

Underspecification, Case and Tense: A Processing-based Analysis of Borrowing

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1. Introduction

Martin (1975), Kageyama (1993), among others, claim that Japanese is unique in that it has two special grammatical categories, ‘verbal nouns’ and ‘adjectival nouns.’ According to Martin (1975), ‘verbal nouns’ are predicated nouns with special ‘verbal’ properties, and ‘adjectival nouns’ are predicated nouns with special ‘adjectival’ properties. Significantly, many of the ‘verbal nouns’ and the ‘adjectival nouns’ are borrowed from Chinese, and some are taken from English or are of native origin.

Developing Grimshaw and Mester’s (1988) Argument Transfer analysis, Saito and Hoshi (2000) propose an LF incorporation analysis for Japanese light verb constructions. There, based on the head movement analysis, Saito and Hoshi argue that the mixed [V+N] properties of a ‘verbal noun’ should be accounted for in the core computation in terms of complex predicate formation (cf. Terada 1990, Kageyama 1993, Sato 1993, Matsumoto 1996, Dubinsky 1997, among others). Furthermore, Saito and Hoshi (2000) argue that if the LF incorporation analysis is correct, it implies that predicates such as ‘verbal nouns’ may assign theta roles even after movement operations (contra. Chomsky’s 1995 configurational theta theory; cf. Hornstein 1999).

Hoshi (in press), however, points out that Saito and Hoshi’s LF incorporation analysis does not appear to be free from problems, and that there are indeed some potential problems for the incorporation analysis. Furthermore, Hoshi (in press) suggests that the dual [V+N] characteristics of a ‘verbal noun’ might be accounted for more adequately in terms of the left to right processing of a sequence of words (cf. Kempson et al. 2001, Cann et al. 2005, Cann et al. 2009, Kempson and Kiaer 2009, Kempson and Kurosawa 2009; cf. Phillips 1996, Yumoto 2011). More specifically, Hoshi (in press) proposes that the categorial status of a ‘verbal noun’ is not specified with respect to N or V in the lexicon, and thus, the categorial status of the projection of a ‘verbal noun’ must be determined by Case and/or Tense in structural environments/context in the course of the left to right incremental processing of a sequence of words.

In other words, Saito and Hoshi (2000), on the one hand, propose that ‘verbal nouns’ in Japanese light verb constructions assign theta roles even after movement operations (cf. Baker 1988, Chomsky 1995; cf.

Hornstein 1999). Furthermore, Saito and Hoshi (2000) argue that this type of theta marking by ‘verbal nouns’ is not special at all, because predicates may, in principle, assign theta roles at any point of the derivation even after movement operations (cf. Chomsky 1995). On the other hand, following Martin (1975) and Kageyama (1993), Hoshi (in press) regards a ‘verbal noun’ as a special category, and implies that the Japanese language might have accommodated borrowing such as ‘verbal nouns,’ by making the best use of the underspecification of lexical information and its own grammatical resources such as case and tense markers (cf. Kempson et al. 2001, Cann et al. 2005, Cann et al. 2009, Kempson and Kiaer 2009, Kempson and Kurosawa 2009; cf. Phillips 1996, Yumoto 2011). Consequently, Hoshi (in press) argues that given the proposed parsing-based analysis of ‘verbal nouns,’ we might be able to maintain Chomsky’s (1995) hypothesis that theta relatedness is a ‘base’ property (contra. Saito and Hoshi 2000, among others).

In this paper, I focus on clarifying Hoshi’s (in press) arguments for the processing-based analysis of a ‘verbal noun,’ and I aim to show some supporting evidence for it.¹ In the following section, I discuss some of the major properties of a ‘verbal noun’ in Japanese briefly. In section 3, I review Hoshi’s (in press) parsing-based analysis of a ‘verbal noun.’ In section 4, I show further evidence for the proposed processing-based analysis. Section 5 concludes the discussion of this paper with some remarks on borrowing.

2. Verbal Nouns

Grimshaw and Mester (1988) examine the nature of examples like the ones below in great detail, and show the mixed [V+N] characteristics of verbal nouns in Japanese. Observe first that in (1), the verbal noun *ryakudatu* ‘plundering,’ which is of Chinese origin, displays the characteristics of N,

- (1) John-**no** Mary-**kara-no** hooseki-**no** ryakudatu
 -Gen Mary-from-Gen jewelry-Gen plundering
 -ga
 -Nom
 ‘John’s stealing of jewelry from Mary’

because all of its arguments, the agent *John*, the source *Mary-kara* ‘from Mary,’ and the theme *hooseki* ‘jewelry’ are suffixed with the Genitive Case marker *-no*.

Importantly, in (2), an instance of Japanese light verb construction, the verbal noun *ryakudatu* shows the properties of V. (*Si* is the light verb in Japanese, which lacks semantic content.)

- (2) John-**ga** Mary-**kara** hooseki-**o** **ryakudatu**
 John-Nom Mary-from jewelry-Acc plundering
 -si-ta.
 -do-Pst
 ‘John stole jewelry from Mary.’

This is because in (2), none of the arguments taken by *ryakudatu* appears with the Genitive Case particle *-no*. Namely, here, the agent *John* is suffixed with the Nominative Case marker *-ga*, the source argument *Mary-kara* shows up without any case particle, and the theme *hooseki* is suffixed with the Accusative Case marker *-o*.

The example in (3), another instance of Japanese light verb construction, sounds slightly awkward, presumably because there are two *-o* marked NPs in the sentence, which is in violation of the surface double-*o* constraint in Japanese (see Harada 1973, Kuroda 1978, Saito 1985, among others). In (3) as well, the verbal noun *ryakudatu* displays the properties of V,

- (3) ?John-**ga** Mary-**kara** hooseki-**o** **ryakudatu**
 John-Nom Mary-from jewelry-Acc plundering
 -o si-ta.
 -Acc do-Pst
 ‘John stole jewelry from Mary.’

because none of the arguments selected by *ryakudatu* is suffixed by the Genitive Case marker *-no* in (3), either. The agent argument *John* is suffixed with *-ga*. The source argument *Mary-kara* is not suffixed with any Case particle. The theme argument *hooseki* is suffixed with the Accusative Case marker *-o*.

Importantly, in (4), another instance of Japanese light verb construction, the verbal noun *ryakudatu* appears to be N and V at the same time,

- (4) John-**ga** Mary-**kara** hooseki-**no** **ryakudatu**
 John-Nom Mary-from jewelry-Gen plundering
 -o si-ta.
 -Acc do-Pst
 ‘John stole jewelry from Mary.’

for the agent *John* is suffixed with *-ga*, and the source is not suffixed with any case particle, implying that the verbal noun *ryakudatu* is V. However, the theme argument *hooseki* ‘jewelry’ is suffixed with the Genitive Case *-no*, indicating that *ryakudatu* is N.

There is a sharp contrast between (4) and (5), although (4) and (5) have some significant properties in common.

- (5) *John-**ga** hooseki-**o** Mary-**kara-no**
 John-Nom jewelry-Acc Mary-from-Gen
ryakudatu-o si-ta.
 plundering-Acc do-Pst
 ‘John stole jewelry from Mary.’

That is, like the verbal noun in (4), *ryakudatu* in (5) seems to be N and V at the same time. In (5), the agent *John* is suffixed with the Nominative Case marker *-ga*, and the theme argument *hooseki* is suffixed with the Accusative Case marker *-o*, suggesting that the verbal noun *ryakudatu* is V. However, the source *Mary-kara* is suffixed with the Genitive Case marker *-no*, implying that *ryakudatu* is N. Like (3), (5) is in violation of the surface double-*o* constraint, but as Grimshaw and Mester (1988) and Grimshaw (1990) point out, (5) is much worse than (3).

Given the data involving the verbal noun *ryakudatu* ‘plundering’ above, questions immediately arise as to exactly what verbal nouns in Japanese are special about, why and how verbal nouns display the dual [V+N] characteristics illustrated above, etc. As Martin (1975), Kageyama (1993), among others, point out, many of the Japanese verbal nouns are borrowed from Chinese, and some are taken from English or are of native origin (cf. ‘adjectival nouns’). By attempting to answer these questions, we might be able to deepen our understanding of the mechanism of how a natural language accommodates loan words such as verbal nouns.

3. A Processing-based Analysis of Verbal Nouns

Both Grimshaw and Mester (1988) and Saito and Hoshi (2000) argue that there is nothing special about the categorial status of a verbal noun, and that a verbal noun in Japanese is simply N with its own argument structure. On the one hand, Grimshaw and Mester (1988) propose their Argument Transfer analysis, and suggest that we should explain the mixed [V+N] properties of a verbal noun in terms of complex predicate formation, Argument Transfer, in the lexicon. Saito and Hoshi (2000), on the other, propose an LF incorporation analysis, and claim that such dual [V+N] characteristics should be explained in terms of head movement in the core computation.²

In contrast, Hoshi (in press) suggests that we must accept Martin’s (1975) claim that Japanese has ‘verbal nouns,’ predicated nouns with special ‘verbal’ properties (cf. Kageyama 1993). Furthermore, based on the recent developments of Dynamic Syntax (Kempson et al. 2001, Cann et al. 2005, Cann et al. 2009, among others), in Hoshi (in progress), I argue that the categorial status of a verbal noun is not specified with respect to N or V in the lexicon, and thus, that of a verbal noun must be fixed in structural environments/context in the course of the left to right incremental processing of a sequence of words.

More specifically, in Hoshi (in press), I propose (6)

and (7a-b).

- (6) The categorial status of ‘verbal nouns’ in Japanese is not specified with respect to N or V in the lexicon, and thus, that of ‘verbal nouns’ must be determined by structural environments/context in the course of the left to right incremental processing.

(6) is suggested in line with a ‘dynamic’ view of a lexical item. Under the dynamic view of words, we consider that the nature of a lexical item in a natural language is very often not fully fixed in the lexicon, and it is updated and determined in the course of the left to right incremental processing of a sequence of words (Kempson et al. 2001, Cann et al. 2005, Cann et al. 2009, Kempson and Kiaer 2009, Kempson and Kurosawa 2009, etc.). This ‘dynamic’ view of a verbal noun in Japanese contrasts sharply with the ‘fixed/static’ view of a verbal noun by Grimshaw and Mester (1988) and Saito and Hoshi (2000). Under the ‘fixed’ view of a lexical item, Grimshaw and Mester (1988) and Saito and Hoshi (2000) suppose that a verbal noun is inherently fully specified as N with its own argument structure.

(7a-b) are suggested in line with the hypothesis that grammatical resources such as case and tense particles play significant roles in the left to right incremental processing of words in Japanese (Kempson et al. 2001, Cann et al. 2005, Cann et al. 2009, Kempson and Kiaer 2009, Kempson and Kurosawa 2009, among others).

- (7)a. At the time when a case marker (henceforth, K) merges a projection of a ‘verbal noun’ in the course of the left to right incremental processing, the projection of the ‘verbal noun’ merged by K is licensed as an N projection.
- b. At the time when a tense marker (henceforth, T) merges a projection of a ‘verbal noun’ in the course of the left to right incremental processing, the projection of the ‘verbal noun’ merged by T is licensed as a V projection.

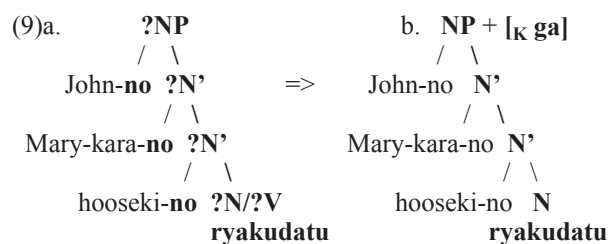
Given (6), the categorial status of a verbal noun in Japanese is underspecified concerning N or V in the lexicon. Therefore, the categorial status of the projection of a verbal noun must be updated and determined step by step in the course of the left to right incremental processing. Given (7a), if the projection of a verbal noun is merged by a case marker, the entire projection is licensed top to bottom as an N projection. Given (7b), if the projection of a verbal noun is merged by a tense marker, the whole projection is licensed as a V projection. The assumptions in (7a-b) seem to me to have some plausibility, because case markers and tense markers have close relationships with N and V, respectively. In short, by proposing (6) and (7a-b), Hoshi (in press) attempts to argue that the Japanese

language might have accommodated borrowing such as ‘verbal nouns’ in a ‘dynamic’ way.

Below, let us examine how the proposed processing-based analysis builds up structures for examples (1), (2), (3), (4), (5), etc. based on (6) and (7a-b). First, consider example (1), repeated here as (8).

- (8) [John-**no** Mary-kara-**no** hooseki-**no** ryakudatu]-ga
..... (=1)

When we have parsed from *John-no* to *ryakudatu* in (8), we construct representation (9a).

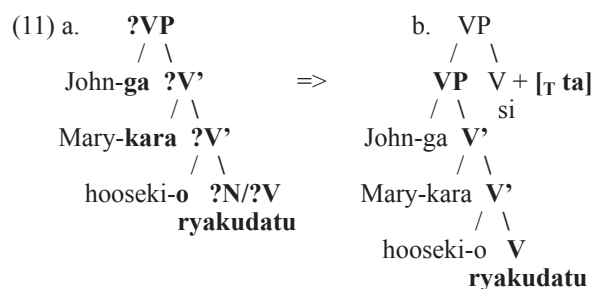


In (8), *John*, *Mary-kara*, and *hooseki* are all suffixed with Genitive Case *-no*. Given this Case information, the language faculty anticipates that the projections immediately dominating these arguments are N projections, as illustrated in (9a). Due to assumption (6), the categorial status of the verbal noun *ryakudatu* is underspecified with respect to N or V in the lexicon, and *ryakudatu* is introduced underspecified as in (9a). In example (8), the ‘verbal noun’ *ryakudatu* is suffixed with the case particle [_K *ga*]. Let us assume that the language faculty makes the incremental processing as efficient as possible. Thus, immediately after having parsed the case particle [_K *ga*], the language faculty targets the highest projection of *ryakudatu*, and merges [_K *ga*] with the highest projection, as illustrated in (9b). Consequently, the whole categorially underspecified projection of *ryakudatu* is licensed top to bottom as an N projection due to assumption (7a), as desired (cf. Saito 1982, Murasugi 1991, among others).

Examine next example (2), repeated here as (10).

- (10) John-**ga** Mary-kara hooseki-**o** ryakudatu-si-ta.
(=2)

When we have finished parsing from *John-ga* to *ryakudatu* in (10), we build up structure (11a).



In (10), *John* is suffixed with Nominative Case *-ga*, *Mary-kara* is not suffixed with any case particle, and *hooseki* is suffixed with Accusative Case *-o*. Given the Case information, the language faculty predicts that the projections immediately dominating these arguments are V projections, as illustrated in (11a) (cf. 9a-b). Because of assumption (6), the categorial nature of loan words like the verbal noun *ryakudatu* is not fixed with respect to N or V in the lexicon, and the verbal noun is introduced underspecified as in (11a). The language faculty forces the incremental processing to be as efficient as possible. Hence, after having parsed $[_V \text{ si}]$ - $[_T \text{ ta}]$, the language faculty targets the highest projection of *ryakudatu*, and constructs structure (11b). Notice that in (11b), the tense marker $[_T \text{ ta}]$ together with $[_V \text{ si}]$ merges the highest projection of *ryakudatu* constructed in (11a). Subsequently, in accordance with assumption (7b), the tense marker $[_T \text{ ta}]$ efficiently licenses, top to bottom, the entire underspecified projection of *ryakudatu* as a V projection, as desired (cf. 9b).

Significantly, as a desirable consequence, the parsing-based analysis based on (6) and (7a-b) straightforwardly accounts for the ungrammaticality of the example in (12), observed by Miyagawa (1991), Kageyama (1993), Dubinsky (1997), among others.

- (12) ***John-ga** Mary-**kara** hooseki-**no** ryakudatu
 John-Nom Mary-from jewelry-Gen plundering
 -si-ta.
 -do-Pst
 ‘John stole jewelry from Mary.’

After having parsed from *John-ga* to *ryakudatu*, we construct representation (13a).

- (13) a. $\begin{array}{c} ?VP \\ / \ \backslash \\ \text{John-ga} \ ?V' \\ / \ \backslash \\ \text{Mary-kara} \ ?N' \\ / \ \backslash \\ \text{hooseki-no} \ ?N/?V \\ \text{ryakudatu} \end{array} \Rightarrow \text{b. } * \begin{array}{c} VP \\ / \ \backslash \\ V + [_T \text{ ta}] \\ / \ \backslash \\ \text{si} \\ \text{John-ga} \ V' \\ / \ \backslash \\ \text{Mary-kara} \ V' \\ / \ \backslash \\ \text{hooseki-no} \ V \\ \text{ryakudatu} \end{array}$

In (12), the agent *John* is suffixed with Nominative Case *-ga*. The source argument *Mary-kara* ‘from Mary’ appears without any case particle. The theme *hooseki* ‘jewelry’ is suffixed with Genitive Case *-no*. The language faculty hence anticipates that as illustrated in (13a), the projections immediately dominating the agent and the source are V projections, but that the projection immediately dominating the theme *hooseki-no* is an N projection. According to assumption (6), the categorial status of the verbal noun *ryakudatu* is underspecified concerning N or V in the lexicon, and thus, *ryakudatu*

appears as shown in structure (13a). As always, the language faculty attempts to make the left to right incremental processing as efficient as it can. Hence, after having parsed the very last part of the sentence in (12), i.e. $[_V \text{ si}]$ - $[_T \text{ ta}]$, the language faculty tries to construct representation for a proposition, targeting the highest projection of *ryakudatu*, and merging the tense marker $[_T \text{ ta}]$ together with the light verb $[_V \text{ si}]$ with the highest projection. Consequently, the whole underspecified projection of the verbal noun *ryakudatu* is licensed top to bottom as a V projection, given assumption (7b) (cf. 11b). As illustrated in (13b), however, if such categorial licensing takes place, the Genitive Case marked NP, *hooseki-no*, cannot be immediately dominated by an N projection, and thus, cannot be properly licensed. Hence, the parsing is aborted. In this way, the ungrammaticality of (12) is accounted for under the proposed parsing-based analysis of verbal nouns, as desired.

Consider next example (3), repeated here as (14). (14) is slightly odd, because it violates the surface double-*o* constraint in Japanese.

- (14) ?**John-ga** Mary-**kara** hooseki-**o** ryakudatu-**o**
 si-ta. (=3)

The parsing process Hoshi (in press) proposes for example (14) is given below. Having parsed from *John-ga* to *ryakudatu*, we build up structure (15a), exactly as in (11a).

- (15) a. $\begin{array}{c} ?VP \\ / \ \backslash \\ \text{John-ga} \ ?V' \\ / \ \backslash \\ \text{Mary-kara} \ ?V' \\ / \ \backslash \\ \text{hooseki-o} \ ?N/?V \\ \text{ryakudatu} \end{array} \Rightarrow \text{b. } \begin{array}{c} ?VP \\ / \ \backslash \\ \text{John-ga} \ ?V' \\ / \ \backslash \\ \text{Mary-kara} \ ?V' \\ / \ \backslash \\ \text{hooseki-o} \ N + [_K \text{ o}] \\ \text{ryakudatu} \end{array}$
- c. $\begin{array}{c} VP \\ / \ \backslash \\ VP \ V + [_T \text{ ta}] \\ / \ \backslash \\ \text{si} \\ \text{John-ga} \ V' \\ / \ \backslash \\ \text{Mary-kara} \ V' \\ / \ \backslash \\ \text{hooseki-o} \ N + [_K \text{ o}] \\ \text{ryakudatu} \end{array}$

Then, the accusative case particle $[_K \text{ o}]$ is parsed. Unlike in (9b) or (11b), this time, the language faculty morphologically merges the case particle $[_K \text{ o}]$ with the lowest projection of *ryakudatu*, efficiently licensing it as N^0 in accordance with assumption (7a). This is shown in (15b). Finally, after parsing $[_V \text{ si}]$ - $[_T \text{ ta}]$, the language faculty constructs representation (15c), where $[_T \text{ ta}]$

together with the light verb [_V *si*] merges the highest projection of *ryakudatu*, successfully licensing the remaining underspecified projection of *ryakudatu* top to bottom as a V projection in accordance with (7b), as desired.

Consider now light verb construction (4), repeated here as (16).

(16) John-**ga** Mary-**kara** hooseki-**no** **ryakudatu**-o
si-ta. (=4)

At some point of our parsing example (16) from left to right, we build up representation (17a).

(17) a. ?VP b. ?VP
 / \ / \ / \ / \
John-**ga** ?V' John-**ga** ?V' John-**ga** ?V' John-**ga** ?V'
 / \ / \ / \ / \
Mary-**kara** ?NP Mary-**kara** NP + [_K o] Mary-**kara** NP + [_K o] Mary-**kara** NP + [_K o]
 / \ / \ / \ / \
hooseki-**no** ?N/?V hooseki-**no** N hooseki-**no** N hooseki-**no** N
 ryakudatu **ryakudatu** **ryakudatu** **ryakudatu**
c. VP
 / \
 VP V + [_T ta]
 / \ si
John-**ga** V'
 / \
Mary-**kara** NP + [_K o]
 / \
hooseki-**no** N
 ryakudatu

In (16), *John* is suffixed with Nominative Case *-ga*, and *Mary-kara* is not suffixed with any case marker. Hence, as seen in (17a), the language faculty anticipates the projections immediately dominating these arguments to be V projections. *Hooseki* in (16), on the other hand, is suffixed with Genitive Case *-no* and thus, the projection immediately dominating *hooseki-no* is predicted to be an N projection as shown in (17a). Given assumption (6), the categorial status of the verbal noun *ryakudatu* is not specified with respect to N or V in the lexicon, and the verbal noun is introduced underspecified as in (17a). The language faculty makes the parsing as efficient as possible. Given the representation in (17a), as illustrated in (17b), the Accusative Case particle [_K o] morphologically merges with the second lowest projection of *ryakudatu*, successfully licensing that part of the underspecified projection of *ryakudatu*, top to bottom, as an N projection in accordance with assumption (7a). Finally, as illustrated in (17c), [_T ta] together with [_V *si*] merges the highest projection of *ryakudatu*, licensing the remaining unfixed projection of *ryakudatu* top to bottom as a V projection due to assumption (7b), as desired.

Examine next the ungrammatical light verb

construction in (5) discovered by Grimshaw and Mester (1988), repeated here as (18). Like (14), (18) violates the surface double-*o* constraint, but (18) is much worse than (14).

(18) *John-**ga** hooseki-**o** Mary-**kara-no** **ryakudatu**-o
si-ta. (=5)

The language faculty processes a string of words in (18), exactly in the same way as it does in example (16). Consequently, the language faculty generates the representation in (19) (cf. 17c).

(19) * VP
 / \
 VP V + [_T ta]
 / \ si
John-**ga** V'
 / \
hooseki-**o** NP + [_K o]
 / \
Mary-**kara-no** N
 ryakudatu

Unlike structures such as (17a-c), structure (19) is ruled out in a straightforward manner by the assumption that the theme argument must be always positioned in the closest complement position of a predicate in accordance with Chomsky's (1995) configurational theta theory (contra. Saito and Hoshi 2000). In (19), not the theme argument *hooseki* but the source argument *Mary-kara* is generated in the closest complement position.³

Furthermore, the proposed processing-based analysis of verbal nouns provides a pleasing way to account for the grammaticality of predicate fronting data like the ones below, discovered by Sato (1993) and others.

- (20) a. ?Mary-**kara** hooseki-**o** **ryakudatu**-o
Mary-from jewelry-Acc plundering-Acc
-sae, John-**ga** si-ta.
-even, John-Nom do-Pst
'Even steal jewelry from Mary, John did.'
- b. Mary-**kara** hooseki-**no** **ryakudatu**-o,
Mary-from jewelry-Gen plundering-Acc,
John-**ga** si-ta.
John-Nom do-Pst
'Steal jewelry from Mary, John did.'

As illustrated in (21a-b), the well-formedness of (20a-b) implies that in (20a), [*Mary-kara hooseki-o ryakudatu*]-*o-sae* forms a constituent, and that in (20b), [*Mary-kara hooseki-no ryakudatu*]-*o* is a constituent.

- (21) a. ?John-**ga** [Mary-**kara** hooseki-**o**
John-Nom Mary-from jewelry-Acc
ryakudatu]- o- sae si-ta. (cf. 20a)
plundering -Acc-even do-Pst
'John even stole jewelry from Mary.'
b. John-**ga** [Mary-**kara** hooseki-**no**
John-Nom Mary-from jewelry-Gen
ryakudatu]-o si-ta. (cf. 20b)
plunderage-Acc do-Pst
'John stole jewelry from Mary.'

Under the proposed parsing-based analysis of verbal nouns, we can build structures (22a) and (22b) for (21a) and (21b), respectively, and can explain properly how constituents are formed in these examples.

- (22) a. VP (for 21a) b. VP (for 21b)
 / \ / \
 VP V + [_T ta] VP V + [_T ta]
 / \ si / \ si
John-ga V' John-ga V'
 / \ / \
Mary-kara V' Mary-kara NP + [_K o]
 / \ / \
hooseki-o N + [_K o]-sae hooseki-no N
 ryakudatu **ryakudatu**

In representation (22a) for (21a), Accusative Case [_K o] first attaches to the lowest projection of the verbal noun *ryakudatu*, licensing the projection as an N⁰ projection (see assumptions 6 and 7a). Then, the tense marker [_T ta] together with the light verb [_V si] merges the highest projection of *ryakudatu*, licensing the remaining underspecified projection of *ryakudatu* as a V projection (see assumptions 6 and 7b). Consequently, in structure (22a), [Mary-kara hooseki-o ryakudatu]-o-sae forms a constituent, as desired (see 20a and 21a). In structure (22b), Accusative Case [_K o] first merges the second lowest projection of the verbal noun *ryakudatu*, licensing the projection as an N projection in accordance with (6) and (7a). The tense marker [_T ta] then merges the highest projection of the verbal noun together with the light verb [_V si], licensing the remaining unfixed projection as a V projection (see assumptions 6 and 7b). In (22b) as well, [Mary-kara hooseki-no ryakudatu]-o forms a constituent, as desired (see 20b and 21b).⁴

Last and most importantly, the proposed parsing-based analysis yields the following pleasing consequence. Namely, the processing-based analysis provides a direct way to capture the semantic equivalence among light verb constructions such as (2), (3), and (4). Notice that if we eliminate formal features such as Case features from the parsed representations in (11b), (15c), and (17c) for these examples, we have the following configurationally identical structure (cf. Grimshaw and Mester 1988, Saito and Hoshi 2000, among others):

- (23)
- $$\begin{array}{c}
 \wedge \\
 / \quad \backslash \\
 \textit{plunder}' \quad \textit{Past} \\
 / \quad \backslash \\
 \textit{John}' \quad \textit{plunder}' \\
 / \quad \backslash \\
 \textit{Mary-from}' \quad \textit{plunder}' \\
 / \quad \backslash \\
 \textit{jewelry}' \quad \textit{plunder}'
 \end{array}$$

In the following section, I show further evidence for the processing-based analysis of verbal nouns in Japanese, and explore its consequences.

4. Further Evidence and Consequences

Consider now the following examples cited from Shibatani and Kageyama (1988):

- (24) a. Kanai -**ga** Amerika-**o** **hoomon-no**
my wife-Nom America-Acc visiting-Gen
ori -ni -wa,
occasion-on-Top
iroiro osewa -ni narimasi -ta.
much hospitality-Adv.Part. she.receive-Pst
'Thank you for your generous hospitality when my wife visited America.'
b. Musuko-**ga** kokuritu-daigaku-**ni** **gookaku-no**
my.son -Nom national -univ. -to entering-Gen
akatuki-ni-wa, zidoosya-o
time -at-Top, car -Acc
katte-yaru tumori-da.
buy -give I.plan -Pres
'If my son is successfully admitted to a national university, I'm going to buy him a new car.'

Observe that in (24a), the verbal noun *hoomon* 'visiting,' which is of Chinese origin, is used. Furthermore, the verbal noun *hoomon* is suffixed with Genitive Case *-no*, licensed by the time denoting noun *ori* 'occasion' (see assumptions 6 and 7a-b). This is exactly the structural configuration where the proposed parsing-based analysis of verbal nouns predicts that the agent *kanai* 'my wife' can be suffixed with Nominative Case *-ga*, and the location *Amerika* may be suffixed with Accusative Case *-o* (see 24a). In (24b) as well, the verbal noun *gookaku* 'entering' is used, which is also Sino-Japanese. Furthermore, the verbal noun *gookaku* is suffixed with Genitive Case *-no*, which is licensed by the time denoting noun *akatuki* 'time' (see 6 and 7a-b). This is also exactly the structural context where the proposed processing-based analysis predicts that the agent argument *musuko* 'my son' may be suffixed with Nominative Case *-ga*, and the theme *kokuritu-daigaku* 'national university' can be suffixed with Dative Case *-ni* (see 24b).

The proposed parsing-based analysis therefore

assigns structures (25a) and (25b) to (24a) and (24b), respectively, and explains the grammaticality of (24a-b).

- (25) a. $[_{TP/NP} [_{VP} \text{kanai-ga} [_{V'} \text{Amerika-o} [_{N'} \text{hoomon}]-[_{K} \text{no}]]] [_{T/N} \text{ori}], \dots$ (for 24a)
 b. $[_{TP/NP} [_{VP} \text{musuko-ga} [_{V'} \text{kokuritu-daigaku-ni} [_{N'} \text{nyuugaku}]-[_{K} \text{no}]]] [_{T/N} \text{akatuki}], \dots$ (for 24b)

Under the proposed analysis, in (25a), the Genitive Case marker $[_{K} \text{no}]$ first merges the lowest projection of the verbal noun *hoomon* ‘visiting,’ licensing the underspecified projection as an N^0 projection due to assumption (7a). Then, the time denoting noun $[_{T/N} \text{ori}]$ ‘occasion’ merges the highest projection of *hoomon*, licensing the remaining underspecified projection as a V projection, according to (7b). Similarly, in (25b), first, the Genitive Case $[_{K} \text{no}]$ morphologically merges the verbal noun *nyuugaku* ‘entering,’ licensing the lowest projection as an N^0 projection because of (7a). Then, the time denoting noun $[_{T/N} \text{akatuki}]$ ‘time’ merges the highest underspecified projection of the verbal noun, licensing the remaining unfixed projection as a V projection in accordance with (7b).

Furthermore, the proposed processing-based analysis of verbal nouns correctly predicts that constructions such as the ones in (24a-b) should display ‘mixed case’ arrays like the ones in (26a-d), discovered by Miyagawa (1991) and others (cf. examples 1-5).

- (26) a. **John-no Mary-kara-no hooseki-no**
 John-Gen Mary-from-Gen jewelry-Gen
ryakudatu-no ori -ni, ...
 plundering-Gen occasion-on, ...
 ‘When John stole jewelry from Mary, ...’
- b. **John-ga Mary-kara-no hooseki-no**
 John-Nom Mary-from-Gen jewelry-Gen
ryakudatu-no ori -ni, ...
 plundering-Gen occasion-on, ...
- c. **John-ga Mary-kara hooseki-no**
 John-Nom Mary-from jewelry-Gen
ryakudatu-no ori -ni, ...
 plundering-Gen occasion-on, ...
- d. **John-ga Mary-kara hooseki-o**
 John-Nom Mary-from jewelry-Acc
ryakudatu-no ori -ni, ...
 plundering-Gen occasion-on, ...

In (26a), the verbal noun appears to be N, because all of its arguments are suffixed with Genitive Case *-no*. In (26b-c), on the other hand, the verbal noun seems to be N and V at the same time. In (26b), both the source *Mary-kara* ‘from Mary’ and the theme *hooseki* ‘jewelry’ are suffixed with Genitive Case *-no*, implying that the verbal noun *ryakudatu* is N. The agent *John* is,

however, suffixed with Nominative Case *-ga*, suggesting that *ryakudatu* is V. In (26c), *hooseki* is suffixed with the Genitive Case marker *-no*, indicating that the verbal noun is N. However, *John* is suffixed with Nominative Case *-ga*, and *Mary-kara* is not suffixed with any particle, implying that *ryakudatu* is V. In (26d), none of the arguments is suffixed with Genitive Case *-no*. The agent is suffixed with Nominative Case *-ga*; the source shows up without any case particle; the theme is suffixed with Accusative Case *-o*, implying that the verbal noun *ryakudatu* is V in (26d).

The proposed analysis assigns the following parsed representations to (26a-d), and accounts for their grammaticality in a straightforward manner.

- (27) a. $[_{TP/NP} [_{NP} \text{John-no} [_{N'} \text{Mary-kara-no} [_{N'} \text{hooseki-no} [_{N'} \text{ryakudatu}]]]]-[_{K} \text{no}] [_{T/N} \text{ori}]]-ni$
 (for 26a)
 b. $[_{TP/NP} [_{VP} \text{John-ga} [_{NP} \text{Mary-kara-no} [_{N'} \text{hooseki-no} [_{N'} \text{ryakudatu}]]]]-[_{K} \text{no}] [_{T/N} \text{ori}]]-ni$
 (for 26b)
 c. $[_{TP/NP} [_{VP} \text{John-ga} [_{V'} \text{Mary-kara} [_{NP} \text{hooseki-no} [_{N'} \text{ryakudatu}]]]-[_{K} \text{no}]]] [_{T/N} \text{ori}]]-ni$ (for 26c)
 d. $[_{TP/NP} [_{VP} \text{John-ga} [_{V'} \text{Mary-kara} [_{V'} \text{hooseki-o} [_{N'} \text{ryakudatu}]]]-[_{K} \text{no}]]] [_{T/N} \text{ori}]]-ni$ (for 26d)

In the parsed structure (27a) for example (26a), the Genitive Case marker $[_{K} \text{no}]$ merges the highest projection of the verbal noun *ryakudatu* ‘plundering,’ licensing the entire underspecified projection as an N projection. In representation (27b) for (26b), Genitive Case $[_{K} \text{no}]$ first merges the second highest projection of *ryakudatu*, licensing the underspecified projection as an N projection. Then, the time denoting noun $[_{T/N} \text{ori}]$ ‘occasion’ merges the highest projection of *ryakudatu*, licensing the remaining projection as a V projection. In the parsed structure (27c) for (26c), the Genitive Case marker $[_{K} \text{no}]$ first merges the second lowest projection of the verbal noun, and licenses the unfixed projection as an N projection. The time denoting noun $[_{T/N} \text{ori}]$ then merges the maximal projection of *ryakudatu*, licensing the remaining unfixed projection as a V projection. In (27d) for example (26d), Genitive Case $[_{K} \text{no}]$ merges the lowest projection of the verbal noun *ryakudatu* and licenses it as N^0 . Then, the time denoting noun $[_{T/N} \text{ori}]$ merges the maximal projection of *ryakudatu*, and licenses the remaining underspecified projection as a V projection, as desired. Significantly, the proposed processing-based analysis captures the semantic equivalence of examples (26a-d) by assigning the configurationally identical representation to all the examples in (26a-d). In other words, if we eliminate formal features such as Case features from the structures in (27a-d), we have the identical configuration for all the examples in (26), as desired (cf. configuration 23; cf. Grimshaw and Mester 1988, Saito and Hoshi 2000,

among others).

Furthermore, the parsing-based analysis provides a direct way to explain the ungrammaticality of the following example exactly in the same way as it does the ill-formedness of example (5), an instance of light verb construction (cf. Grimshaw and Mester 1988, Grimshaw 1990).

- (28) *John-ga hooseki-o Mary-kara-no
 John-Nom jewelry-Acc Mary-from-Gen
 ryakudatu-no ori -ni, ...
 plundering-Gen occasion-on, ...

The structure that the processing-based analysis assigns to example (28) is given below:

- (29) *_{[TP/NP} [_{VP} John-ga [_V hooseki-o [_{NP} Mary-kara-no [_N ryakudatu]]-<sub>[K no]]] [_{T/N ori}]]-ni
 (for 28)</sub>

In (29), the Genitive Case marker [_{K no}] first attached to the second lowest projection of the verbal noun *ryakudatu*, licensing the projection as an N projection in accordance with (7a). Then, the temporal noun [_{T/N ori}] merges to the highest projection of *ryakudatu*, licensing the remaining underspecified projection as a V projection. This parsing process parallels the one in (27c). Importantly, however, while the theme argument *hooseki-no* is placed in the closest complement position in (27c) in accordance with Chomsky's (1995) configurational theta theory, the source *Mary-kara-no* is positioned in the closest complement position in (29). The parsing in (29) is thus aborted, when the verbal noun *ryakudatu* merges the source argument *Mary-kara-no* (cf. representation *19).

The proposed parsing-based analysis of verbal nouns also provides a principled way to account for the contrast like the one below, first observed by Shibatani and Kageyama (1988).

- (30) a. Kazoku-to Yooroppa-o ryokoo -no
 family -with Europe -Acc traveling-Gen
 ori, ...
 occasion, ...
 'On the occasion of traveling in Europe with my family, ...'
- b. *Kazoku-to -no Yooroppa-o ryokoo -no
 family -with-Gen Europe -Acc traveling-Gen
 ori, ...
 occasion, ...

Observe that in (30a-b), the verbal noun *ryokoo* 'traveling,' which is of Chinese origin, is used. Furthermore, in these examples, the verbal noun *ryokoo* is suffixed with the Genitive Case marker *-no* which is licensed by the time denoting noun [_{T/N ori}]. In the

well-formed example in (30a), the partner argument *kazoku-to* 'with my family' shows up without any case particle, and the location argument *Yooroppa* 'Europe' is suffixed with the Accusative Case maker *-o*. In the ill-formed example in (30b), however, the partner argument is suffixed with Genitive Case *-no*, whereas *Yooroppa* is suffixed with Accusative Case *-o*. The contrast between (30a) and (30b) is accounted for under the proposed analysis as follows:

When we have finished parsing the string of words in (30a) from *kazoku-to* up to *ryokoo* 'traveling,' we build up structure (31a).

- (31) a. ?VP b. TP/NP (for 30a)
- | | | |
|------------------|----|------------------------------------|
| / \ | => | / \ |
| kazoku-to ?V' | | VP [_{T/N ori}] |
| / \ | | / \ |
| Yooroppa-o ?N/?V | | kazoku-to V' |
| ryokoo | | / \ |
| | | Yooroppa-o N + [_{K no}] |
| | | ryokoo |

In (30a), *kazoku-to* 'with my family' appears without any case particle, and the locative argument *Yooroppa* 'Europe' is suffixed with Accusative Case *-o*. Hence, as illustrated in (31a), the language faculty predicts the projections dominating these two arguments to be a V projection. Then, the Genitive Case marker [_{K no}] is parsed, and the language faculty morphologically merges [_{K no}] with the lowest underspecified projection of *ryokoo* 'traveling.' Consequently, the projection is licensed as an N⁰ projection in accordance with (7a). Then, after parsing the time denoting noun [_{T/N ori}], the language faculty merges [_{T/N ori}] with the highest projection of *ryokoo*. Finally, as shown in (31b), the remaining unfixed projection is licensed as a V projection due to (7b), as desired.

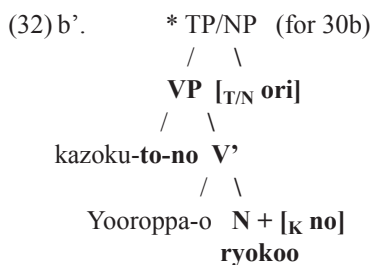
On the other hand, when having parsed the sequence of words from *kazoku-to-no* up to *ryokoo* in (30b), we construct representation shown in (32a).

- (32) a. ?NP b. * TP/NP (for 30b)
- | | | |
|------------------|----|---|
| / \ | => | / \ |
| kazoku-to-no ?V' | | NP + [_{K no}] [_{T/N ori}] |
| / \ | | / \ |
| Yooroppa-o ?N/?V | | kazoku-to-no N' |
| ryokoo | | / \ |
| | | Yooroppa-o N |
| | | ryokoo |

In (32a), the partner argument *kazoku-to* is suffixed with Genitive Case *-no*, but the locative argument *Yooroppa* is suffixed with Accusative Case *-o*. Given this Case information, the language faculty anticipates the projection dominating the partner argument to be an N projection, and the projection dominating *Yooroppa* to be a V projection. Then, after parsing the Genitive Case

marker [_K no], the language faculty might merge [_K no] with the highest projection of the verbal noun *ryokoo*, as illustrated in (32b). Consequently, as in (32b), the remaining underspecified projection of *ryokoo* is fixed as an N projection in accordance with (7a). However, if this parsing process indeed takes place, the parsing is aborted, because as shown in (32b), the Accusative Case marked locative argument *Yooroppa-o* ends up being immediately dominated by an N projection.

If, on the other hand, the language faculty first merges the Genitive Case marker [_K no] with the lowest projection and then, merges [_{T/N} ori] with the highest projection of the verbal noun *ryokoo*, we have the structure below:



In representation (32b'), the lowest projection of *ryokoo* 'traveling' is fixed as an N⁰ projection by [_K no] due to (7a), and the remaining projection of *ryokoo* is fixed as a V projection by [_{T/N} ori] due to (7b). However, the structure in (32b') is ill-formed, too, because the Genitive Case marked partner argument *kazoku-to-no* ends up being immediately dominated by a V projection in (32b') (cf. Saito 1982, Murasugi 1991, etc.) Consequently, it turns out that the parser cannot yield any well-formed representation for Shibatani and Kageyama's (1988) example (30b), as desired (cf. 13b; 31a-b for 30a).

5. Conclusion

In this paper, following Martin (1975) and Kageyama (1993), I have assumed that a verbal noun in Japanese is a special grammatical category (cf. Grimshaw and Mester 1988, Saito and Hoshi 2000, among others). Taking seriously the fact that many of verbal nouns are borrowed from Chinese and some are taken from English, or are of native origin, I have attempted to argue for Hoshi's (in press) processing/use-based analysis of verbal nouns. More specifically, here, I have tried to argue that the invaluable insight provided by Dynamic Syntax (Kempson et al. 2001, Cann et al. 2005, Cann et al. 2009, among others) might shed a new light on how a natural language accommodates borrowing such as verbal nouns. In particular, here, I have attempted to claim that the underspecification of lexical information and the update of such information in the course of the left to right incremental processing might provide a proper way to reveal the nature of borrowing.

I leave for my future research questions as to if the proposed parsing-based analysis can account for the other intriguing properties of Japanese verbal nouns discovered by Shibatani and Kageyama (1988), Kageyama (1993), Sugioka (2009), etc. and if it is indeed possible for us to extend the proposed Dynamic Syntax analysis of verbal nouns to 'adjectival nouns,' another type of borrowing in Japanese.

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- ¹ The reader is referred to Hoshi (in press) for a detailed comparison between Saito and Hoshi's (2000) LF incorporation analysis and Hoshi's (in press) processing-based analysis.
- ² See Hoshi (in press) for some potential problems for the analyses of a verbal noun in terms of complex predicate formation (cf. Terada 1990, Kageyama 1993, Sato 1993, Matsumoto 1996, Dubinsky 1997, among others).
- ³ The reader is referred to Hoshi (in press) for arguments for 'mixed category projections' such as (15c) and (17c). See Sugioka (2009) for more arguments for a 'mixed category projection' projected by a verbal noun.
- ⁴ See Hoshi (in press) for an argument that the predicate fronting data like (20a-b) pose a problem for the analyses of light verb constructions which are based on complex predicate formation (cf. Grimshaw and Meter 1988, Saito and Hoshi 2000, among others).