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The Syntax of Three Japanese Postpositions

Mikael Vinka

0. Introduction

This article presents a descriptive analysis of the Japanese postpositions *e, ni* and *de*. These postpositions can serve a large number of functions, but I will concentrate on the instances where they denote LOCATIVE (*ni* and *de*), GOAL (*ni* and *e*) and INSTRUMENT (*de*).

The following study is conducted within the frame of the Government and Binding approach to linguistic inquiry. As concerns Japanese phrase structure, I use the model presented in Takano 1991, where it is assumed that Japanese is a configurational language, rather than a non-configurational one.

In accordance with Miyagawa 1989 among others, I consider the case particles *ga* (NOM), *o* (ACC) as clitics, whereas the particles to be treated below are considered as postpositions heading PPs. (See Miyagawa 1989: chapter 1 for a discussion.)

In section 1, I will introduce the postpositions treated in this paper through traditional grammar. There are two reasons for doing so. First, it gives a reader who does not know Japanese an opportunity to familiarize himself with Japanese postpositions and secondly, most of the forthcoming discussion has its basis in the observations made by traditional grammarians.

In 2 the working hypothesis of the paper is outlined. 3 discusses the licensing of locative phrases and constitutes the core of the paper. 4 treats directionals and 5 deals with instrumentals. Much of the reasoning in 4 and 5 follows from 3.

Finally, in section 6 some concluding remarks are given.

1. A traditional account of *E, NI* and *DE*

1.1. E and NI

Direction is denoted by *e* and *ni*. The closest English equivalents to these postpositions are 'toward' or 'to'. Consider the following examples:

1.a. Boku ga   Kyooto e itta.[1]
      I   NOM   Kyoto   to go (past)
      'I went to/toward Kyoto.'[2]

b. Boku ga   Kyooto ni itta.
    I   NOM   Kyoto   to go (past)
    'I went (in)to Kyoto'

c. Taroo ga   uchi e kaetta.
    Taroo NOM   home to return (past)
    'Taroo went (toward) home .'

d. Taroo ga   uchi ni kaetta.
    Taroo NOM   home to return (past)
    'Taroo went home (and stayed there).'

Alfonso 1989:27 notes that there is a slight difference in meaning depending on which postposition is used: "*e* signals the direction *towards* which one moves, while *ni* implies that one went *into* the place indicated". Ono 1973 and Makino & Tsutsui 1986 give similar accounts.[3]

Notice that together with verbs of giving it is impossible to use *e* to denote the person to whom something is given. In such cases *ni* must be used:

2.a. Taroo ga   Hanako ni hana o   ageta.
      Taroo NOM   Hanako to flower ACC   give (past)
      'Taroo gave Hanako a flower.'

b.   *Taroo ga Hanako e hana o ageta.

1.2. NI and DE

Both *ni* and *de* denote location. Alfonso 1989:57 states that *de* "indicates the *place where an activity takes place*", whereas *ni* indicates the place where "something or somebody is *placed* or *situated*" (p. 212).

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[1]The Hepburn Romanization System is used throughout in the transcriptions of Japanese.
[2]The English translations given in (1) are meant to shed light on the difference between *ni* and *de*. Hence the use of slashes and parentheses.
[3]See Morita 1981 for a thorough traditional description of the usage of the postpositions treated in this article.

3.a. Watashi wa   gakkoo de   eigo   o   naratta.
      I   TOP   school in   English   ACC learn (past)
      'I learned English in School.'

b. Maiban,   boku   ga   Tsubohachi de   biiru   o   nomu.
    Every night I   NOM   Tsubohachi at   beer   ACC drink (pres)
    'I drink beer at the pub called Tsubohachi every night.'

c. Watashi wa   Gifu-shi ni   sunde iru.
    I   TOP   Gifu City in   live (pres)
    'I live in Gifu City.'

d. Boku   wa   ano isu ni   suwari-tai.
    I   TOP   that chair on   sit want (pres)
    'I want to sit on that chair.'

The use of *de* and *ni* in (4) is explained in the same manner: "The *location* is signalled by the particle *ni* when the subject is one concrete tangible thing which occupies a definite place; e.g., a person, a house, a city. *Location* is signalled by the particle *de* when the subject stands for an activity, such as a party, a concert, an examination, a show, etc" (Alfonso 1989:104).

4.a. Ano heya ni   seito   ga   iru.[4]
      that room in   student NOM   exist (pres)
      'There are students in that room.'

b. Ano depaato   ni   erebeeta ga   aru.
    that department store in   elevator NOM   exist (pres)
    'There are elevators in that department store.'

c. Sono kyooshitsu de   shiken ga   aru.
    that classroom in   test   NOM   exist (pres)
    'There is a test in that classroom.'

d. Sono uchi de   paatii ga   aru.
    that house in   party   NOM   exist (pres)
    'There is a party in that house.'

One more function of *de* will need to be mentioned, namely that of instrument. In (5) *de* serves this purpose:

5.a. Boku   wa   jitensha de   gakkoo e   itta.
      I   TOP   bicycle   INSTR   school to go (past)
      'I went to school by bicycle.'

---

[4]The Japanese verbs *aru* and *iru* are both glossed as 'exist'. *Aru*, on the one hand, co-occurs only with [-ANIMATE] NPs case marked for nominative, while *iru* co-occurs with [+ANIMATE] NPs marked for nominative case.

b. Hanako wa   naifu   de   Taroo   o   koroshita.
   Hanako TOP   knife   INSTR   Taroo   ACC   kill (past)
   'Hanako killed Taroo with a knife.'

c. Watashi   wa   enpitsu de   tegami o   kaita.
   I   TOP   pencil INSTR   letter ACC   write (past)
   'I wrote a letter with a pencil.'

d. Nihonjin   wa   hashi   de   taberu.
   Japanese people TOP chopsticks INSTR   eat (pres)
   'Japanese people eat with chopsticks.'

2. Argument Structure and Postpositions

Bierwisch 1988:6 assumes "that prepositions have both an internal and an external θ-role, the former θ-marking the complement, the latter being discharged in different ways according to the modificational, predicative, and complement position of their PP". Bierwisch (ibid:7) suggests the following lexical entry for the German preposition *über* 'above':

6.   /über/: [-V, -N,-Dir]: λy [$\underline{\lambda x}$ [x [ABOVE y]]][5]
      |_PF_| |____C____| |_θ-grid_|
                           |_____SF_____|

As for Japanese then, which is a postpositional language, a postposition P takes an internal argument y and external argument x. (7) shows a highly simplified illustration of this:

7. $((yP)x)$[6]

Hence I will argue that it is not only the argument structure of verbs that rules the distribution of postpositional phrases headed by *ni*, *e* and *de*; the a-structure of the postpositions themselves plays a crucial role as well. However, I will not launch into a discussion about formal semantics.

I consider the assignment of thematic roles as a mechanism that applies at two different levels:

8.a.   Primary θ-assignment conducted by the verb, which is crucial for the whole clause as such.

---

[5]PF = Phonetic Form, C = Syntactic and grammatical categorization, SF = Semantic Form. The external argument is underlined in the θ-grid. For a detailed discussion, the reader is referred to Bierwisch's own article.

[6]With the exception of (6), () is used for argument structure and [] for syntactic structure.

b.   Secondary θ-assignment, which determines the relationship between postpositions and other constituents of the clause or phrase.[7]

It is necessary to stipulate that the θ-criterion applies independently at both levels. As an exemplification, consider (9), which involves the three-place predicate *ageru* 'give':

9.   Taroo   ga   Hanako ni hana   o   ageta.
      Taroo   NOM   Hanako to flower   ACC   give (past)
      AGENT   GOAL   THEME[8]
      'Taroo gave Hanako a flower.'

It is by means of (8a) that the θ-roles in (9) are assigned; THEME is the most deeply embedded argument of the verb and AGENT is the external argument. At this level the essential information obtained is that a certain object, the THEME, is moved to a certain destination, the GOAL, and that this is initiated by the AGENT. Next, (8b) comes into the picture. The postposition *ni* assigns a θ-role to its internal argument *Hanako*, presumably LOCATIVE, and another θ-role to its external argument, *hana*. Thus, in (10) the above sequence represents Primary θ-roles and the bottom sequence displays Secondary θ-roles:

10.   AGENT   GOAL   THEME
      Taroo ga   Hanako ni   hana o ageta.
                  LOC   THEME

In this way Secondary θ-assignment assures that the relationship between *Hanako* and *hana* is secured, i.e. the THEME NP, rather than the Agent, is the external argument of the postposition *ni*. Assuming that the assignment of thematic roles applies to maximal projections it is also clear that it is the THEME NP rather than V' that is the external argument of the postposition.

The θ-criterion guarantees that the verb has only one argument to which THEME can be assigned. It also guarantees that the postposition has one and only one θ-role to assign to each of its arguments. This implies that the θ-criterion applies at both thematic domains and thus the generated sequences are double-checked.

---

[7]I leave the question open whether Primary θ-assignment applies before Secondary θ-assignment or whether the application is simultaneous. Thus, the terms Primary and Secondary only serve to distinguish the two θ-levels.

[8]The classification of thematic roles is essentially that of Haegeman 1991:41-2.

3. LOCATIVE

This section will mainly deal with locatives, as suggested by the title. However, other issues, such as phrase strucure, will be discussed, which are crucial not only for 3 but also for 4 and 5.

3.1. A survey of ni- *and* de-*locatives*

It was mentioned above that PPs headed by *ni* as well as *de* can function as LOCATIVE. It was also said that the former denotes the location of existence, while the latter denotes location of action. Consider the following examples:

11. a. Boku   ga   Takasu-mura   ni   sunde iru.
    I   NOM   Takasu village   LOC   live (pres)
    'I live in Takasu Village.'

    b. * Boku ga Takasu-mura de sunde iru.

Traditional grammar thus ascribes the grammaticality of (11a) and the ungrammaticality of (11b) to the fact that the verb *sumu* 'live' is a predicate denoting existence rather than an action. (12) is explained along the same lines:

12. a. Boku   wa   izakaya de   biiru   o   nonda.
    I   TOP   pub   LOC   beer   ACC   drink (past)
    'I drank beer in the pub.'

    b. *Boku wa izakaya ni biiru o nonda.

It is obvious that *nomu* 'drink' is a dynamic verb, and consequently LOCATIVE should be denoted by *de*.

However, upon encountering examples like those in (13), the suspicion is evoked that some other quality than existence/activity is relevant for the licensing of *de-* and *ni*-phrases:

13. a. Boku   wa   Gifu-ken   de Takasu-mura   ni   sunde   iru.[9]
    I   TOP   Gifu Prefecture LOC Takasu village   LOC   live (pres)
    'I live in Takasu Village, in Gifu Prefecture.'

---

[9]This kind of construction is, according to my native speaker informant, not very common, but it is not felt to be strange. It becomes, however, unacceptable if the 'subject' (more about this issue in 3.3.) is not topicalized, unless the PP headed by *de* is topicalized instead. Notice also that the PP headed by ni cannot be topicalized in double locative constructions of this type (see 3.6.):
i.   *Boku ga Gifu-ken de Takasu-mura ni sunde iru.
ii.   Gifu-ken de wa boku ga Takasu-mura ni sunde iru.
iii. *Takasu-mura ni wa boku ga Gifu-ken de sunde iru.

    b. Boku   wa   heya de   yasunda.
    I   TOP   room LOC   rest (past)
    'I rested in the room.'

I have not been able to find an account for the grammaticality of sentences like (13a) in any of the traditional grammars that I have consulted. As concerns (13b), the verb *yasumu* 'rest' is in one way or another considered to express some kind of action or activity. It is however difficult to say in what way *yasumu* differs from *sumu*, using such vague terms.

Makino & Tsutsui 1986:295 mention that *ni* can indicate "the surface of something upon which some action directly takes place". In order to show the difference between such use of *ni* in contrast to *de*, they give the following examples:

14. a. Michi   ni   e   o   kaita.[10]
    street   LOC   picture   ACC   draw (past)
    'I drew a picture on the street'

    b. Michi   de   e   o   kaita.
    street   LOC   picture   ACC   draw (past)
    'I drew a picture in the street'

Compare (14a) and (b) with (15) and (13a), which are very similar:

15. Boku   wa   Tookyoo   de   michi   ni   e   o   kaita.
    I   TOP   Tokyo   LOC   street   LOC   picture ACC   draw(past)
    'I drew a picture on the street in Tokyo.'

On the basis of (14), (15) and (13a) it appears plausible that the difference between *ni*-locatives and *de*-locatives is structural. According to Takezawa 1991:145 *ni*-phrases must be licensed in the domain of [+V], while *de*-phrases can be licensed anywhere. Moreover, there is a conspicuous contrast in scope between the the two locative phrases in e.g. (13a). While the *ni*-phrase has narrow scope, the *de*-phrase takes wide scope.

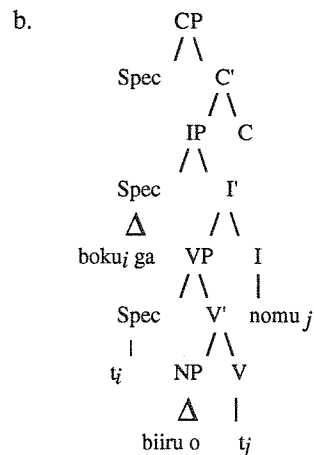*3.2. Japanese phrase structure*

In line with Takano 1989:220ff., I will assume that the maximal projection of the category X in Japanese is as in (16) below, where ZP is the complement of X and YP is the specifier of X, in accordance with X-bar theory.

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[10]Readers not familiar with Japanese should note that subjects are preferably dropped in most instances. Aside from the syntax allowing it, this fact can undoubtedly be explained by pragmatic and cultural factors.

16.   XP
        / \
   YP   X'
          / \
        ZP   X
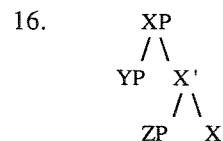
Furthermore, the clause consists of the two functional categories CP and IP on the one hand, and on the other hand the lexical category VP, arguments being base generated within the latter. Consider (17a) and its canonical form (17b):

17.a. Boku   ga   biiru o   nomu.
      I   NOM   beer   ACC   drink (pres)
      'I drink beer.'

b.   CP
                 / \
             Spec   C'
                   / \
                 IP   C
                / \
            Spec   I'
             Δ   / \
        boku$_i$ ga VP   I
                   / \ |
               Spec   V' nomu $_j$
                | / \
               t$_i$ NP   V
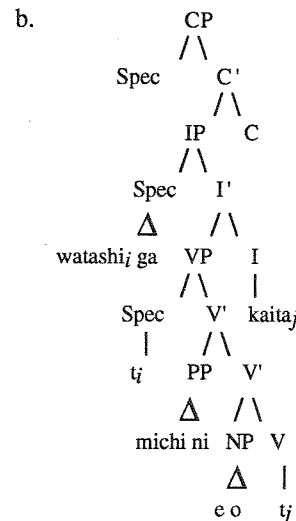   Δ |
                  biiru o t$_j$

I assume that case is assigned by the well known mechanisms of government and Spec-head agreement. Thus, the NP which is the complement of V, i.e. the sister of V, is assigned accusative case. The NP in SpecVP moves to SpecIP, the position for nominative case. In accordance with Takano 1989, I assume that topicalized XPs are moved to Spec CP:

18.   CP
              / \
          Spec   C'
           Δ   Δ
       boku$_i$ wa   t$_i$ biiru o nomu
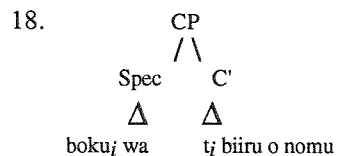
Given that a *ni*-phrase is licensed within the domain of [+V], as was said in 3.1 above, the structure of (19a) ought to be as shown in (19b), with the *ni*-phrase Chomsky-adjoined to V':

19.a. Watashi ga   michi   ni   e   o   kaita.
      I   NOM   street LOC   picture ACC draw (past)
      'I drew a picture on the street.'

b.   CP
                   / \
               Spec   C'
                     / \
                   IP   C
                  / \
              Spec   I'
               Δ   / \
        watashi$_i$ ga VP   I
                      / \ |
                  Spec   V' kaita$_j$
                   | / \
                  t$_i$ PP   V'
                       Δ   / \
                   michi ni NP   V
                            Δ |
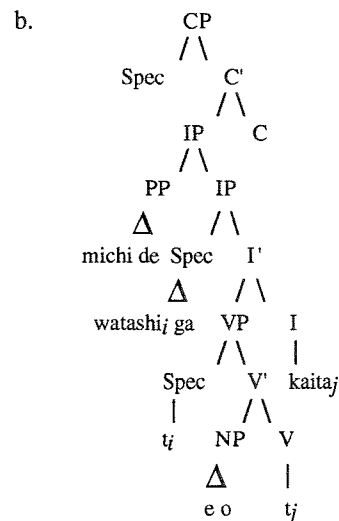   e o   t$_j$

Similarly, the *de*-phrase in (20a) would consequently have to occur in a position outside the domain of [+V], which is shown in (20b), where it is adjoined to IP:[11]

20.a. Michi   de   watashi ga   e   o   kaita.
      Street LOC   I   NOM   picture ACC draw (past)
      'I drew a picture in the street.'

---

[11]Note, however, that the following word-order is just as acceptable:
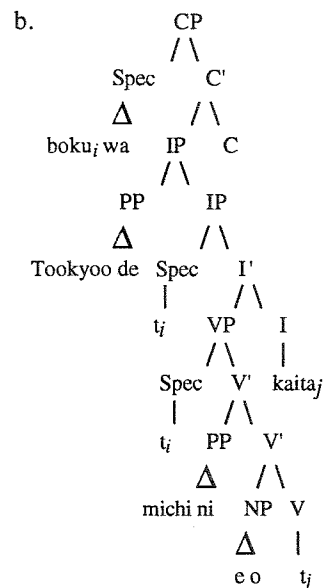
i. Watashi ga michi de e o kaita.

This means that the position of the *de*-PP is somewhat difficult to determine. Recall that (i) in footnote (9) has exactly the same word order, but is still judged as ungrammatical. It seems that the *de*-phrase is sometimes adjoined to IP and in other instances it must be adjoined to VP. A *de*-phrase never occurs inside VP proper, i.e. as an argument. This is in line with Takezawa's 1991 claim that *ni*-phrases are licenced within the domain of [+V].

b.

```
                CP
               / \
           Spec   C'
                 / \
               IP   C
              / \
           PP   IP
           Δ    / \
     michi de Spec  I'
           Δ     / \
    watashi_i ga VP   I
              / \    |
          Spec  V' kaita_j
           |    / \
           t_i NP   V
              Δ    |
             e o   t_j
```

On the basis of this, it can be assumed that (21a) (=15), which contains a *de*-phrase as well as a *ni* -phrase, should be represented as in (21b):

21.a. Boku   wa   Tookyoo   de   michi   ni   e   o   kaita.
      I   TOP   Tokyo   LOC   street LOC picture ACC draw (past)
      'I drew a picture on the street in Tokyo.'

b.

```
                CP
               / \
           Spec   C'
           Δ     / \
      boku_i wa  IP   C
                / \
             PP    IP
             Δ     / \
      Tookyoo de Spec  I'
             |    / \
            t_i  VP   I
                 / \  |
             Spec  V' kaita_j
              |   / \
             t_i PP   V'
                 Δ   / \
          michi ni  NP   V
                    Δ    |
                   e o   t_j
```

3.3. NI and DE and different types of verbs

Takezawa 1991 observes that the distribution of *ni* and *de* depends on whether the verb is unaccusative or unergative[12]. Now, consider (22) (= 11a):

22.   Boku ga Takasu-mura ni sunde iru.

Along the lines of Miyagawa 1989 it is plausible that *sumu* is an unaccusative verb and thus the subject *boku* would be base generated as a sister of V, where it is θ-marked by V, but because of the defective case assignment properties of the verb, the NP has to move to a position where it can be case marked, namely SpecIP. The same would thus be true of such verbs as *noru* 'ride' 'join' 'take part in', *hairu* 'enter', *au* 'meet', *katsu* 'win', *hantaisuru* 'oppose' etc. None of these verbs subcategorize NP*o*, but rather *ni*-complements[13]:

23.a. [_IP John_i ga[_VP[_V' kuruma ni[_V' t_i t_j]]]noru_j]
      John NOM   car   ride (pres)
      'John rides a car.'

   b. [_IP Boku_i ga [_VP[_V' ofuro ni[_V' t_i t_j]]]hairu_j]
      I NOM   bathtub   enter(pres)
      'I will take a bath.'

   c. [_IP Taroo_i ga [_VP[_V' Hanako ni [_V' t_i t_j]]]atta_j]
      Taroo NOM   Hanako   meet (past)
      'Taroo met Hanako.'

   d. [_IP Giants_i ga [_VP[_V' Dragons ni [_V' t_i t_j]]]katsu_j]
      Giants NOM   Dragons   win (pres)
      'The Giants will beat the Dragons.'

   e. [_CP Boku_i wa[_IP t_i[_VP[_V' ryooshin no iken ni[_V' t_i t_j]]]hantaishita_j]]
      I TOP   parent GEN opinion   oppose (past)
      'I opposed my parents' opinion.'

Now, in the light of this, consider (24) (=13b):

---

[12]Following Takezawa 1991, the term *unaccusative* as it is used here, includes unaccusatives *and* ergatives. *Unergative* corresponds to Burzio's *intransitive*. The important point here is the assumption that there is a class of verbs which take an internal argument NP which must move to SpecIP in order to be case marked, which is due to defective case marking properties of the verb. This class of verbs should be distinguished from another kind of verbs which do not take an internal argument NP, i.e. unergatives. For a thorough discussion, see Burzio 1986:chapter 1.

[13]I do not specify what thematic role the *ni*-complements of these verbs are assigned. What is important to notice is the syntactic behavior displayed in (23).

24.   Boku wa heya de yasunda.

The charcteristics of *yasumu* show that it cannot be a transitive verb, which is seen in its incapability of taking an NP*o*-complement:

25.   *Boku   wa   heya de   kodomo o   yasunda.
      I   TOP   room LOC   child   ACC   rest (past)

Takezawa 1991:146 shows that unergative verbs cannot take *ni*-complements since they are VP internal, but rather take *de*-adjuncts that structurally do not belong to VP proper[14]. The incapability of *yasumu* to subcategorize a *ni*-complement suggests that it is an unergative verb:

26.   *Boku wa ano heya ni yasunda.

Verbs showing the same characteristics as *yasumu* are *odoru* 'dance', *asobu* 'play' 'enjoy oneself', *hataraku* 'work' etc.

27.a. Minna   wa   Hachiman-choo   de   odoru.
       Everybody   TOP   Hachiman Town   LOC   dance (pres)
       'Everybody dances in Hachiman Town.'

   b. Kodomo   wa   soto   de   asobu.
      child   Top   outdoors LOC   play
      'The children play outdoors.'

   c. Watashi   ga   kaisha   de   hataraku.
      I   NOM   company LOC   work (pres)
      'I work in a company.'

3.4. The external argument of P

The relevant question to be asked at this point is why a *ni*-locative can only occur inside VP, while a *de*-locative cannot? As an answer to that question, I propose that the fundamental difference lies in what kind of external argument the postpositions subcategorize.

As have been shown, a *ni*-phrase cannot occur inside all types of VP. A fundamental requirement for a *ni*-phrase to be licensed is that the verb is not an unergative. There must be a base-generated complement NP of V, which, depending on the case-assigning properties of the verb, may remain or move. Furthermore, the function that the *ni*-locative serves is to specify the location of that NP, rather than the location of V'. If we consider (15) repeated here as (28):

---

[14]But, as noted earlier, a *de*-phrase may very well be adjoined to VP.

28.   Boku wa Tookyoo de michi ni e o kaita.

it is relatively obvious that *michi ni* is not primarily concerned with where the activity 'drawing' took place, but rather with the location of what was drawn, i.e. the picture. On the basis of such facts I propose that *ni* takes the sister NP of V as its external argument. This means that a *ni*-locative cannot be AGENT oriented, but is THEME or PATIENT oriented. This is obtained if the *ni*-PP governs its external argument via c-command.

It is however important to notice that the existence of a sister NP of V is not enough to license a *ni*-locative:

29.   *Boku ga izakaya ni biiru o nonda.

A *ni*-phrase must be part of the argument structure of the verb. If the verb has a thematic role LOCATIVE to assign in addition to THEME/PATIENT, the locative phrase will be realized as a PP headed by *ni*. Consequently, the *ni*-phrase in (29) is not part of the a-structure of the verb; it cannot be θ-marked by the verb and this renders it ungrammatical, even though *ni* can assign its external theta role to an appropriate argument. Consequently, both the external argument of *ni* as well as the *ni-phrase* itself must be assigned a θ-role each by V.

This implies that *de*-phrases are not part of the a-structure of verbs, which explains why they cannot occur inside VP. If we consider examples like (11) and (13a), repeated below as (11') and (13') respectively, it is clear that in order for a *de*-locative to occur, the verb must have assigned all its thematic roles before *de* can enter the structure.

11'.a. Boku ga Takasu-mura ni sunde iru.

   b. *Boku ga Takasu-mura de sunde iru.

13'.   Boku wa Gifu-ken de Takasu-mura ni sunde iru.

Thus, the only θ-role assignment that takes place in relation to *de*, is that done by the postposition itself.

As we have seen in constructions with three-place predicates like *kaku* 'draw', the *ni*-locative can be suppressed and it is still possible to let a *de*-locative modify IP/VP. Here it is important to notice that the two locative expressions are not semantically co-indexed. However, such an operation is not possible in constructions with two-place predicates like *sumu*, where the *ni*-phrase must be overtly realized in order for the *de*-locative to be allowed

to enter the structure, and moreover, the locative phrases here are semantically co-indexed.

3.5. NI and DE in aru/iru Constructions

Consider (30) (=4), which are examples with the verbs *aru/iru* 'exist':

30.a. Ano heya ni seito ga iru.

   b. Ano depaato ni erebeeta ga aru.

   c. Sono heya de shiken ga aru.

   d. Sono uchi de paatii ga aru.

The NPs assigned nominative case in (30a) and (b) are non-event nouns, whereas those in (30c) and (d) are event nouns. The PP occurring with [-event] nouns is headed by *ni*, whereas in the case of [+event] nouns the PP must be headed by *de*.

The account given in 3.3 does not apply to (30), given word order. The ungrammaticality of (31a-d) shows that the PPs in (31) must originate to the left of the *ga*-marked NPs:

31.a. *Seito ga ano heya ni aru.

   b. *Erebeeta ga ano depaato ni aru.

   c. *Shiken ga sono heya de aru.

   d. *Paatii ga sono de aru.

However, the NPs assigned nominative case in (31a-b) can be preposed by means of topicalization. Event nouns, on the other hand, do not undergo topicalization as readily as non-event nouns. Still, (32c-d) are far better than (31c-d)[15]:

32.a. Seito wa ano heya ni iru.

   b. Erebeeta wa ano depaato ni aru.

   c. ?Shiken wa sono heya de aru.

   d. ?Paatii wa sono uchi de aru.

---

[15]This might be due to the fact that in (32c) and (d), the sequence *de aru* is easily confused with the stylistically formal variant of the copula verb, which is *de aru* as well.

Having established basic word order, we will now turn to constructions containing [-event] nouns. Kuroda 1992:242-3 shows by PRO$_{ARB}$[16] tests in constructions of the type *NPni-NPga-aru/iru* that *NPni* must be the subject, using examples similar to (33):

33.a. PRO$_{ARB}$ seito   ga   iru   koto wa   yoi   koto da.
          student   NOM exist thing TOP   good thing be
    'It is good that there are students/It is good PRO to have students.'

   b. PRO$_{ARB}$ erebeeta ga   aru koto wa   yoi koto da.
             elevator   NOM exist thing TOP good thing be
    'It is good that there are elevators.'

   c. *Ano heya ni PRO$_{ARB}$ iru koto wa yoi koto da.

   d. *Ano depaato ni PRO$_{ARB}$ aru koto wa yoi koto da.

NPni-NPga-aru/iru constructions often express, logically speaking, a possessive relationship of the type *x has y* where x corresponds to *NPni* and y to *NPga*, thus providing support for Kuroda's analysis of *NP ni* as subject.

For the type of construction discussed here, I will adopt a modified version of Pollock's 1989 analysis of English and French *have/avoir* constructions. (34a-b) shows examples (53) and (54) in Pollock (ibid:388):

34.a. Jean a une voiture.
    'John has a car.'

   b. [$_S$ NP$_i$ a$_j$ e$_j$ [$_{SC}$ P e$_i$ [une voiture Loc]]] [17]

Pollock (ibid.) says that "the two R-expressions *Jean* and *une voiture* are θ-marked by the phonetically null preposition P and the abstract Predicate Loc, respectively". Assuming that what I referred to as Secondary θ-assignment, in interaction with Primary θ-assignment, has the capacity to license arguments, the following can tentatively be a possible analysis of the Japanese construction type in question. Consider (35), the Japanese equivalent to (34):
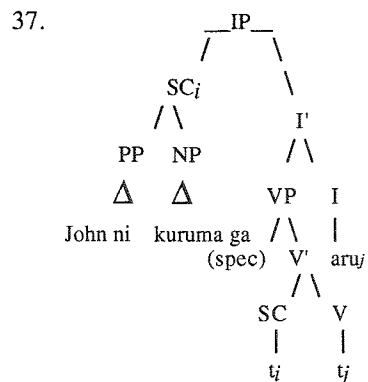
35.   John ni kuruma ga aru.

---

[16]It ought to be said that the licensing of PRO and pro in Japanese is not too clear to me. This is an issue which has given rise to much discussion, but to my knowledge the problem still awaits an answer. For relevant discussions see Fiengo & Haruna 1986 on BT and Huang 1989 on pro-drop in Chinese.

[17]e = empty and thus equivalent to the use of t = trace, which is used in this article. S = IP.

Thus, if postpositions can license external arguments Pollock's abstract predicate Loc could be dispensed with in the case of Japanese. Given this, it would be possible to say that *NPni* is the subject of a Small Clause headed by the NP[18] which, at S-structure, is assigned *ga*.[19] This entails that the whole SC is affected by move-α. Consequently, (36) would show the derivation of (35):

36. $[_S[_{SC}$ NPni [NP]$]_i$ [$_{VP}$ t$_i$ t$_j$] aru$_j]$

In accordance with the generally accepted assumption that Small Clauses do not constitute barriers for government, the SC, in this case being of the category NP, can be assigned *ga* via Spec Head agreement in IP. A more detailed illustration of (35/36) is found in (37). I assume that the SC is base-generated as the complement of V.

37.

```
            __IP__
           /      \
         SC_i      \
        /  \       I'
      PP    NP     / \
      Δ     Δ    VP   I
   John ni kuruma ga / \   |
              (spec) V'  aru_j
                     / \
                   SC   V
                   |    |
                   t_i  t_j
```

Next, consider the examples in (38).

38.a Ue   no   musume   ni   takusan kodomo ga   iru.
     above GEN   daughter LOC   many children   NOM   exist
     'The oldest daughter has many children.'

---

[18]This is in line with the assumption that an SC must be a projection of a word-level category (see Radford 1988:512). Another possibility, which I however will not discuss in this article, is to consider *NPni* of (35) to be in SpecNP, since it is a well known fact that *ni* is more or less in complementary distribution with the genitive marker *no*. Thus *ni* may not be followed by *no*, whereas the postposition *de* may very well be followed it.

[19]This presupposes quite unorthodox case marking, since it is the head of the SC which is case marked, rather than the subject. While the subject already is case marked, the head is not. It might therefore be conceivable that the case particle is attracted to the head. It is however important to emphasize that a fully elaborated theory of case assignment in Japanese would give rise to another analysis, but would not affect the descriptions made here.

b. *Ue no musume de takusan kodomo ga iru.

c. *Yamada no   uchi de   takusan kodomo ga   iru.
   Yamada   GEN   house LOC many children   NOM   exist

d. Yamada no   uchi de   ue   no   musume   ni
   Yamada GEN   house LOC above GEN   daughter LOC
   takusan kodomo ga   iru.
   many children   NOM   exist
   'The oldest daughter of the Yamada family has many children.'

The grammatical (38a) is a standard example of the construction under discussion. In (38d), which also is well formed, we find a *de*-phrase which is semantically co-indexed with a *ni*-phrase, which is subordinate to the latter in terms of hyponymy. It seems as if the *de*-phrase can be said to be an operator, which A'-binds a variable, the *ni*-phrase. The ungrammaticality of (38c) can be explained as a subcategorization violation. If, on the other hand, we consider (38c) to contain PRO, the ungrammaticality can be due to PRO's incapability to function as a variable. The ungrammaticality of (38b) can be explained in the same manner.

Thus, in the case of [-event] nouns, it appears plausible to assume that there is a position available for a locative argument, i.e. as the subject of a Small Clause. However, as for [+event] nouns, that position seems to be suppressed or in some other way oblique under certain circumstances. Consider (39):

39.a. Yanagidokaikan de   paatii ga   aru.
      Yanagido Hall   LOC   party   NOM   exist.
      'There is a party in the Yanagido Hall.'

b. *Yanagidokaikan   ni   paatii ga   aru.
   Yanagido Hall   LOC   party   NOM   exist

c. *101 gooshitsu   ni   paatii ga   aru.
   101 number room   LOC   party   NOM   exist
   'There is a party in room 101.'

d. Yanagidokaikan de   101 gooshitsu   ni   paatii ga   aru.
   Yanagido Hall   LOC   101 number room LOC   party   NOM   exist
   'In the Yanagido Hall, there is a party in room 101.'

The oblique locative can surface if and only if it is A'-bound by a co-indexed locative, which it is hyponymous to, the A-positioned locative being the subordinate one of the two. Moreover, such facts indicate that the oblique constituent can possibly not be PRO, the grammaticality of (39a)

given. That taken into consideration, I will propose that (39a) has the canonical form shown in (40), which is based on Pollock 1989:388:

40. $[_S[_{PP}$ NP P$][_S[_{SC}$ Ø P$_{NULL}[NP_{[+event]}]]_i$ [VPe$_i$ e$_j$] aru$_j$]]$[20]

3.6. Conclusion

The important point in this section has been to show that a *de*-locative take IP, alternatively VP, as its external argument, which yields wide scope, (41a), whereas a *ni*-locative takes the sister NP of V, which yields narrow scope, (41b). Furthermore, we have seen that a *ni*-locative, if present in the syntax, can be A'-bound by a co-indexed *de*-locative, if the former is the subordinate member in a hyponymous pair constitued by the two locative phrases. In (41c), co-indexation is expressed with a numeral, the superior member as α and the subordinate member as β, where β must be in the c-commanding domain of α. Notice that the same carries over to verbs expressing location, e.g. *sumu* 'live', where co-indexed double locatives are possible. In other instances of double locatives, e.g. the verb *kaku* 'draw', the locative expressions are not co-indexed, and thus the licensing of a *de*-phrase does not depend on the presence of a *ni*-phrase.

41.a. ((NP *de*) IP/VP)

b. ((NP *ni*) NP$_{[-AGENT]}$)

c. ((NP*de*$_{1α}$) IP/VP ((NP*ni*$_{1β}$) NP$_{[-AGENT]}$))

4. GOAL

As understood from 1.1 both *ni* and *e* can head a PP which is assigned the thematic role GOAL by the verb. The argument structure of these postpositions is identical to that of locative *ni*: the external argument must be a non-agentive NP, i.e. originating as the complement of V. Thus, also here the PP must c-command the external argument of P. Moreover, they are part of the of the verb's a-structure. Recall the examples (1a-d), repeated here as (42):

42.a. Boku ga Kyooto e itta.

b. Boku ga Kyooto ni itta.

c. Taroo ga uchi e kaetta.

---

d. Taroo ga uchi ni kaetta.

It was said that there is a slight difference in meaning, depending on whether *e* or *ni* is the head of the PP.

Whereas the PPs in (42) are assigned GOAL by the verb, the postpositions *e* and *ni* assign different theta roles to their internal arguments. If *e* heads the PP, GOAL is assigned to the internal argument, which yields the non-restative[21] directional interpretation. On the other hand, *ni* assigns LOCATIVE to its internal argument, hence the restative directional interpretation. This assumption is based on the fact that (42b) gives the notion that somebody went to Kyoto and actually spent some time there, whereas (42a) does not tell us more than the fact that somebody went to Kyoto; he might have spent some time there, but he might also just have changed trains there for example and continued elsewhere. The interpretation of a sentence like (42a) is far more dependent on pragmatics than (42b).

This would also explain why *e*-phrases cannot be used to denote GOAL together with verbs of giving, since *e* would imply that the given thing simply moves towards somebody. In the light of this, consider (43) (= 2):

43.a. *Taroo ga Hanako e hana o ageta.

b. Taroo ga Hanako ni hana o ageta.

It is *ni*, which assigns LOCATIVE to *Hanako*, making sure that we interpret (43a) in the sense that *Hanako* has a flower as the result of Taroo's giving it to her.

5. INSTRUMENT

The postposition *de* can be used to denote INSTRUMENT, in addition to its locative function. The argument structure of instrumental *de* resembles locative *de* in that it also takes, at the very least, VP as its external argument and is consequently not part of the argument structure of the verb. Consider the following examples:

44.a. Sensei	wa	pen	de	tegami	o	kaku.
professor	TOP	pen	INSTR	letter	ACC	write (pres)

'The professor writes a letter with a pen.'

---

b. Watashi wa kuruma de Shinjuku ni itta.
    I   TOP   car   INSTR   Shinjuku GOAL   go (past)
    'I went to Shinjuku by car.'

Furthermore, two de-phrases, one locative and the other instrumental, can occur within the same clause:

45.   Hanako wa ano heya de naifu de Taroo o koroshita.
      Hanako TOP that room   LOC knife INSTR   Taroo ACC kill (past)
      'Hanako killed Taroo with a knife in that room.'

The reason why this is possible is due to the fact that the *de*-phrases have different external arguments. The external argument of *naifu de* is the constituent *Taroo o koroshita*, whereas *naifu de Taroo o korishita* is the external argument of *ano heya de*. This is entirely in line with the θ-criterion. In (46), however, the θ-criterion is twofoldly violated, two identical θ-roles INSTR cannot be assigned by one predicate, and, vice versa, one constituent, i.e. *Taroo o koroshita*, is assigned two identical secondary θ-roles. Hence the ungrammaticality:

46.   *Hanako wa naifu de juu de Taroo o koroshita.
      Hanako Top knife INSTR   gun INSTR   Taroo ACC kill (past)
      *'Hanako killed Taroo with a knife with a gun'

6. Concluding remarks

It has been shown by assuming that postpositions take external arguments that the distribution and semantic interpretation of Japanese PPs can be captured. Under this assumption we have also seen how lexical items are linked together into well-formed units by letting the assignment of thematic roles take place at two independent but interrelated levels, where the θ-criterion makes sure that an XP is assigned one and only one thematic role at each level. It is the nature of the verb that decides what arguments can occur, and the function of e.g. the postposition *ni* is to further tie these arguments together, independently of the verb. PPs headed by *ni* and *e* are part of the a-structure of the verb.

We also saw that a postpositional phrase need not be part of the verbal a-structure, but can be adjoined to IP or VP. In such a case, the PP does not specify the relationship of the arguments of the verb, but takes scope over IP or VP as a matter of course. Such PPs are headed by *de*.

However, in the part where existential constructions with *aru/iru* were discussed, some problems concerning word order and PP licensing were encountered. As a solution it was proposed that these verbs take SC

complements headed by NP. The subject of the SC was suggested to be an overt or an oblique PP, the latter only being able to surface under certain circumstances. This made us notice the necessity of considering hyponymy relations between double locatives, and the conditions for such co-indexed locatives to occur.

What the different postpositions all have in common is that the PP that they head, must c-command the external argument of the postposition. It is self-evident that the c-command condition holds between the postposition and its internal argument as well.

I hope that I have been able to shed some light on the properties of Japanese postpositions and their distribution. As for the field of Japanese linguistics, the issue of postpositions requires further study and research.

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Crosslinguistic Cineradiographic Studies of the Temporal Coordination of Speech Gestures

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Summary

The research programme outlined here is devoted to the analysis of speech gestures from 7 x-ray motion films of speech from 5 different languages (Southern Swedish, British English, West Greenlandic Eskimo, Cairo Arabic and Bulgarian). The issues specifically addressed are (i) the methodology and feasibility of analysing and identifying individual gestures in these languages and assigning them to their respective phonemes, (ii) the organization of movement in these languages, (iii) an evaluation of the observed patterns of temporal coordination in these languages in the light of coarticulation models, (iv) the relation of coarticulation to assimilation, especially the assimilation of vowels to uvular and pharyngeal consonants in Eskimo, vowels to emphatic consonants in Arabic and palatovelar consonants to palatal vowels in Swedish.

Background

Investigations of coarticulation have typically comprised just one or two articulators (frequently the lips, mandible, tongue blade or velum), exploiting and depending on the technology currently available, such as e.m.g., movement transduction, optical tracking, dynamic palatography, fibrescopy, cinematography, x-ray motion film (automatic pellet-tracking or manually traced pictures as here), interpretation of acoustic features of the speech wave etc. Very rarely, if at all, has work been reported on the dynamic coordination of gestures in all parts of the vocal tract simultaneously.

A typical definition of coarticulation is that articulators are moving simultaneously but for different phonemes, which explicitly implicates a belief in some sort of underlying "segment" that has its physical expression in articulatory behaviour. Indeed, Liberman & Mattingly 1985 insist that some sort of discrete representation is always implied, even for those who would deny it. The classical arguments in favour of discrete underlying segments in this context, which we also share, have been summarized by e.g. Pisoni & Luce 1987 and Löfqvist 1990. Although most authors seem to