative interpretation. In other words, the semantic structure of the complex verbs suffixed by the

indirect passive morpheme *-(r)are* is obligatorily required to satisfy the conditions for the adversative reading. If my hypothesis above is on the right track, it predicts the constraint specified as follows:

(232)   VOLITION CONSTRAINT:
    In the semantic structure of the indirect passive morpheme *-(r)are*, the LCS which lacks the function VOL cannot be embedded as the second argument of the function AFFECTED.

As I have shown above, suffixation of the indirect passive morpheme is applicable to both transitive and intransitive verbal bases. However, (232) constrains the type of verbal bases to which the morpheme is applicable. Specifically, it predicts that unaccusatives, whose LCS lacks the function VOL, cannot appear in the second argument of AFFECTED in the semantic structure of *-(r)are*, hence, cannot form indirect passives. The examples in the following bear out this point:[3]

(233) a.   *(Watasi-wa) gurasu-ni ware-rare-te   kega-wo-si-ta.
      (I-TOP)   glass-DAT break-PASS-GER injury-ACC-do.LV-PAST
      'lit.: Having the glass break on me, I was injured.'
      (Teramura 1982)

    b.   *(Watasi-wa) uwasa-ni   hiromar-are-te   kaisya-wo   kubininat-ta.
      (I-TOP)   rumor-DAT spread-PASS-GER company-ACC be fired-PAST
      'lit.: Having the rumor spread on me, I was fired.' (ibid.)

    c.   *Watasi-wa oziisan-ni   korob-are-ta.
      I-TOP   grandfather-DAT fall-PASS-PST
      'lit.: I was adversely affected by my grandfather's falling.'
      (Kageyama 1993: 59)

Note that even when the *ni*-marked noun is human as in (233c), unaccusative verbs such as *korobu* ('fall down') cannot form indirect passives. Ungrammaticality of these examples serves as supportive evidence for the constraint (232).[4]

Obviously, the mechanism of its 'adversative' reading is too involved a subject to be treated here in detail. Though I have given only a bare sketch, it seems promising to go on to a more detailed examination of the nature of 'affectedness' from this point.

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[3]For clarification, I have added 'affectee' arguments in the parenthesis which were not included in the original examples in Teramura (1982).

[4]However, the following well-known examples seem to remain problematic:

(i) a. Naomi-ga   otto-ni   sin-are-ta.
       Naomi-NOM husband-DAT die-PASS-PST

   'Naomi's husband died on her.'

   b. Ken-ga   ame-ni   hur-are-ta.
      Ken-NOM rain-DAT fall-PASS-PST

   'It rained on Ken.'

Since both *sin* ('die') and *hur* ('rain') are not regarded as volitional activities, the examples in (i) seem contrary to my hypothesis (218) and constraint (232).

Nevertheless, there are several reasons why the sentences in (i) do not seem to be compelling enough to serve as counterevidence. First, as Kageyama (1993) has observed, it is highly probable that the verb *sin* ('die') has the function VOL in its semantic representation. The point is made explicit by comparing this verb with its synonyms (i.e., *siboo-su-r* or *sikyo-su-r*) which are listed in the following:

(ii)   Naomi-no   otto-ga   sin-da/siboo-si-ta/sikyo-si-ta.
       Naomi-GEN husband-NOM die-PAST

       'Naomi's husband died.'

All the sentences in (ii) equally denote the event that Naomi's husband has died. What should be noted here is that the verb *sin* in question is different from the others in several respects. For instance, it has been observed that some particles such as the volitional *-(y)oo* in (iii) or the desiderative *-(i)tagar* in (iv) can only be suffixed to the verbs whose semantic representations involve the function VOL:

(iii) a. Naomi-ga   paatii-de   sawag-oo-to-si-ta.
        Naomi-NOM party-POSTP make a fuss-VOL-PART-do-PAST

   'Naomi tried to make a fuss.'

   b. Ken-ga   mado-wo   sime-yoo-to-si-ta.
      Ken-NOM window-ACC close-VOL-PART-do-PAST

   'Ken tried to close the window.'

(iv) a. Naomi-ga   paatii-de   sawag-itagat-ta.
        Naomi-NOM party-POSTP make a fuss-DES-PST

   'Naomi wanted to make a fuss at the party.'

   b. Ken-ga   mado-wo   sime-tagat-ta.
      Ken-NOM window-ACC close-DES-PST

   'Ken wanted to close the window.'

On the contrary, verbs whose semantic representations lack the function VOL (e.g., unaccusative verbs) are incompatible with these particles:

(v) a. *Ken-ga   taore-yoo-to-si-ta.
       Ken-NOM fall-VOL-PART-do-PAST

   b. *Ken-ga   taore-taga-tta.
      Ken-NOM fall-DES-PST

Certainly, the examples in (v) are made acceptable only in the special context such as Ken, who is an actor, tried to/wanted to 'fall down' on the stage. But such a pragmatic factor is of no immediate relevance here. The point is that only *sin* can be affixed by these particles:

5.2.2 Syntactic Passives and Lexical Passives

Next, let me turn to the third question posited in (170c) in the previous chapter, i.e., the reason why the transitive verb with 'affectee' subject such as *azukar*, which is repeated as (234a) in the following, prohibits syntactic passivization as in (234b):

(234) a. Uketukegakari-ga kyaku-kara   kityoohin-wo azukat-ta.
        receptionist-NOM customer-from valuables-ACC be enstrusted-PAST
        'The receptionist was entrusted valuables from the customer.'
        (=(160b))

     b. *Kityoohin-ga   uketukegakari-niyotte kyaku-kara   azuka-rare-ta.
        valuables-NOM receptionist-POSTP   customer-from be entrusted-PASS-PST
        (=(169b))

 (vi) a. Naomi-no otto-ga   sin-oo-to-si-ta.
        Naomi-GEN husband-NOM die-VOL-PART-do-PAST
        'Naomi's husband tried to kill himself.'
     b. *Naomi-no otto-ga si boo-si-yoo-to-si-ta.
     c. *Naomi-no otto-ga si kyo-si-yoo-to-si-ta.

 (vii) a. Naomi-no otto-ga   sini-tagat-ta.
        Naomi-GEN husband-NOM die-DES-PST
        'Naomi's husband wanted to die.
     b. *Naomi-no otto-ga si boo-si-taga-tta.
     c. *Naomi-no otto-ga si kyo-si-taga-tta.

Such contrast indicates that the verb *sin* should be distinguished from its synonyms in that its semantic structure has the function VOL.

However, such argument does not apply to the case of *hur* in (ib). It is obvious that the natural phenomena such as raining has nothing to do with volitionality. At present, I cannot say for certain what makes (ib) acceptable. Moreover, it is not so clear how productive this sort of expression is. Note the following example:

(viii)

    ??Ken-ga   kaze-ni huk-are-ta.
      Ken-NOM wind-DAT blow-PASS-PST
      'lit.: It blew on Ken.'

Some speakers seem to accept this sentence, but even those who accept it do not necessarily find an adversative reading in it. These examples seem to suggest that (ib) should be treated as purely 'idiosyncratic' expression, well-known though it is. Actually an argument along the same lines has been made by Teramura (1982), Sugimoto (1991), Kageyama (1993) and many others. Thus, it follows from what has been observed, that the examples in (i) cannot be counterexamples to my proposals here. Nevertheless, the productivity of indirect passives and mechanism of adversative reading call for further consideration. I will leave the matter open for further research.

I will start by comparing the sentence in (234a) with the syntactically passivized sentences of the ditransitive verb *azuke* ('entrust') in the following:

(235) a.   Kyaku-ga   uketukegakari-ni kityoohin-wo azuke-ta.   (=(160a))
        customer-NOM receptionist-DAT valuables-ACC entrust-PAST
        'The customer entrusted valuables to the receptionist.'

      b.   Kityoohin-ga   kyaku-kara/-niyotte   uketukegakari-ni azuke-rare-ta.
        valuables-NOM customer-from/POSTP receptionist-DAT entrust-PASS-PST
        'The valuables were entrusted to the receptionist from the customer.'

      c.   Uketukegakari-ga kyaku-kara   kityoohin-wo azuke-rare-ta.
        receptionist-NOM customer-from valuables-ACC entrust-PASS-PST
        'The receptionist was entrusted the valuables from the customer.'

All the sentences in (235) share the basic proposition, i.e., the transfer of the theme from the sender to the recipient. While (235a) describes the event from the view point of the agentive sender, (235b) denotes the same event focusing on the change of the location of the theme. Likewise (235c) is regarded as the description of the same event from the recipient's point of view. The point is that (234b) parallels (235c) in this respect.[5]

As I have observed in the previous section, the triunaccusative *mitukar* in (236a) also parallels the indirect passive sentence in (236c):

(236) a.   Ken-ga   sensei-ni   tabako-wo   mituk-a-tta.   (=(207))
        Ken-NOM teacher-DAT cigarette-ACC be found-PAST
        'Ken had his cigarette found by his teacher.'

      b.   Sensei-ga   Ken-no   tabako-wo   mituk-e-ta. (=(227a))
        teacher-NOM Ken-GEN cigarettte-ACC find-PAST
        'The teacher found Ken's cigarette.'

      c.   Ken-ga   sensei-ni   tabako-wo   mituk-e-rare-ta. (=(227b))
        Ken-NOM teacher-DAT cigarette-ACC find-PASS-PST
        'Ken was adversely affected by the teacher's finding his cigarette.'

Namely, the diunaccusative verbs such as *azukar* and the triunaccusative *mitukar*, whose semantic structures are characterized by the function AFFECTED, are expected

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[5]The only difference between (234b) and (235c) is the volitionality of the recipient.

to inherently encode the same relationship as the passivized sentences, thus it follows that these verbs prohibit further syntactic passivization. Actually, numerous previous studies seem to miss the point by regarding this constraint on passivization as idiosyncratic in nature. Instead, I will hypothesize that this constraint follows from the condition as follows:

(237) HYPOTHESIS 2:

When the verbs have semantic structures involve the function AFFECTED, their *wo*-marked objects do not undergo syntactic passivization.

I assume that the possible relationships between individual and event are classified into two basic relations which a wide range of verbs have in common as their core meaning: inherently active relation (i.e., the relation initiated by causer) represented by the function CAUSE in the LCS, and the relation of the opposite direction, i.e., inherently passive relation represented by the function AFFECTED.[6] The most unmarked method to encode the active relation will be syntactic causatives (i.e., addition of the causative morpheme *-sase*) while, that of the passive relation will be syntactic passives (i.e., the addition of the (in)direct passive morpheme *-(r)are*). However, as has been shown in numerous previous studies, Japanese (and presumably any language) has various alternative ways to encode causal relations, e.g., (di)transitive verbs whose semantic structures have been characterized by CAUSE. Thus, it seems reasonable to assume that there exist various alternative ways to encode the notion of 'affectedness' as well. One of the typical alternatives might be lexical items such as I have examined here, i.e., verbs denoting 'inherent passive' relationship, which are specified by the function AFFECTED in their semantic structures.

5.2.3 Locative Subjects

Lastly, I will mention the possibility of extending my analysis towards so-called 'locative' subject constructions. As I have shown above, (238a) is ungrammatical. What should be noted here, however, is the sentence in (238b) is perfectly acceptable:

(238) a. *Sigoto-ga Ken-ni mitukat-ta.

job-NOM Ken-DAT be found-PAST

'lit.: The job was found by John'

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[6]An argument along the same lines has also been suggested by Washio (1997: 56–60) in his analysis of the English verb *have* in causative/passive constructions.

    b.   Ken-ni   sigoto-ga mitukat-ta.
        Ken-DAT job-NOM be found-PAST
        'Ken came across the job.'

In (238b), *ni*-marked noun is interpreted as 'affectee', i.e., the person who is indirectly affected by the event where the job was found either by himself or someone else. Namely, *ni* in (238b) marks the location of the theme, i.e., the person who has got the job, but not necessarily the agent who found the job. The interesting point is that in basic word order, such a locative noun must appear in the sentence-initial position (note that the *ni*-marked noun in (238a) above cannot be interpreted as locative). Moreover, there is evidence to show that such a locative noun (i.e., 'Ken'), rather than the nominative marked theme (i.e., 'job'), corresponds to the grammatical subject:

(239) a.   Ken-ni   zibun-no sainoo-wo   ikas-er-u sigoto-ga mitukat-ta.
          Ken-DAT self-GEN talents-ACC suitable job-NOM be found-PAST
          'Ken came across the job which fits his talents.'

      b.   Ken-ni   oyomesan-ga zibun-no syussinkoo-kara   mitukat-ta.
          Ken-DAT bride-NOM   self-GEN alma mater-POSTP be found-PAST
          'Ken found a bride for himself from his own university.'

In Japanese, reflexive *zibun* is typically anteceded by the grammatical subject (see Shibatani, 1978). In the sentences in (239), the antecedent of the reflexive anaphor is Ken. Namely, the *ni*-marked nouns in these sentences are regarded as the grammatical subject. The basic word order as well as such *zibun* binding indicates that (238b) has a locative subject. To discuss this point fully is beyond the scope of my dissertation, but it seems promising to pursue locative inversion phenomena in relation to 'affectee' subject as in (238a).[7]

5.3 Summary

In this dissertation, I have explored the nature and status of semantic structures of verbs in the grammatical theory and clarify its interaction with argument structure through the detailed analysis of a range of voice alternation phenomena observed in Japanese verbs. The main purpose is to investigate the lexical representation of

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[7]For one attempt to analyze locative subject constructions in Japanese in terms of lexical mapping theory, see Imaizumi (1999).

the semantic structures of verbs and the mechanism of their syntactic realization by exploring the point on which the lexical semantic approach and the constraint-based lexicalist approach converge. Thus, my concern has been to present a theory of verbal semantics which is capable of describing a wide range of facts observed in Japanese, and of providing them with well-constrained, mathematically and logically explicit formalization. Now let me review my arguments and the specific proposals I have made in chapter 2 through 4.

Chapter 2 has presented the theoretical background assumed in this dissertation. Firstly, I have overviewed the structure of the lexicon whose internal structure is hierarchically organized (2.2). Mainly based on the framework developed in Sag and Wasow (1999), I explained the fundamental properties and technical apparatus of Head-driven Phrase Structure Grammar (HPSG) such as Feature Structures and Well-Formed Definitions (2.2.1), Lexical Types and Type Hierarchy (2.2.2), and Lexical Rules (2.2.3). Next, adopting this idea of the hierarchical lexicon, I have proposed a classification of Japanese verbs, where the verbs are classified into six distinct types in terms of their ARG-ST (2.3). I have also proposed a couple of general constraints which regulate the relationship between ARG-ST and VALENCE in accordance with the relative obliqueness of each argument, thus, it has been shown that once the value of ARG-ST is specified, the value of VALENCE is automatically obtained (2.4). Another characteristic of ARG-ST whose value is specified by EXT and INT list is that it does not refer to the specific label of thematic roles. Instead, I have employed the predicate decomposition approach (2.5.1), and proposed a set of primitive predicates which constitute the Lexical Conceptual Structures (LCS) of verbs (more specifically, *verbal lexemes*) (2.5.2). Finally, I have presented two proposals which will play an essential role in the following chapters. First, I have introduced the novel function AFFECTED to specify the relation between the individual (i.e., 'affectee') and the affecting event into the LCS of verbs (2.5.3). Second, I have incorporated the idea of HEAD EVENT in Pustejovsky's (1995) 'extended event structure' in the framework of Generative Lexicon into the LCS representations (2.5.4). In the following chapters, I have shown how such theoretical assumptions of LCS and HEAD EVENT offer an explanation for the various behaviors of verbs as well as constraints on a range of voice alternation phenomena at lexeme/word level.

Table 5: Various Subtypes of *das* and *de*

Verb	Class	LCS
de_0	*unaccusative*	$[\text{BECOME}([\text{BE}(\text{I},OUT)])]$
das_c	*transitive*	$[\text{CAUSE}([\text{APPLY}(\text{E},\text{I})],[\text{BECOME}([\text{BE}(\text{I},OUT)])])]$
de_{cr}	*unergative*	$[\text{CAUSE}([\text{APPLY}(\text{E},\text{E})],[\text{BECOME}([\text{BE}(\text{E},OUT)])])]$
de_{cd}	*unaccusative*	$[\text{CAUSE}([\text{APPLY}(\text{D},\text{I})],[\text{BECOME}([\text{BE}(\text{I},OUT)])])]$
das_a	*transitive*	$[\text{AFFECTED}(\text{E},[\text{BECOME}([\text{BE}(\text{I},OUT)])])]$
de_{ad}	*unaccusative*	$[\text{AFFECTED}(\text{D},[\text{BECOME}([\text{BE}(\text{I},OUT)])])]$

Chapter 3 through chapter 5 discussed various grammatical phenomena concerning voice alternation in Japanese: lexical compound verbs, non-agentive subject constructions, and indirect passives, which were intended to demonstrate the descriptive adequacy and the wide applicability of the LCS-based approach of this dissertation.

Chapter 3 examined complex event structures of lexical compound verbs. Specifically, Verb-Verb compounds where the verb *das* and *de* appear as the second verb were dealt with. First, following Kageyama's (1993) five diagnostic tests, I have examined the distinction between lexical compounds and syntactic compounds and shown that *das* compounds which denote outward movement (i.e., MOVEMENT type) should be analyzed as lexical compounds, while *das* compounds which marks the beginning of certain events (i.e., ASPECTUAL type) as syntactic compounds. More supporting evidence based on the scope of adverbial modification was offered (3.2).

Next, section 3.3 has observed the behaviors of *das* and *de* as independent verbs. It has been shown that the transitive/intransitive dichotomy fails to capture the holistic interaction between the various subtypes of these verbs. Instead, I have proposed the LCS-based classification of such subtypes which clarifies the interrelation between *das* and *de*. In particular, the introduction of the semantic functions CAUSE and AFFECTED into the semantic structures of verbs makes it possible to array all of these subtypes of *das* and *de* in the interactional voice alternation system, which is summarized in Table 5 (=Table 2 in chapter 3 repeated here for convenience). Particularly, the semantic similarity between the transitive *das* with 'affectee' subject (i.e., das_a) and the unaccusative *de* (i.e., de_{ad}) is neatly captured.

Each of the subtypes of *das* and *de* is based on the LCS of de_0, in which the simplex

event specifies the appearance of the argument (i.e., [BECOME([BE(I,*OUT*)])]). The LCS of *das*$_c$ is obtained by causativizing this simplex event, while *das*$_a$ corresponds to the passivized (to be more precise, 'affectivized') version of this simplex event. On the other hand, *de*$_{cr}$ is obtained by the combination of causativization and reflexivization of the simplex event, *de*$_{ad}$ by the combination of passivization and demotion, and *de*$_{cd}$ by the combination of causativization and demotion.

Section 3.4 has dealt with the case where such subtypes of *das* or *de* appear as V2 of lexical compounds. I have discussed that compound verbs which take causative *das*$_c$ or *de*$_{cr}$ as V2 are derived through the lexical rule of FUNCTIONAL APPLICATION type, where the LCS of V1 is embedded in that of V2. On the other hand, I have proposed that compound verbs which take affective *das*$_a$, *de*$_{ad}$ or *de*$_0$ as V2 are derived through the lexical rule of UNIFICATION type, which further specifies the LCS of V1. In addition, having observed the combinatory patterns allowed in V1+*das/de* compounds, I have proposed a general constraint on lexical compounding: when the complex event structures of the lexical compound verbs have more than two head events, they must occur continuously along the time sequence order (=FOCUS CONTINUITY CONSTRAINT (FCC)).

Chapter 4 dealt with non-agentive subject constructions. In section 4.2, I have briefly reviewed Dowty's (1991) model of Thematic Proto-Roles and moved onto the analyses of a group of verbs which seem to violate the lexicalization patterns of his model. Specifically, I have examined the constructions which take the recipient subject (e.g., *azukar*, *osowar*, etc.) in section 4.3 and the affectee subject (e.g., *mitukar*, *tukamar*) in section 4.4. They characteristically take *wo*-marked objects in spite of their intransitive morpheme *-ar*. I have shown that such a seemingly irregular relation between their meaning (i.e., passive-like) and their valency can be analyzed in a unified way by assuming the function AFFECTED in their semantic structures. In addition, through the examination of some characteristic behaviors of the verbal lexeme *mitukar*, I have proposed another subtype of *unaccusative*, which takes triple internal arguments (i.e., *triunaccusative*). Having presented several supportive evidence for such a subtype of *unaccusative*, I have suggested the further applicability of the analysis towards a phrasal level. Finally, section 4.5 has mentioned the possibility that the LCS-based approach thus developed will offer a unified analysis to a wider range of affectee subject constructions such as possessor subject constructions (4.5.1)

and several idiomatic expressions (4.5.2).

5.4   Possible Applications

Next, I would like to mention some applications of the assumptions developed here.

5.4.1   Acquisition of Argument Structures

As has been pursued in Pinker (1984, 1989) and many others, empirical data obtained in language acquisition research offers considerable evidence for the grammatical theories and components assumed in them. In this dissertation, I have assumed the function AFFECTED, which specifies 'noncanonical' relations between LCS (i.e., thematic information) and ARG-ST or VAL (i.e., grammatical information) which yields non-agentive subjects. Thus, if my assumption is on the right track, it is expected that the acquisition of these verbs should be delayed. The following quotation from Pinker (1984) bears out this point:

> Verbs that intrinsically violate the canonical mappings (e.g., *receive, please, strike as, undergo*) are virtually nonexistent in children's speech, and Slobin (1984a) notes that the Japanese equivalent of *receive*, whose recipient or goal argument takes nominative case, is acquired late by Japanese children. (Pinker 1984: 307)

Such experimental evidence seems to support the distinction between canonical and noncanonical lexical forms, and thus to offer some justification for the analysis assuming the function AFFECTED as an opposite to CAUSE. It is promising to pursue the collaborative study of theory and acquisition along these lines.

5.4.2   Cross-linguistic Investigation and Universality

Cross-linguistic investigation is another foreseeable extension of this approach. For instance, the passive and existential usage of *have*, or *get*-passives in English seems to be a good place to start with. The analysis of complex events offered in chapter 3 is also expected to shed light on the general constraint(s) of resultative constructions in various languages. Moreover, it has been observed that several Algonquian languages (e.g., Cree, Fox) demonstrate constructions where the grammatical objects 'registers a subjective notion of AFFECTED participant' (Dahlstrom 1999). In particular, the

sentences involving relational verbs in Fox have been observed to show striking similarities with adversative passives in Japanese (Amy Dahlstrom p.c., 1999). Although my information on these languages is limited, I find it highly suggestive if these phenomena which are observed in quite unrelated languages such as Fox and Japanese, can be treated in a unified way by assuming the function AFFECTED.

Sag and Szabolcsi (1992), quoted at the very beginning of this dissertation has also mentioned, "... lexical matters ... will be of central concern well into the next century, not just within the field of linguistics, but also in the neighboring disciplines where the study of language has assumed an increasingly important role ..." (Sag and Szabolcsi 1992: vii). Hopefully, the analyses and hypotheses developed here will be the first step toward a challenging look at the unexplored areas concerning the notion of 'affectedness' and its realization in natural language.

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