

Locative Postpositions and Conceptual Structure in Japanese

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Abstract

This paper proposes two syntax-semantics correspondence rules which consistently account for the distribution of Japanese locative postpositions *ni* and *de*. We demonstrate how to adapt the machinery of the occurrence of the postpositions based on the assumption of Conceptual Semantics (Jackendoff, 1983; 1990; 1991) to fit the organization of Japanese grammar. The correspondence rules correlate with semantic distinction of verb classes: the semantic field distinction between Spatial and Temporal with respect to the BE-function encoded in the lexical conceptual structure of several verbs. As a result, this paper elucidates the mechanism of locative alternation of the verb *aru* ‘be’, which has not been fully explicated.

1 Introduction

Japanese postpositions *ni* and *de* indicate locations, which are exemplified below.

- (1) a. Kauntaa-no-ue- $\{ni/*de\}$ gurasu-ga aru.
bar-GEN-on glass-NOM is
‘There is a glass on the bar.’
- b. Kauntaa-no-ue- $\{*ni/de\}$ gurasu-ga subetta.
bar-GEN-on glass-NOM slid
‘A glass slid on the bar.’

As shown in (1a) *de* cannot be used with the stative verb *aru* ‘be’ to indicate a location where an object exists, and as shown in (1b) *ni* cannot occur with non-stative verb *suberu* ‘slide’ which expresses motion of an object. It can be argued that *ni* indicates “location of a state”, while *de* indicates “location of an event or action”.

However, the locational verb *aru* ‘be’ shows the following alternation between *ni* and *de*.

- (2) a. Kono hoteru- $\{ni/*de\}$ hooru-ga aru.
This hotel-in hall-NOM is
‘There is a hall in this hotel.’
- b. Kono hoteru- $\{*ni/de\}$ konsaato-ga aru.
This hotel-in concert-NOM is
‘There is a concert in this hotel.’

Since the postposition *de* can be used with the stative verb *aru* ‘be’ as shown in (2b), we cannot simply refer to the stative/non-stative distinction of the predicate involved in order to predict the distribution of *ni* and *de*.

Although many descriptive and theoretical studies have discussed the syntactic and semantic properties of these postpositions (e.g. Kageyama, 1974; Kamio, 1980; Martin, 1987; Moriyama, 1988; Nakau, 1994a; 1994b; 1995; 1998; Teramura, 1982, among others), none of them have fully accounted for the distribution of the postposition *ni* and *de* and the semantic difference between them.

In this paper we consider the semantic difference between the two locative postpositions and give an account of the semantic structures for sentences involving locative *ni*- or *de*-phrases within the framework of Jackendoff’s (1983; 1990; 1991) Conceptual Semantics.

2 Distribution of *Ni* and *De*

2.1 Two Types of Location

There are cases where *ni* can occur with a non-stative verb as in (3a), and *de* can appear with a stative verb as in (3b).

- (3) a. Kauntaa-no-naka-*ni* baaten-ga tatta.
bar-GEN-inside barman-NOM stood
'A barman stood inside the bar.'
- b. Raunji-*de*-wa biiru-no nedan-ga takai.
lounge-at-TOP beer-GEN price-NOM high
'The price of beer is high at the lounge.'

In (3a), the entity *baaten* 'barman' occupies the place denoted by the *ni*-phrase. In (3b), 'the price of beer being high' obtains at the location denoted by the *de*-phrase.

2.2 Locational Verb *Aru*

On the semantic level, there are two points to be addressed with regard to the examples in (2). The first point to be noted is that the choice between *ni* in (4a) and *de* in (4b) below seems to be related to the ontological category of the nominative NP.

- (4) a. Kono hoteru-*{ni/*de}*
This hotel-in
[_{NP} hooru/steeji/raunji]-ga aru.
hall/stage/lounge-NOM is
'There is a
{hall/stage/lounge} in this hotel.'
- b. Kono hoteru-*{*ni/de}*
This hotel-in
[_{NP} konsaato/kekkonshiki/kaigi]-ga aru.
concert/wedding/meeting-NOM is
'There will be a
{concert/wedding/meeting} in this hotel.'

That is, the nominative NP denoting a location of an "individual" co-occurs with a PP headed by *ni*, while the nominative NP denoting a location of a "situation" co-occurs with a PP headed by *de*, as Nakau (1998) claims.

The second point is the semantic relatedness of the two instances of the same verb *aru* 'be' in (4a) and (4b). There is a clear intuition about the relatedness between the two, so that one may reasonably assume that they are two different realizations of the same verb *aru*: both of them mean that some "entities" are located at some "locations", though they differ in what are counted as "entity" and "location". The *aru* in (4a) means that some Things are located at some spatial "locations", while the *aru* in (4b) means that some Events are located at some temporal "locations" that are not expressed.¹

¹When the temporal location is expressed, it is realized as a PP headed by *ni*, the same phonetic form as that of the head

The semantic relatedness between the two uses of *aru* as mentioned above should be reflected in the lexical conceptual structure (henceforth, LCS) of the verb.

3 Two Types of Location

3.1 Two Types of Location in English

Jackendoff (1983; 1990) distinguishes two types of "location" by assuming that the conceptual category [PLACE] can appear either as an argument or a modifier in conceptual structure.

- (5) a. The mouse is under the table.
[_{State} BE ([_{Thing} MOUSE],
[_{Place} UNDER ([_{Thing} TABLE])])] (Jackendoff, 1990: 72)
- b. The mouse stayed under the table.
[_{Event} STAY ([_{Thing} MOUSE],
[_{Place} UNDER ([_{Thing} TABLE])])] (cf. Jackendoff, 1983: 163, 172)
- (6) The mouse ran around under the table.
[_{Event} [GO ([_{Thing} MOUSE], [_{Path} AROUND])]
[_{Place} UNDER ([_{Thing} TABLE])]]] (Jackendoff, 1990: 72)

In (5), [PLACE] appears as the second argument of the locational function BE as (5a) or STAY as (5b), which shows that the [PLACE] is the location where the Thing involved exists. The Place-arguments in (5) are licensed by one of the *innate formation rules for the conceptual structure* shown in (7a).

In (6), on the other hand, the [PLACE] is not an argument of the Event-function GO, but appears as a restrictive modifier, designating the location where the whole Event occurs. The conceptual structure in (6) is licensed by the *restrictive modification schema* shown in (8):

(8) Restrictive Modification Schema

$$[\text{Entity}_1] \rightarrow \left[\begin{array}{c} X \\ [\text{Entity}_2] \end{array} \right]$$

(Jackendoff, 1990: 56)

of the spatial locative *ni*-phrase, as shown in (i).

- (i) 7 *ji-ni* kono hoteru-*de* konsaato-ga aru.
7:00-at this hotel-in concert-NOM is
'There is a concert in this hotel at 7:00.'

We will discuss the realization of the temporal location in Section 4.3.

- (7) a. [PLACE] → [Place PLACE-FUNCTION ([Thing])]
- b. [PATH] → $\left[\begin{array}{c} \left\{ \begin{array}{l} \text{TO} \\ \text{FROM} \\ \text{TOWARD} \\ \text{AWAY-FROM} \\ \text{VIA} \end{array} \right\} \left(\left(\begin{array}{l} [\text{Thing}] \\ [\text{Place}] \end{array} \right) \right) \end{array} \right]$
- c. [EVENT] → $\left\{ \begin{array}{l} [\text{Event GO} ([\text{Thing}], [\text{Place}])] \\ [\text{Event STAY} ([\text{Thing}], [\text{Place}])] \end{array} \right\}$
- d. [STATE] → $\left\{ \begin{array}{l} [\text{State BE} ([\text{Thing}] [\text{Place}])] \\ [\text{State ORIENT} ([\text{Thing}] [\text{Place}])] \\ [\text{State EXT} ([\text{Thing}] [\text{Place}])] \end{array} \right\}$
- e. [EVENT] → $\left[\begin{array}{c} \text{CAUSE} \left(\left(\begin{array}{l} [\text{Thing}] \\ [\text{Event}] \end{array} \right), [\text{Event}] \right) \end{array} \right]$
- (Jackendoff, 1990: 43)

- (9) a. [Situation SITUATION-FUNCTION ([Thing x], [Place y])] : Conceptual Structure
 \updownarrow
 [S ... [PP [NP y] ni] ...] : Syntactic Structure
- b. $\left[\begin{array}{c} \text{SITUATION-FUNCTION} (\dots) \\ [\text{Situation} \quad \quad \quad [\text{Place z}]] \end{array} \right]$: Conceptual Structure
 \updownarrow
 [S ... [PP [NP z] de] ...] : Syntactic Structure

In (8), [Entity₂] modifies X, which represents the rest of the constituent [Entity₁]. According to this schema, the constituent [Place UNDER ([Thing TABLE])] in (6) is considered to modify the whole function-argument structure: GO([Thing MOUSE], [Path AROUND]) in the [Event].

3.2 Linking of Spatial Concepts in Japanese

We claim that the difference between *ni* and *de* shown in the previous sections can be encoded as the structural distinction between arguments and modifiers in conceptual structure. *Ni* indicates the location of a “Thing” whereas *de* indicates the location of a “Situation” which subsumes states, events, actions, and so on in Jackendoff’s (1983) terms. In Japanese the Place-argument in (5) is realized as a *ni*-phrase while the Place-modifier in (6) as a *de*-phrase, though in English they can be expressed by the same PP.

Regarding the linking of conceptual categories [PLACE] with Japanese postpositional phrases, we propose the correspondence rules in (9).

The category [SITUATION] in (9) is a supercategory which subsumes Events and States (Jackendoff, 1991). In (9a), a conceptual constituent [PLACE] that appears in conceptual structure as the second argument of a two-place Situation-function (i.e. Event- or State-function) corresponds to a PP headed by *ni* in syntactic structure. On the other hand, in (9b) a [PLACE] that appears as a restrictive modifier in a [SITUATION] in conceptual structure corresponds to a PP headed by *de* in syntactic structure.

The rule (9a) provides an account for the difference in grammaticality between *ni* and *de* in (1a) repeated as (10).

- (10) Kauntaa-no-ue-*{ni/*de}* gurasu-ga aru.
 bar-GEN-on glass-NOM is
 ‘There is a glass on the bar.’

The conceptual structure for the verb *aru* ‘be’ in (10) is represented as (11) by the BE-function, which is the same as the conceptual structure for its English counterpart *be* in (5a).

- (11) Kauntaa-no-ue-*ni* gurasu-ga aru.
 bar-GEN-on glass-NOM is

$$[\text{State BE}([\text{Thing GLASS}], [\text{Place ON}([\text{Thing BAR}]])]) : \text{CS}$$

$$\updownarrow$$

$$[\text{S} \dots [\text{PP} [\text{NP kauntaa-no-ue } ni] \dots]] : \text{SS}$$

In the framework of Conceptual Semantics, the correspondence rules (9a) and (9b) belong to the class of syntax-semantics correspondence rules in Japanese grammar.

4 Locational Verb *Aru* and Semantic Fields

4.1 Spatial and Temporal Fields

Following the basic assumption of Conceptual Semantics, we account for the difference and the relatedness between the two uses of the locational verb *aru* ‘be’ in (2a) and (2b), repeated as (12a) and (12b), respectively.

- (12) a. Kono hoteru- $\{ni/*de\}$ hooru-ga aru.
 This hotel-in hall-NOM is
 ‘There is a hall in this hotel.’
 b. Kono hoteru- $\{ni/de\}$ konsaato-ga aru.
 This hotel-in concert-NOM is
 ‘There is a concert in this hotel.’

We claim that both instances of the verb *aru* ‘is’ are realizations of the semantic function BE, and are distinguished from each other by the kind of *semantic field* (Jackendoff, 1983), more precisely Spatial field or Temporal field, in which the Event or the State is defined.

Thematic Relations Hypothesis (henceforth, TRH) in (13), which was originally suggested by Gruber (1976) and developed by Jackendoff (1983) to explore the parallelism across different semantic fields.

One of the evidence for TRH is the fact that many verbs appear in two or more semantic fields, forming intuitively related paradigms. Here we deal only with Spatial and Temporal fields that are relevant to the present discussion.

- (14) Spatial field
 a. The statue is in the park. (BE)
 b. We moved the statue from the park to the zoo. (GO)
 c. Despite the weather, we kept the statue on its pedestal. (STAY)
 (Jackendoff, 1983: 190)

- (15) Temporal field
 a. The meeting is at 6:00. (BE)
 b. We moved the meeting from Tuesday to Thursday. (GO)
 c. Despite the weather, we kept the meeting at 6:00. (STAY) (Jackendoff, 1983: 190)

The conceptual structures for (14) and (15) are represented as (16) and (17), respectively.

These two semantic fields have parallel conceptual structures. They are realizations of the basic conceptual functions BE (for stative location), GO (for transition), and STAY (for eventive, durational location). They differ only in what is counted as an entity being located in a Place. In terms of the TRH, Temporal field is defined as follows:

- (18) Temporal field:
 a. [EVENTS] and [STATES] appear as theme.
 b. [TIMES] appear as reference object.
 c. Time of occurrence plays the role of location. (Jackendoff, 1983: 189)

The semantic relatedness of the two variants of the same verb serves to restrict the ranges of possible ontological and conceptual categories (i.e. Thing, Event, Place, and so on) that can appear as Theme and as reference object of Event- or State-functions in each semantic field.

4.2 Two Variants of the Verb *Aru*

The semantic relatedness of the two variants of the verb *aru* in (12a) and (12b) is postulated as (19).

- (19) Lexical Entry for the Verb *Aru*

$$\left[\begin{array}{l} aru \\ v \\ \langle PP_j \rangle _ \\ \left\{ \begin{array}{l} BE_{\text{Spat}}([\text{THING}]_i, \\ [\text{Place PLACE-FUNCTION}_{\text{Spat}}([\text{THING}])_j] \end{array} \right\} \\ \left\{ \begin{array}{l} BE_{\text{Temp}}([\text{EVENT}]_i, \\ [\text{Place PLACE-FUNCTION}_{\text{Temp}}([\text{TIME}])_j] \end{array} \right\} \end{array} \right]$$

The LCS in (19) consists of two alternating variants of the same BE-function: BE_{Spat} and BE_{Temp} . They are distinguished from each other by the kind of semantic field features shown as subscripts attached to the functions, i.e. spatial or temporal. These two functions, each enclosed in curly brackets { }, are interpreted as mutually exclusive (cf. Jackendoff, 1990: 76–77).

(13) *Thematic Relations Hypothesis (TRH)*

In any semantic field of [EVENTS] and [STATES], the principal event-, state-, path-, and place-functions are a subset of those used for the analysis of spatial location and motion. Fields differ in only three possible ways:

- a. what sorts of entities may appear as theme;
- b. what sorts of entities may appear as reference object;
- c. what kind of relation assumes the role played by location in the field of spatial expressions.

(Jackendoff, 1983: 188)

(16) a. [State BE_{Spat} ([Thing STATUE], [Place IN ([Thing PARK]])])]

b. [Event CAUSE ([Thing WE], [Event GO_{Spat} ([Thing STATUE], [FROM ([Place PARK])], [Path TO ([Place ZOO)])])])]

c. [Event CAUSE ([Thing WE], [Event STAY_{Spat} ([Thing STATUE], [Place ON ([Thing PEDESTAL])])])]

(17) a. [State BE_{Temp} ([Event MEETING], [Place AT_{Temp} ([Time 6:00])])]

b. [Event CAUSE ([Thing WE], [Event GO_{Temp} ([Event MEETING], [FROM_{Temp} ([Time TUESDAY]), [Path TO_{Temp} ([Time THURSDAY])])])])]

c. [Event CAUSE ([Thing WE], [Event STAY_{Temp} ([Event MEETING], [Place AT_{Temp} ([Time 6:00])])])]

(Jackendoff, 1983: 190–191)

These conceptual-categorical restrictions, being fully integrated into the LCS for the verb, serve as the selectional restrictions with which the verb constrains its arguments. We can present the conceptual structures of sentences (12a) and (12b) as in (20a) and (20b), respectively.

- (20) a. Kono hoteru-*ni* [NP hooru]-ga aru.
 This hotel-in hall-NOM is
 [State BE_{Spat} ([Thing HALL],
 [Place IN_{Spat} ([Thing HOTEL])])]
 ↓
 [S ... [PP [NP kono hoteru] *ni*] ...]
- b. Kono hoteru-*de* [NP konsaato]-ga aru.
 This hotel-in concert-NOM is
 [BE_{Temp} ([Event CONCERT],
 [Place AT_{Temp} ([Time])])]
 [State [Place IN_{Spat} ([Thing HOTEL])]]
 ↓
 [S ... [PP [NP kono hoteru] *de*] ...]

In (20a) the verb *aru* is a realization of the spatial function BE_{Spat} that takes a Thing as its Theme-argument and a spatial location as its Place-argument. The latter argument is realized as the locative PP headed by *ni*, whose realization is

consistent with (9a). In (20b) the verb *aru*, on the other hand, corresponds to the temporal function BE_{Temp} which requires an Event as its Theme-argument and a Time as the reference object.

4.3 Locative *Ni/De* Alternation

As the definition of the Temporal field in (18) states, BE_{Temp} cannot take any Place-argument designating a spatial location of the Theme. This is the crucial difference between BE_{Spat} and BE_{Temp}, which triggers *ni/de* alternation in syntax.

If the semantic field changes from spatial to temporal, the kind of the ontological category required as the reference object of the BE-function also changes from Thing to Time. The Place-constituent designating a spatial location can no longer work as the second argument of the BE_{Temp}, and therefore it is demoted to the restrictive-modifier position in conceptual structure, which is syntactically realized as a PP headed by *de*, as the rule (9b) predicts.

In sentence (21) below, the BE_{Temp} takes as its second argument a temporal Place-constituent [Place AT_{Temp} ([Time 7:00])], which corresponding to *7 ji-ni* ‘at 7:00’, a syntactic PP headed by *ni*.

- (21) 7 *ji-ni* kono hoteru-de konsaato-ga aru.
 7:00-at this hotel-in concert-NOM is
 ‘There is a concert in this hotel at 7:00.’

$$\left[\begin{array}{l} \text{BE}_{\text{Temp}} ([\text{Event CONCERT}], \\ \text{Place AT}_{\text{Temp}} ([\text{Time 7:00}])) \\ \text{State Place IN}_{\text{Spat}} ([\text{Thing HOTEL}])] \end{array} \right]$$

In the Temporal field, as defined in (18), the BE_{Temp} requires as its reference object a [TIME].

5 Verb Classes and the Occurrence of PP

This section deals with the LCS of some verb classes which are exemplified in (1b), (3a) and (3b), and are repeated here as (22), (23) and (24).

- (22) Kauntaa-no-ue-*de* gurasu-ga
 bar-GEN-on glass-NOM
 subetta/korogatta/yuraida.
 slid/fell/wobbled
 ‘A glass {slid/fell/wobbled} on the bar.’

- (23) Kauntaa-no-naka-*{de/ni}* baaten-ga
 bar-GEN-inside barman-NOM
 tatta/suwatta/nekoronda.
 stood/sat/lay
 ‘A barman {stood/sat/lay} inside the bar.’

- (24) Raunji-*de*-wa biiru-no nedan-ga takai.
 lounge-at-TOP beer-GEN price-NOM high
 ‘The price of beer is high at the lounge.’

5.1 Object-internal Motion Verbs

The verb in (22) is semantically characterized as a verb of object-internal motion (Jackendoff, 1990: 89). The conceptual structure for verbs in this class is represented by the one-place Event-function MOVE that takes only a Theme-argument, as shown in (25).

- (25) $[\text{Event MOVE} ([\text{Thing } _])]$

Since MOVE does not take a Place-argument, any Place-constituent co-occurring with the verb must occupy the modifier position in conceptual structure as in (26).

- (26) Kauntaa-no-ue-*de* gurasu-ga subetta.
 bar-GEN-on glass-NOM slid

$$\left[\begin{array}{l} \text{MOVE} ([\text{Thing GLASS}]) \\ \text{Event Place ON} ([\text{Thing BAR}]) \end{array} \right]$$

↓

[S ... [PP [NP kauntaa-no-ue] *de*] ...]

Consequently, a Place-constituent co-occurring with MOVE is always syntactically realized as a PP headed by *de* by the correspondence rule (9b).

5.2 Verbs of Configuration

The essential part of the LCS for the verb in (23) is represented as (27).

- (27) $[\text{Event INCH} ([\text{State CONF} ([\text{Thing } _])])]$

INCH is the Event-function denoting an inchoative Event and it maps its State-argument into an Event that terminates in that State (Jackendoff, 1990: 92). CONF is the one-place State-function that expresses the internal spatial configuration of its Theme (Jackendoff, 1990: 91). The co-occurrence of a *de*-phrase with the verbs in (23) is also licensed by the rule (9b).

However, some verbs in this class can also take a locative *ni*-phrase as well as a *de*-phrase.² Since the LCS (27) does not contain a BE_{Spat} , a problem arises as to how the co-occurrence of a *ni*-phrase with the verbs in (23) is licensed.

On the intuitive understanding of sentence (23), Ueno (2007) points out that *baaten* ‘barman’ changed not only his configuration but also his his spatial location.³ According Ueno (2007), when verbs in this class take a locative *ni*-phrase, its inherent meaning is subordinated in terms of conceptual-structure configuration (backgrounded), whereas the meaning of “change of location” yielded by conflation is superordinated (foregrounded) as (28).

- (28) LCS for the Verbs of Configuration

$$\left[\begin{array}{l} \text{INCH} \left(\left[\begin{array}{l} \text{BE}_{\text{Spat}} ([\text{Thing } _]^{\alpha}_j, [\text{Place } _]) \\ \text{State WITH} [\text{State CONF} ([\alpha])] \end{array} \right] \right) \end{array} \right]$$

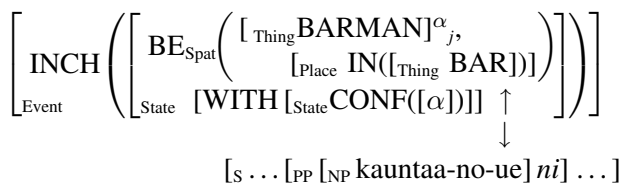
If the correspondence rule (9a) is applied to (28), the Place-argument of the BE_{Spat} is realized as the locative PP headed by *ni* as follows.

²The other verbs in this class cannot take a locative *ni*-phrase, as shown in (ii).

- (ii) Kauntaa-no-naka-*{*ni/de}* baaten-ga
 bar-GEN-inside barman-NOM
 syaganda/ojigishita/senobishita.
 crouched/bowed/stretched himself
 ‘A barman {crouched/bowed/stretched himself} inside the bar.’

³The sentence with *de*-phrase as in (ii) implies that barman changes his configuration but does not imply that he changes his spatial location.

(29) Kauntaa-no-naka-*ni* baaten-ga tatta.
 bar-GEN-inside barman-NOM stood



Thus, the desired syntactic realization of PP and semantic interpretation of the sentence are obtained by the correspondence rule (9a).

5.3 Identificational Field

To deal with sentence (24), another semantic field *identificational*, which concerns the categorization and ascription of properties, is needed. In terms of the TRH, Identificational field is defined as follows:

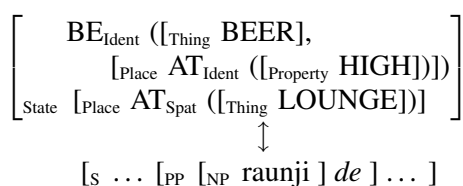
(30) Identificational field:

- a. [THINGS] appear as theme.
- b. [THING TYPES] and [PROPERTIES] appear as reference object.
- c. Being an instance of category or having a property plays the role of location.

(Jackendoff, 1983: 194)

The conceptual structure for the adjective *takai* ‘high’ in (24) is represented as the following (31) by the finction BE_{Ident} .

(31) Raunji-*de*-wa biiru-no nedan-ga takai.
 lounge-at-TOP beer-GEN price-NOM high



Since BE_{Ident} requires a Thing as its Theme-argument and a Property as the reference object, any Place-constituent co-occurring with the verb must occupy the modifier position in conceptual structure by the rule (9b).

6 Concluding Remarks

In this paper, we have proposed two kinds of syntax-semantics correspondence rules within the framework of Conceptual Semantics. We have observed the distribution of locative postpositional *ni*-marked and *de*-marked phrases and the semantic difference between them in Section 1 and 2.

In Section 3, we have demonstrated how to adapt the machinery of the occurrence of the spatial postpositional phrases based on the assumption of Conceptual Semantics to fit the organization of Japanese grammar. The conceptual-categorical restrictions, being fully integrated into the LCS for the verb, serve as selectional restrictions that the verb imposes on its Place-argument, which is realized as *ni*-phrase in Japanese.

We have also explicated the mechanism of the locative *ni/de* alternation seen with the verb *aru* ‘be’ in Section 4, and co-occurrence of the spatial and temporal locative postpositional phrases in Section 5 on the basis of the correspondence rules and the semantic field distinction with respect to the BE-function encoded in the LCS of several verbs.

In this paper, we have only provided the account of syntax and semantics conditions for the distribution of locative phrases marked with the postpositions *ni* and *de*. One of the reviewers pointed out that *wo*-marked locative phrase, the presence of Goal-reading with *ni*-phrases and the absence of such a reading with *de*-phrases should be explained within our framework. We will leave the analysis of the issue for future work.

Acknowledgments

We are indebted to three anonymous PACLIC reviewers, Pilar Valverde and Robert Logie for their invaluable comments on an earlier version of this paper. All remaining inadequacies are our own. This research is partially supported by the Grant-in-Aid for Scientific Research (C), 24500189 of the Japan Society for the Promotion of Science (JSPS).

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