

# Japanese “Verbal Noun and *suru*” Constructions

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Proceedings of the workshop on Multi-Verb constructions  
Trondheim Summer School 2003

Norwegian University of Science and Technology, Trondheim

Dorothee Beermann and Lars Hellan (Editors)

2003

## **Abstract**

This paper proposes an HPSG analysis for the light verb constructions in Japanese. The analysis focuses on the form Verbal Noun and *suru* (VN+*suru*, i.e., incorporated form). The proposing classification of the Japanese VNs is based on Ohara (2000), and the HPSG analysis we propose draws on Choi and Wechsler (2001).

# 1 Introduction

The Japanese Verbal Noun (VN) and *suru* constructions (VN+*suru*) consist of two components: the Japanese VN and the verb *suru*. The Japanese VN illustrates an event and may have argument taking properties. In addition, the Japanese VNs show also verbal properties. The verb *suru* ‘do’ could be either a light (or semantically incomplete) verb or a heavy verb (normal transitive verb).

There are two forms of Japanese VN+*suru* constructions: the incorporated form and the unincorporated form. In the incorporated form (see 1a), the VN BENKYOO occurs directly in front of the verb *suru* without a case particle between them. In the unincorporated form (1b), on the other hand, the VN BENKYOO appears with an accusative marking particle *o*, combining with the verb *suru* as a normal complement. (VNs in the examples below are written in small capitals.)

- (1) a. Taro-ga eigo-o BENKYOO sita.  
Taro-Nom English-Acc study did
- b. Taro-ga eigo-no BENKYOO-o sita.  
Taro-Nom English-Gen study-Acc did  
‘Taro studied English.’

In addition, the object of the event BENKYOO ‘study’, namely *eigo* ‘English’ in the incorporated form, appears with the accusative particle *o*. In this case, we assume that the argument of the VN BENKYOO appears on the sentential level. In the unincorporated form, on the other hand, the noun English occurs as a modifier of the VN BENKYOO and it is marked by the genitive particle *no*.<sup>1</sup>

Although the surface structure of the two forms in (1a) and (1b) is different, they are assumed to denote the same meaning: ‘Taro studied English’. Through this translation one can see that the verb *suru* has no significant contribution to the meaning of the sentence; that is, the main verb *suru* is semantically light, and the VN BENKYOO decides for the meaning of the sentence. Because of this, the VN+*suru* constructions in both forms are often treated in the literature as light verb constructions.

In this paper, we present an HPSG (Head-driven Phrase Structure Grammar, Pollard and Sag [PS87, PS94]) analysis for the Japanese VN+*suru* constructions of the incorporated form. We are treating this construction as a light verb construction (verb-like VN and a light verb *suru* combination), whereas VN+*suru* constructions of the unincorporated form we are treating as the combination of the (less verb-like) VN and a heavy verb *suru*. In our analysis, the incorporated and the unincorporated forms in (1) denote “almost the same meaning”, but not the same. The “almost the same meaning” in our account means that both the incorporated and the unincorporated forms of the

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<sup>1</sup>The function of the particle *no* is different from that of other case marking particles, such as *ga* ‘Nom(inative)’ or *o* ‘Acc(usative)’. The particle *no* combines with nouns and functions as a modifier to nouns.

VN+*suru* constructions contain the same verbal predicate information in their semantics and share the same relationship between the event they denote and its participants, but their main predicates are different. In our account, the head predicate of the incorporated form in (1a) is the VN BENKYO ‘study’, while that of the unincorporated form in (1b) is the heavy verb *suru* ‘do’.

Our analysis draws on two related works: Ohara [Oha00], and Choi and Wechsler [CW01]. Ohara [Oha00] has proposed an LFG (Lexical-Functional Grammar, Kaplan and Bresnan [KB82]) analysis for the Japanese light verb constructions. She has also provided a nominal classification of the Japanese VNs, which is assumed to be relevant to the determination of the co-occurrence pattern of the VN+*suru* constructions. Choi and Wechsler [CW01], on the other hand, have proposed an HPSG analysis for the Korean light verb construction. Their approach is based on *mixed categories* (see Choi [Cho99] and Malouf [Mal98, Mal00]) and *argument transfer* (see Abeille et al [AGS98] and Hinrichs and Nakazawa [HN94]).

This paper is organized as follows: in Section 2, the main properties of the Japanese VN and the verb *suru* are briefly presented. In Section 3, we focus on the main points of the approaches of Ohara [Oha00] and Choi and Wechsler [CW01] comparing at the end of the section these approaches to our account. In Section 4, we present the HPSG analysis for the Japanese VN+*suru* constructions of the incorporated form. Finally, in Section 5, we briefly sketch an analysis for the VN+*suru* constructions of the unincorporated form.

## 2 VN and *suru* in Japanese

In this section, we shortly introduce the properties of the main components of the VN+*suru* constructions. We start with examining the verb *suru*. The verb *suru* could be either a light verb or a heavy verb in the Japanese VN+*suru* constructions. Here we concentrate only on the characteristics of the light verb. Thereafter, we examine the mixed categorical nature of the Japanese VNs and finally, in the next section we provide a new classification of the Japanese VNs.

### 2.1 Light Verbs

The term “light verb” first occurs in Jespersen [Jes54] and Cattell [Cat84]. In examples in (2), we examine some English light verbs (the examples are from Cattell [Cat84]).

- (2) a. Jennifer **made** a dash across the road.
- b. Bill **gave** a cough.
- c. Sue **had/took** a look at the book.
- d. Peter **did** a dance on top of the piano.

The verbs **make**, **give**, **have**, **take** and **do** above are the main verbs in each of the sentences in (2), but they are not the main predicates of the sentences. Instead, the post-verbal elements (*a dance* in (2a), *a cough* in (2b), and so on) determine the semantics of the sentences in (2). Thus, the verbs in (2) are thematically “light” or incomplete: i.e., they do not carry any significant semantic information, such as verbal predicate information or argument structure information. That is why these verbs are called “light verbs” in the literature.

In Grimshaw and Mester [GM88], the Japanese verb *suru* ‘do’ is analyzed as a light verb. Like the English light verbs, *suru* ‘do’ does not make any significant contribution to the meaning of the sentence. Instead, the Japanese VN is the main predicate of the sentence, and determines the number and the type of the arguments that appear in the sentence. Example (3) shows this. If the VN is omitted (see (3b)), or replaced with the pronoun *sore* ‘that’ (see 3c), the sentences render ungrammatical.

- (3) a. Taroo-ga eigo-o BENKYOO sita.  
 Taro-Nom English-Acc study did  
 ‘Taro studied English.’
- b. \*Taroo-ga eigo-o sita.  
 Taro-Nom English-Acc did
- c. \*Taroo-ga eigo-o sore sita  
 Taro-Nom English-Acc that did

Thus, the verb *suru* is assumed to be thematically “light” or incomplete, giving rise to the next question of what the function of *suru* in Japanese light verb constructions is. The light verb *suru* is responsible for representing inflectional information: tense (cf., (4a), (4b)), causative (4c), passive, politeness on speech level (4d) and negation (4e).

- (4) a. Taroo-wa eigo-o BENKYOO suru.  
 Taroo-Top English-Acc study do  
 ‘Taro studies English.’
- b. Taroo-wa eigo-o BENKYOO si-ta.  
 Taro-Top English-Acc study do-Past  
 ‘Taro studied English.’
- c. Hanako-wa Taroo-ni eigo-o BENKYOO sa-se-ta.  
 Hanako-Top Taro-Dat English-Acc study do-Cause-Past  
 ‘Hanako made Taro study English.’
- d. Taroo-wa eigo-o BENKYOO si-mashi-ta.  
 Taro-Top English-Acc study do-Polite-Past  
 ‘Taro studied English.’

- e. Taro-wa eigo-o            BENKYOŌ si-nakat-ta.  
 Taro-Top English-Acc study      do-Neg-Past  
 ‘Taro didn’t study English.’

The properties of the Japanese light verb *suru* are the following:

- it does not make any significant contribution to the meaning of the sentence;
- it does not determine the number and the type of the argument(s) that appear in the sentence;
- it supports a VN, which hosts inflectional endings in Japanese light verb constructions.

## 2.2 The Japanese VN

The Japanese VN has the properties of nouns: it does not host inflectional endings; it hosts a case marking particle such as *o* (see (1b)). The VN, though, does not only have the characteristics of a noun, but also the properties of a verb. If the VN appears with the light verb *suru* in the sentence, it functions as the main predicate of the sentence and specifies the argument(s) appearing in the clause. In addition, the VN occurring with the light verb *suru* cannot be modified by an adjectival phrase (*subayai* ‘quick’ in (5a)), but can be modified by an adverbial modifier such as *subayaku* ‘quickly’ in (5b).

- (5) a. \*Taro-ga piza-o      subayai HAITATSU sita.  
 Taro-Nom pizza-Acc quick    delivery    did
- b. Taro-ga piza-o      subayaku HAITASU sita.  
 Taro-Nom pizza-Acc quickly    delivery    did  
 ‘Taro delivered pizzas quickly’

Although the VN is (morphologically) a noun, it has the functional properties of a verb, as well. In Japanese light verb constructions, the VN subcategorizes for the arguments, it can be modified by an adverbial modifier, but cannot be modified by an adjectival modifier. In short, the Japanese VN has a mixed categorical nature: it is a noun with argument taking properties.

The Japanese light verb *suru* bears incomplete semantic information, which can be completed by the Japanese VN. Therefore, it is the most common environment for Japanese VNs to appear with the light verb *suru*. According to Ohara [Oha00], there are three different categories of the Japanese VN+*suru* constructions. In the next section, we examine the Japanese VN+*suru* constructions more closely, following Ohara [Oha00].

### 3 Previous Analyses

In this section, we give a general overview of the approaches of Ohara [Oha00] and Choi and Wechsler [CW01] and then we sum up the different standpoint of our approach to theirs.

#### 3.1 Ohara (2000)

The LFG approach to the Japanese light verb constructions proposed in Ohara [Oha00] treats both the incorporated and the unincorporated forms of Japanese VN+*suru* constructions with a single mechanism. She inserts two extra processes, “argument fusion” (see Alsina [Als96] and Butt [But95]) and “predicate composition” (Alsina [Als96, ABS97] and Butt [But95]), and illustrates that both constructions in (1) have the same meaning. Ohara classifies the Japanese VN+*suru* constructions in three different pairs, according to the meaning she assumes that they convey.

**I.** The incorporated and unincorporated forms denote the same meaning (see (1)).

**II.** The incorporate and unincorporated forms denote different meanings:

- (6) a. Hanako-ga sakana-o RYOURI sita.  
Hanako-Nom fish-Acc cooking did  
'Hanako cooked fish.'
- b. Hanako-ga sanaka-no RYOURI-o sita.  
Hanako-Nom fish-Gen cooking-Acc did.  
'Hanako cooked a dish using fish.'

**III.** There exists only an unincorporated form:

- (7) a. \*Hanako-ga biyooseikei-o SYUJYUTSU sita.  
Hanako-Nom cosmetic.surgery-Acc operation did.
- b. Hanako-ga biyooseikei-no SYUJYUTSU-o sita.  
Hanako-Nom cosmetic.surgery-Gen operation-Acc did.  
'Hanako got an operation of cosmetic surgery.'

The example for **I** is ‘Taro studies English’ (see examples in (1)). In Ohara [Oha00], both (1a) and (1b) denote the same meaning. The examples for the second and third categories of minimal pairs are shown in (6) and (7). (6a) and (7a) are the incorporated forms, and (6b) and (7b) are the unincorporated forms. It is obvious that there is a meaning difference between (6a) and (6b) in **II**. In **III**, the incorporated form (7a) is ungrammatical. Therefore, there exists only the unincorporated form for the VN SYUJYUTSU in (7).

Although the surface structure of the VNs in Japanese VN+*suru* constructions of (1), (6) and (7) is the same, the properties of the VN vary in the unincorporated forms.

(Note that the property of the VNs in the incorporated form remains constant.) We can see these variations of the VNs through the different relationships between the unincorporated and the corresponding incorporated forms above.

In order to represent this variety of Japanese VNs, Ohara [Oha00] has proposed a VN classification for Japanese, following Kageyama [Kag93], which is based on the nominal classification for event nominals proposed in Grimshaw [Gri90]. Let us shortly review the three event nominals (complex event nominals, result event nominals and simple event nominals), and their corresponding examples in English as presented in Grimshaw [Gri90].

- (8) a. The examination of the patient took a long time. (complex event nominal)
- b. The exam was on the table. (result event nominal)
- c. The exam took a long time. (simple event nominal)

There is a well-known distinction between the process and the result nominals. The process nominal illustrates a process or an event, while the result nominal refers to a concrete entity which is a result or an output of a process. The noun “examination” in (8a) is a process nominal, while “exam” in (8b) is a result nominal. The distinction between the process nominals and the result nominals corresponds to the distinction of Grimshaw’s nominal classification for the complex event nominals and the result event nominals: the complex event nominals refer to the process nominal, while the result event nominals to the result nominals. In addition, a simple event nominal indicates an event as an entity (see 8c). The property of the complex event nominals is that they carry argument structure information. The result nominals and the simple event nominals, in contrast, do not have argument structure and do not require arguments.

Now we can go back to the Japanese VN classification. According to Ohara [Oha00], the Japanese VNs can be classified on the basis of Grimshaw’s three classes of event nominals. The following definitions are from Ohara [Oha00] for the event nominals with respect to the Japanese VN+*suru* constructions:

- The **complex event nominal** illustrates a process or an event. It has argument structure information and it can occur with a “light” verb *suru* in both the incorporated and the unincorporated forms.
- The **result event nominal** refers to the concrete entity, which is a result or an output of a process and it cannot occur with the verb *suru* at all.
- The **simple event nominal** indicates an event as an entity and can appear with the “heavy” verb *suru* only in the unincorporated form.

Like Grimshaw [Gri90], in Ohara [Oha00], only the complex event nominals bear argument structure information, but the simple event nominals and the result event nominals do not. According to Ohara [Oha00], the classification of the Japanese

VNs into these three classes of the event nominals is relevant to the determination of the VN+*suru* construction possibilities. The co-occurrence pattern for the Japanese VN+*suru* constructions as proposed in Ohara [Oha00] is shown in Table 1.

Table 1: Co-occurrence pattern of VN+*suru* constructions in Ohara(2000)

	Result event nominals	Simple event nominals	Complex event nominals
Incorporated form	no	no	yes
Unincorporated form	no	yes	yes

In her analysis, the result event nominals cannot occur with the *suru* at all. The simple event nominals can occur with the heavy verb *suru* only in the unincorporated form. The complex event nominals can appear with the light verb *suru* either in the incorporated or the unincorporated form.

Table 2: VN and the verb *suru* combination pattern for **I**, **II** and **III** in Ohara (2000)

	incorporated form	unincorporated form
<b>I</b> : same meaning	complex EN+light <i>suru</i>	complex EN+light <i>suru</i>
<b>II</b> : different meaning	complex EN+light <i>suru</i>	simple EN+heavy <i>suru</i>
<b>III</b> : only unincorporated form	no incorporated form	simple EN+heavy <i>suru</i>

The relationship among the Japanese VN+*suru* construction pairs and their combination patterns in Ohara [Oha00] are summarized in Table 2. As shown in this, both the incorporated and the unincorporated forms are combinations of the complex event nominal VN, which bears argument structure information, and the light verb *suru*. Therefore, both forms are treated as light verb constructions (i.e., the main predicate information of both forms is contained in the VN, not in the light verb *suru*) and denote exactly the same meaning irrespective of the surface structure difference between them. This is the first category of the pair of the VN+*suru* constructions (see **I**) that we have mentioned before. In **II**, the incorporated form is the light verb construction (the complex event nominal VN and the light verb *suru* combination), like in **I**,

and the corresponding unincorporated form is the simple event nominal VN and the heavy verb *suru* combination.<sup>2</sup> Therefore, they denote different meanings. Finally, the unincorporated form in **III** is the simple event nominal VN and the heavy verb *suru* combination. Because the simple event nominal VN bears no argument structure information, the corresponding incorporated form does not exist.

### 3.1.1 Our Assumptions

Unlike Ohara [Oha00], we assume that the pair of the incorporated and the unincorporated forms in category **I** of the Japanese VN+*suru* constructions denotes “almost the same meaning”, but not the same. What does “almost the same meaning” in our approach exactly mean? Here are three criteria:

1. same verbal predicate information;
2. same event and participant relationship, and
3. main predicate of the sentence or not.

Let us examine each criterion above in detail. First, both the incorporated and the unincorporated forms of the VN+*suru* constructions contain common verbal predicate information in their semantics. In the ‘Taro studied English’ example in (1), for instance, both forms contain the event “study” and this event needs two participants, an actor and an undergoer. Secondly, both forms denote the same participants of their common event: the actor of the event “study” is “Taro” and the undergoer of that is “English”. Finally, we assume that the main predicate of both forms in the Japanese VN+*suru* constructions are different. The head predicate in the incorporated form (1a) is BENKYO “study” and that of the unincorporated form (1b) is *suru* “do”.

In our account, all VNs in the incorporated form are complex event nominals and *suru* is a light verb. Therefore, the VN+*suru* construction in the incorporated form is in our account the light verb construction. All the VNs in the unincorporated form, on the other hand, are simple event nominals and *suru* is a heavy verb. These constructions are for us complex predicates.

In Figure 1, we present the Japanese VN classification we assume here. Following Ohara [Oha00], we assume that the Japanese VNs may belong to three classes of event nominals: complex event nominals, simple event nominals and result event nominals. We treat all VNs in the incorporated form as complex event nominals, which have more verb-like properties than VNs in the unincorporated form. All VNs in the unincorporated form are simple event nominals that may appear with the heavy verb *suru*. We assume that the classification of the Japanese VNs is a relatively flexible one. The Japanese VNs are influenced by the arguments they co-occur with and can

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<sup>2</sup>Note that the combination of the complex event nominal and the light verb *suru* in the unincorporated form is assumed here not to exist, although the same VN+*suru* in the incorporated form exists and this VN bears argument structure information.

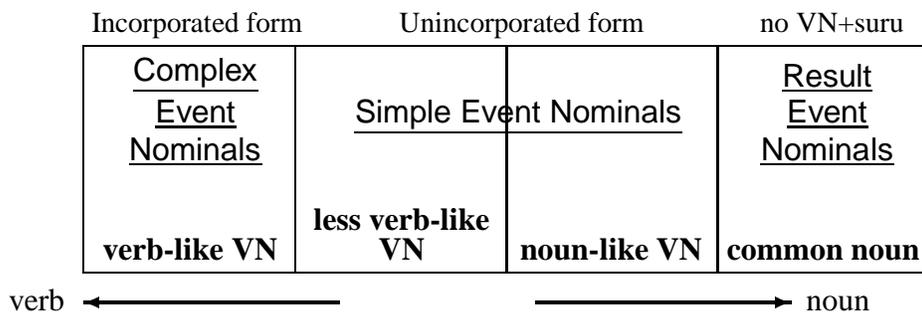


Figure 1: Proposed Japanese VN classification

change their nature to more verb-like in the incorporated form and to less verb-like in the unincorporated form.

In order to illustrate the meaning relevance between the incorporated and the corresponding unincorporated form of the Japanese VN+*suru* construction pair **I**, such as in (1), we should redefine the simple event nominals. We assume that some simple event nominals, whose nature is less verb-like, may bear argument structure information. Through this redefinition, we can represent that the incorporated and the unincorporated forms denote almost the same meaning. In **II**, the incorporated form is like **I**, that is, there is the combination of the verb-like VN and the light verb *suru*. The nature of the VN in the unincorporated form **II** is different from that of **I**: the noun-like VN has fewer verbal properties than the less verb-like VN in the unincorporated form in **I**. We assume that the Japanese VN in the unincorporated form for **II** has no argument structure information unlike that for **I** (see more precise illustration in the last section). Therefore, both forms denote different meanings. Some noun-like VNs have no corresponding argument taking VN (i.e., verb-like VN). This is the third pair of Japanese VN+*suru* constructions (see **III**). In Table 3, we sum up our proposal for the Japanese VN and the *suru* verb combinations in both forms for the three different pairs **I**, **II** and **III**:

Table 3: VN and the verb *suru* combination pattern for **I**, **II** and **III**

	incorporated form	unincorporated form
<b>I</b>	complex EN+light <i>suru</i>	simple EN(less verb-like VN)+heavy <i>suru</i>
<b>II</b>	complex EN+light <i>suru</i>	simple EN(noun-like VN)+heavy <i>suru</i>
<b>III</b>	no incorporated form	simple EN(noun-like VN)+heavy <i>suru</i>

### 3.2 Choi and Wechsler (2001)

Choi and Wechsler [CW01] propose an HPSG analysis for the Korean light verb construction. They work with a similar example in Korean ‘John studied English’.

- (9) John-i yenge-lul kongpu-lul ha-yess-ta  
John-Nom English-Acc study-Acc do-past-Dec  
‘John studied English.’

This example in Korean is in some sense a mixed case of the incorporated and the unincorporated forms in Japanese (cf., (1)). The accusative marked main predicate *kongpu* ‘study’ combines with a Korean light verb *ha-ta* ‘do’. This looks similar to the unincorporated form. But the object of the event “study” is realized on the sentential level, such as in the incorporated form in Japanese. Irrespective of the difference in the syntax of the relevant constructions in Korean and Japanese, we draw on their mechanisms for the analysis of the Japanese VN+*suru* constructions of the incorporated form that we present in the next section.

## 4 The Analysis

In this section, we present an HPSG analysis for the Japanese VN+*suru* constructions of the incorporated form. First, we present the lexical signs for the verb-like VN<sup>3</sup> BENKYOO and the light verb *suru* and then the analysis for (1a).

### 4.1 Lexical Sign

Following the analysis of Choi and Wechsler [CW01], we assume a sort *argument* (see Przepiórkowski [Prz98]) that posits a synsem-valued ARGUMENT and the binary REALIZED (see 10). The arguments which are expressed within the maximal phrases of their head are marked [REALIZED +]. In contrast, the arguments which are unsaturated are marked [REALIZED –]. In this view, all valence features are lists of objects of sort *argument*.

- (10)  $\left[ \begin{array}{ll} \textit{argument} & \\ \text{ARGUMENT} & \textit{synsem} \\ \text{REALIZED} & \textit{bool} \end{array} \right]$

The VN is the main predicate, if it occurs with a light verb *suru* in the sentence. That is, the main predicate, which is a VN, bears the information about the type and the number of the arguments appearing in the sentence. Therefore, the feature structure of the verb-like VN BENKYOO (see Figure 2) contains the semantic information and the argument structure information. Its semantic information is the same as that of

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<sup>3</sup>Note that the VNs in the incorporated form for us are all verb-like.

the transitive verb. The SUBJECT feature (SUBJ in Figure 2) has the same index as the ACTOR. The VN BENKYOO needs one nominal phrase (NP) with an accusative marking particle *o* as its complement, which also denotes the undergoer of the event “study”. Therefore, the COMPS list of BENKYOO in Figure 2 contains one object whose sort is *argument* (the ARGUMENT feature is ARG and the REALIZED feature is REAL in Figure 2), and it has the same index as the UNDERGOER (UND in Figure 2).

$$\left[ \begin{array}{l} \text{SUBJ } \langle \text{NP}_i \rangle \\ \text{COMPS } \left\langle \left[ \begin{array}{l} \text{ARG } \text{NP}_{[-o]j} \\ \text{REAL } - \end{array} \right] \right\rangle \\ \text{SEM } \left[ \text{RESTR } \left\langle \left[ \begin{array}{l} \text{REL } \textit{study} \\ \text{ACTOR } i \\ \text{UND } j \end{array} \right] \right\rangle \right] \end{array} \right]$$

Figure 2: The feature structure verb-like VN BENKYOO

The lexical sign for the light verb *suru* is shown in Figure 3.

$$\left[ \begin{array}{l} \text{SUBJ } \langle \text{NP}_i \rangle \\ \text{COMPS } \left\langle \left[ \text{ARG } \boxed{n} \text{NP} \right], \dots, \left[ \text{ARG } \boxed{m} \text{NP} \right], \text{VN } \left[ \begin{array}{l} \text{SUBJ } \langle \text{NP}_i \rangle \\ \text{COMPS } \left\langle \left[ \text{ARG } \boxed{1} \right], \dots, \left[ \text{ARG } \boxed{m} \right] \right\rangle \\ \text{SEM } \left[ \text{RESTR } \langle \boxed{0} \rangle \right] \end{array} \right] \right\rangle \\ \text{SEM } \left[ \text{RESTR } \left\langle \boxed{0} \left[ \begin{array}{l} \text{REL } \textit{event} \\ \text{ACTOR } i \end{array} \right] \right\rangle \right] \end{array} \right]$$

Figure 3: The feature structure of light verb *suru*

Since the light verb *suru* is an incomplete predicate and needs support from a VN, the ARGUMENT  $\boxed{n}$  ( $[\text{ARG } \boxed{n} \text{NP}]$  in Figure 3) in the feature structure of the light verb *suru* is not yet combined with the main predicate. Moreover, the Japanese light verb *suru* assigns an actor proto-role (see Dowty [Dow91] and Davis [Dav01]) to its subject, exactly like the Korean light verb *ha-ta*. So the indices of the SUBJECT of the VN and *suru* and the ACTOR in the RESTRICTION feature (RESTR in Figure 3) in SEMANTICS (SEM) are identical.<sup>4</sup> In this feature structure of *suru*, all arguments of the

<sup>4</sup>We follow the HPSG representation of Sag and Wasow [SW99].

main predicate can transfer to the COMPS list of the light verb.

Finally, we present the analysis for the Japanese VN+*suru* constructions in the incorporated form (1a). After combining the verb-like VN BENKYOO and the light verb *suru* (see the feature structure of BENKYOO-*sita* in Figure 4), the value of the feature REALIZED (REAL in Figure 4) in the COMPS list of the VN is “-”, but the transferred argument (NP[-o] in the COMPS list) from the VN has the value [REAL +].

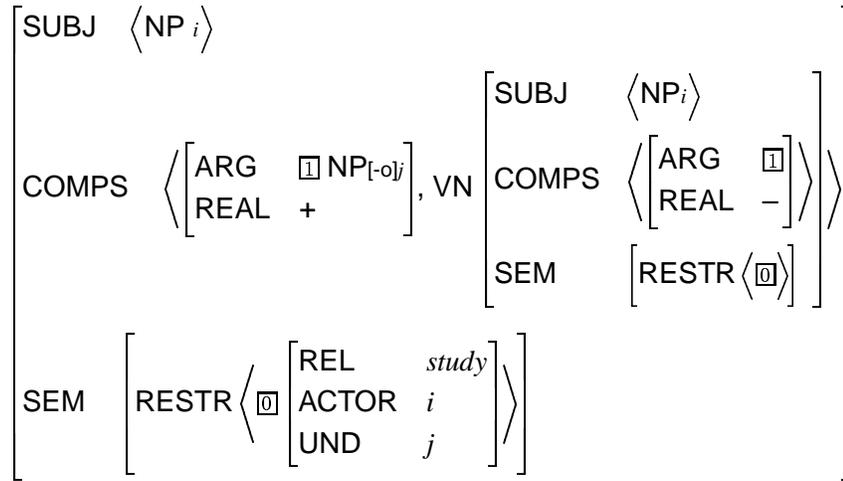


Figure 4: The feature structure of BENKYOO-*sita*

Thereafter, the accusative NP object *eigo-o* is combined with the verb *benkyoo-sita* by unification of the COMPS list of *benkyoo-sita* with the noun *eigo-o* itself. Finally, the subject *Taroo-ga* combines with the VP to form a sentence. The full analysis for (1a) is presented in Figure 5.

Through this account, we represent the co-operative function between the Japanese VN and the light verb *suru*. What we have presented above is the HPSG approach for the simplest and most frequent transitive VN+*suru* constructions. There are also some other variations related to these constructions: the unaccusative VN+*suru* constructions (see (11)) and the ditransitive VN+*suru* constructions (see (12)). In (11) and (12), the incorporated and the unincorporated forms are assumed to also denote almost the same meaning.

- (11) a. Jimen-ga      TOOKETSU sita  
           Ground-Nom freeze      did
- b. Jimen-ga      TOOKETSU-o sita  
           Ground-Nom freeze-Acc      did  
           ‘The ground froze.’
- (12) a. Shishou-ga deshi-ni hiden-o      DENJYU sita  
           Master-Nom student-to secret-Acc initiate      did

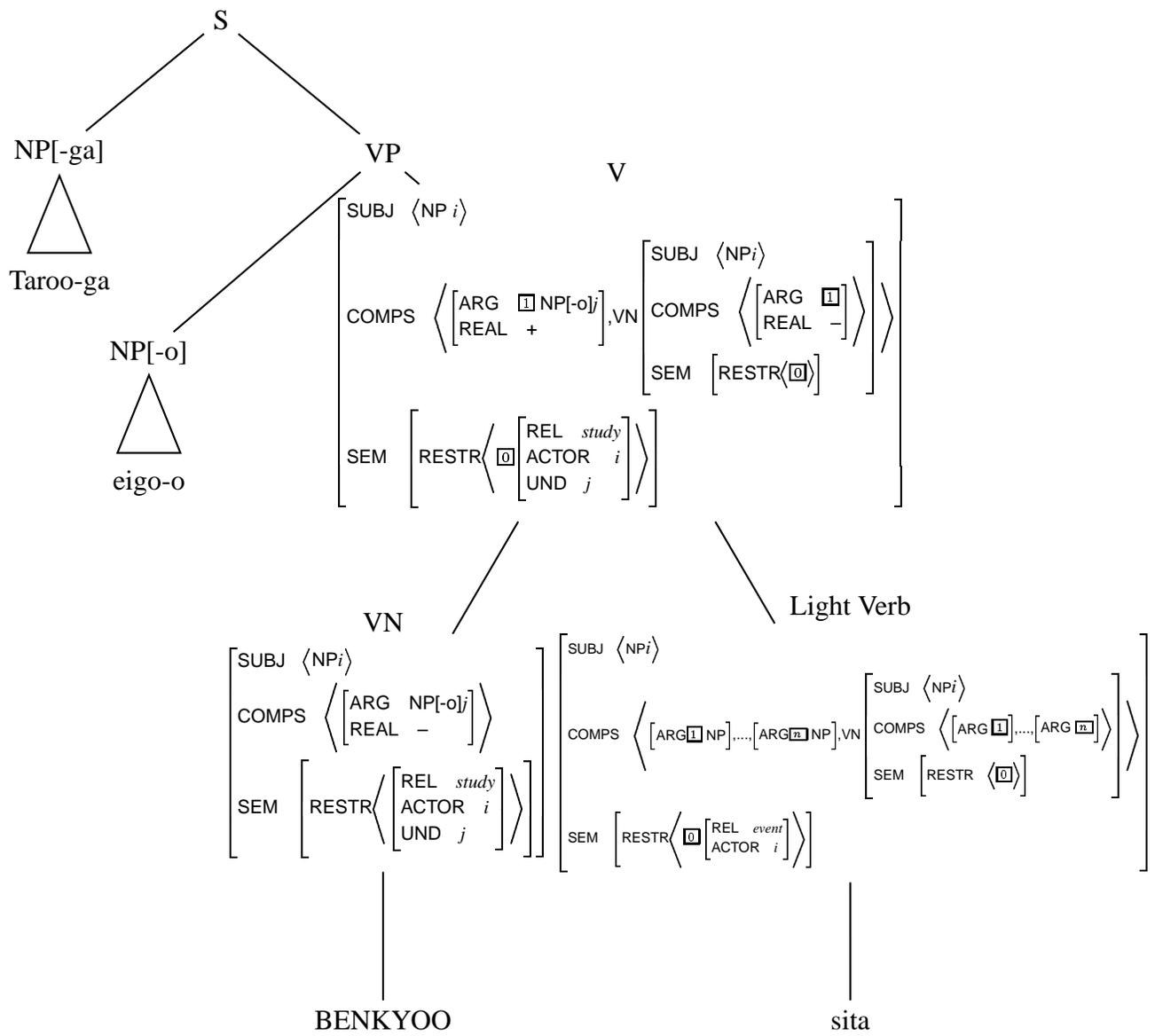


Figure 5: The analysis for (1a)

- b. Shishou-ga deshi-ni hiden-no DENJYU-o sita  
 Master-Nom student-to secret-Gen initiate-Acc did  
 ‘The master initiated the student to the disciple.’

The syntactic difference between (11a) and (11b) is whether there exists an accusative particle *o* between the VN *TOOKETSU* ‘freeze’ and the verb *suru*, or not. Because of this syntactic difference and the property of the unaccusative VN *TOOKETSU*, there is a slight meaning difference between the the two sentences, which is, though, not significant enough to change our account.

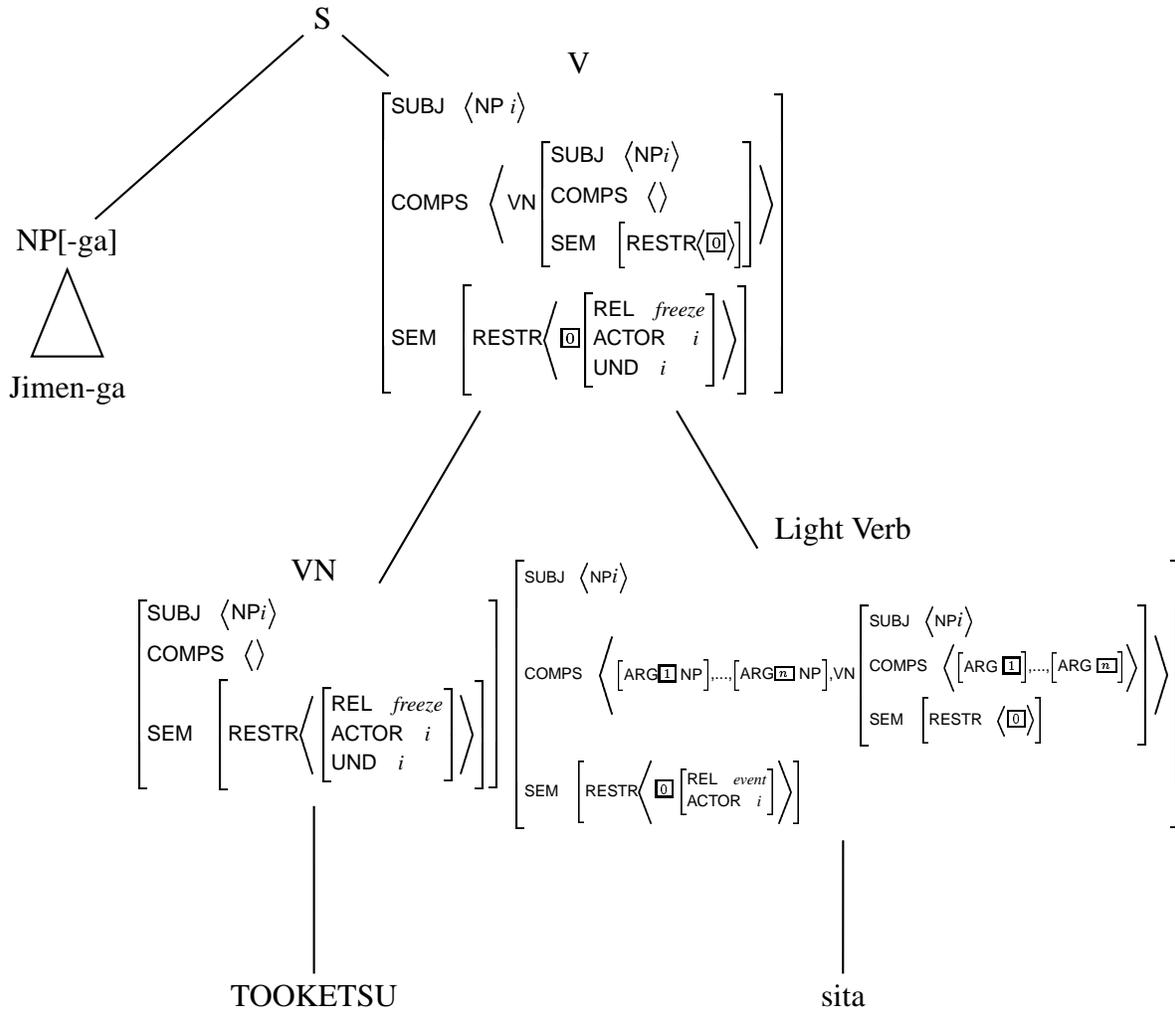


Figure 6: The analysis for (11a)

Since the *TOOKETSU* ‘freeze’ is an unaccusative VN, its actor and its undergoer are denoted by the same entity. Thus, following Davis [Dav01] and Kordoni [Kor03], we assign the identical indices in its *ACTOR* and *UND(ERGOER)* (see the semantic

information in the feature structure of *TOOKETSU* in Figure 6). Through this account we can maintain the assumption that the Japanese light verb *suru* assigns an actor proto-role to its subject. Because the word *TOOKETSU* is an unaccusative VN, there is no complement in its COMPS list.<sup>5</sup>

The VN+*suru* constructions in (12) are assumed to denote almost the same meaning. The difficulty for this analysis is the treatment of the NP *deshi-ni* ‘to student’ in (12). We assume that the NP *deshi-ni* is not the complement of the VN *DENJYU* ‘initiate’, but the modifier which contributes locative information for semantics of the sentence (such as NP[-kara] ‘from NP’ and NP[-e] ‘to NP’). In our analysis, the locative NP is treated as an adverbial modifier. Following Bouma, Malouf and Sag [BMS01], the adverbial modifiers are represented in the dependency list (DEPS in Figure 7). Because we assume that the NP[-ni] (*deshi-ni* in 12a) is an argument-like modifier and not a complement of the VN *DENJYU*, it does not appear in the COMPS list of the feature structure of the *DENJYU* in Figure 7.

The VN *DENJYU* ‘initiate’ is the main predicate in (12a) (incorporated form). Therefore, it bears the argument structure information and the semantic information (see the feature structure of *DENJYU* in Figure 7): it supports two arguments (ACTOR and UNDERGOER) and one optional adverbial modifier that assigns the GOAL feature. The third argument in the DEPS list is the second dependent of the VN (which is assigned the value of the GOAL feature in the semantic information of the VN) and it is an optional argument-like modifier of *DENJYU* ‘initiate’. Following Flickinger [OFUT00], we assume the binary valued OPT(ional) (see OPT in DEPS list of *DENJYU* in Figure 7). The DEPS list of the light verb *suru* is the concatenation of the DEPS list of the VN and the VN itself. After combining the VN *DENJYU* and the light verb *sita*, the subject, the object and the adverbial modifier of the VN are represented in the DEPS list of the verb “*DENJYU sita*”. The ARG-ST list of “*DENJYU sita*” ensures that the NP[-ni] (*deshi-ni* in Figure 7) is not the complement but the modifier of the verb.

Our analysis provides a natural account for the incorporated forms not only in the transitive VN+*suru* constructions, but also in the unaccusative and ditransitive VN+*suru* constructions.

## 5 Outlook

Our future work will target the syntax of the unincorporated form of the Japanese VN+*suru* constructions.

For the analysis of the unincorporated form, it is necessary to clarify the lexical representation of the less verb-like VN and the noun-like VN (see Section 2). The meaning relevance between the incorporated and the corresponding unincorporated

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<sup>5</sup>We assume that this empty COMPS list in the VN causes no trouble for our approach to the incorporated form. Another solution would be to add a new lexical sign for the light verb *suru* whose main predicate has an empty COMPS list.

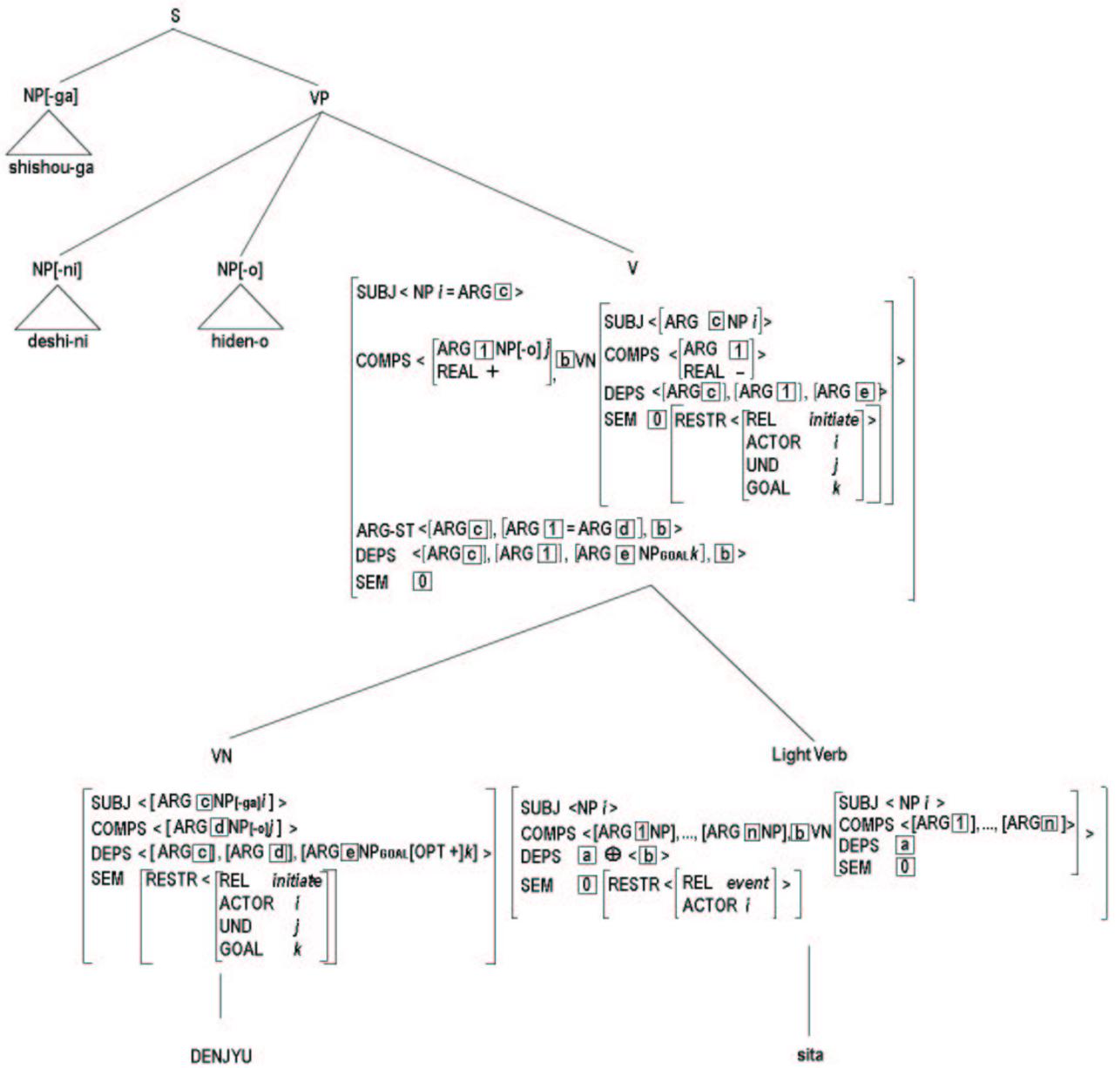


Figure 7: The analysis for (12a)

forms for **I** seems to us to be due to the fact that both constructions contain the same verbal predicate information in the lexical specification of the VN. In order to represent this meaning relevance between the two forms, one should redefine the definition of the simple event nominals, so that some simple event nominals (less verb-like VNs in this case) are also allowed to show verbal predicate information and argument structure information. In the definition of the event nominals in Grimshaw [Gri90] and Ohara [Oha00], only the complex event nominals show the argument structure information, while both result and simple event nominals are not assumed to bear argument structure information.

We assume that the Japanese VNs are quite flexible because of their mixed categorical nature. If the Japanese VN appears with the light verb *suru* in the incorporated form, they co-operate and function like a verb (that is, the verb-like VN and the light verb *suru* form a verb). This verb-like VN has all verbal properties except from inflectional information, which the light verb *suru* provides. Because the Japanese VN is morphologically a noun, it cannot host inflectional information. In contrast, when the Japanese VNs occur with the heavy verb *suru* in the unincorporated form, they are modified by a noun which bears a genitive particle *no* (NP[-no] in this case is an adjectival modifier); they can also appear with an accusative marking particle *o* and behave like a noun. We assume, thus, that the noun-like VNs in the unincorporated form for **II** bear no argument structure information like other common nouns, but they are not true common nouns since they represent events as entities. So, we assume that the less verb-like VNs have both nominal and verbal properties: they can be modified by adjectival modifiers and appear with a case particle such as the noun-like VNs, but they also bear argument structure information such as the verb-like VNs. In Table 4, the properties of the Japanese VN of each type are illustrated.

Table 4: Properties of Japanese VNs

VN	<b>verb-like</b>	<b>less verb-like</b>	<b>noun-like</b>
Category	verb in form VN-suru	noun	noun
Argument Structure	yes	yes	no
Illustrate	event	event	event
Event Nominals(ENs)	Complex ENs	Simple ENs	

In future work, we are focusing on the analysis of the unincorporated forms corresponding to the incorporated form that we have presented in this paper following the assumptions presented in Table 4.

## 6 Conclusion

In this paper, we have proposed an HPSG analysis for the Japanese VN+*suru* constructions of the incorporated form. We have assumed that the incorporated and the corresponding unincorporated forms in (1) denote almost the same meaning, but not the same. We have treated the Japanese VN+*suru* constructions in the incorporated form as light verb constructions and analyzed them following the analysis of Choi and Wechsler [CW01] for the Korean light verb constructions. We have also proposed a new classification for the Japanese VNs, which draws on the VN classification for Japanese presented in Ohara [Oha00].

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