Adjectives in the Locative PP in Japanese[*]

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1. Introduction

This paper is a preliminary study of the adjectives in the locative PPs. Japanese allows sentences such as (1), where only an adjective precedes a postposition and an overt noun which expresses a place does not appear. However, the sentences are interpreted as if an overt noun existed. In this paper, I call sentences like these *locative construction involving adjectives + adpositions* (henceforth LCAAd). As Larson and Yamakido (2003) observe,[1] several restrictions are imposed on this construction. First, adjectives in the LCAAd have to take a *–ku* inflected form, while adjectives which modify nouns are usually inflected with *–i* as in (2). Second, the *–ku* inflected adjectives must be spatio-temporal in meaning; for example, *too* 'far', *taka* 'high' and *huka* 'deep'. Adjectives which are not spatio-temporal cannot be used in the LCAAd as is shown in (3).

(1) a. Taroo ga   **huka-ku**-made   itta.
         Taroo NOM   deep-CASE-until   went
         'Taroo went to a deep place.'

     b. Taroo ga   kanari **taka-ku**-made   tonda.
         Taroo NOM   pretty high-CASE-to   flew/jumped
         'Taroo flew up/jumped to a pretty high place.'

(2)   Taroo ga   huka-**i**   **tokoro**-made   itta.
        Taroo NOM   deep-CASE   place-until   went
        'Taro went to a deep place.'

(3)   *Taroo   ga   **kura**-ku-made   itta.
         Taroo   NOM   dark-CASE-until   went
        'Taroo went to a dark place.'

<div align="right">(Yamakido (2005))</div>

It may seem that the LCAAd is peculiar to Japanese and is not common in other languages, but I claim that the structure which underlies this construction is common in the human language. Section 2 provides a review of Yamakido (2005) and points out its problems. In section 3, an alternative analysis is proposed. I conclude this paper in section 4.

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[1] Larson and Yamakido (2003) also discuss expressions of a time like (i). I mainly concentrate on expressions of a place, and consider temporal expressions a little in section 4.

(i) Kono   denor densetu-ga   **huru-ku**-kara   aru.
     this   legend-NOM   **old-KU**-from   be
     'This legend is from old times.'

2. Previous Analyses

To the best of my knowledge, few studies have analyzed the LCAAd, among which are Larson and Yamakido (2003) and Yamakido (2005). In this section, I provide a brief review of Yamakido (2005) and point out its problems.

2.1. Analysis of Yamakido (2005)

Yamakido (2005) argues that LCAAd like (1) contains a null pronoun of location, that is, pro_{LOC}. Following Rizzi (1986), she also claims that it is necessary to license pro_{LOC} in two ways, namely formal licensing and material licensing. The formal licenser is –*ku*, which she considers as a case-marker, and the material licenser is a location phrase (LP). Following Watanabe (1993), she assumes that spatio-tamporal pre/postpositions (adpositions) are universally composed of two distinct parts: a pure relational element (P) and LP. She claims that a postposition is always necessary in the LCAAd, because LP is a material licenser. Her point is illustrated in (4) (c.f. (1a)).

(4)   [$_{PP}$[$_{LP}$[$_{DP}$[$_{FP}$[$_{AP}$ huka] –ku *pro*]] LOCATION OF]-made]
          FORMAL LICENSING └──▲▲──────┘ MATERIAL LICENSING
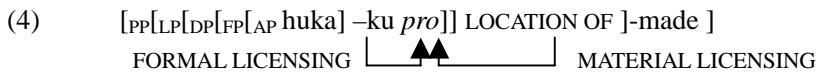
Her argument seems to be correct at first sight. As we have observed in (1), adjectives must take a –*ku* inflected form rather than an –*i* inflected form and postpositions cannot be omitted to license pro_{LOC}, too.[2] Compare (5a) and (5b).

(5)   a.   Taroo ga   kanari   **taka-ku**-made   tonda.   (=(1b))
             Taroo NOM   pretty   high-CASE-to   flew/jumped
             'Taroo flew up/jumped to a pretty high place.'
        b.   *Hanako   ga   taka-**ku**   o   katazuketa.
              Hanako   NOM   high-CASE   ACC   tidied
              'Hanako tidied up a high place.'

                                                                                (Yamakido (2005))

Her analysis, however, has two problems. We will see them in the following section.

2.2. Problems of Yamakido (2005)

In this section, I point out two problems of Yamakido's (2005) analysis. First, her analysis cannot explain why only a small number of adjectives can be used in the LCAAd. Second, her analysis cannot give any account to a

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[2] In Japanese, some verb assigns accusative Case to the locative argument as in (i). As is shown in (ii), the –*ku* inflected adjectives can be replaced with the argument noun in (i).

(i)   Hikooki   ga   sora   **o**   tondeiru.
        plane   NOM   sky   **ACC**   is.flying
        'A plane is flying in the sky.'
(ii)   Hikooki   ga   taka-ku **o**   tondeiru.
        plane   NOM   high   **ACC** is.flying
        'A plane is flying in a high place.'

I do not analyze examples like (ii) in detail, but it is obvious that Yamakido's analysis cannot treat it well without modification.

relation between expressions like (1) and apparently related expressions both in Japanese and other languages. I will consider them in detail below.

The first problem concerns the type of adjectives in the LCAAd. As we have seen in section 1, she notes that the adjectives have to be spatial in meaning. The list of adjectives used in the LCAAd is given in (6).

(6) a. huka-i   'deep'   b. asa-i   'shallow'
     c. taka-i   'high'   d. hiku-i   'low'
     e. too-i   'far (away)'   f. tika-i   'near'

Although it is correct that the adjectives must be spatial, it is only a necessary condition rather than a sufficient condition. The adjectives *hiro* 'large' and *sema* 'narrow' are obviously spatial, but they cannot be used in the LCAAd as shown in (7).[3,4]

(7) a. *Taroo   ga   hiro-ku   de   asonda.
      Taroo   NOM   large   in   played
    b. Taroo ga   hiro-i   basyo de   asonda.
      Taroo NOM   large   place   in   played
      'Taroo played in a large place.'
    c. *Taroo   ga   sema-ku   ni   tozikomerareta.
      Taroo   NOM   small   to   was.locked
    d. Taroo   ga   sema-i   basyo ni   tozikomerareta.
      Taroo   NOM   small   place   to   was.locked
      'Taroo was locked in a small place.'

In addition, her analysis does not predict that the adjectives in the LCAAd must be spatial. Recall that the formal licenser of *pro*_{LOC} is the case-marker –*ku* rather than the adjective. The adjective itself is irrelevant for the licensing, and thus the type of adjectives would not be limited.

The second problem concerns a relation that holds among the sentences in (8). They are similar to the LCAAd not only in surface appearance, but also in meanings. Yamakido (2005) considers examples like (8b) and assigns to it the structure illustrated in (9).

(8) a. Sono   hune   ga   huka-ku   ni   sizunda.
      that   ship   NOM   deep   to   sank
      'That ship sank into a deep point.'
    b. Sono   hune   ga   umi-no   naka   huka-ku   ni   sizunda.
      that   ship   NOM   sea-GEN   in   deep   to   sank
      'That ship sank into a deep point in the sea.'

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[3] There are apparent exceptions. See (i). It is not, however, an exception because it is not interpreted as location. Although it is interesting to ask why sentences like (i) are possible, I do not consider the question in detail.

(i) Kityoona   iken   ga   hiro-ku   kara   yoserareta.
   valuable   opinion   NOM   large   from   was.given
   'Valuable opinions were given from people in the large area.'

[4] An anonymous reviewer notifies that (7c) improves if the verb is changed to *osikomerareta* 'was.forced'. For me, the sentence does not improve, even when the verb is changed. The same reviewer states that she or he does not agree with me on the judgments on (15a) and (15b). I cannot explain the difference of judgment at this stage.

    c.   Sono   hune   ga   umi-no   naka   ni   sizunda.
        that   ship   NOM   sea-GEN   in   to   sank
        'That ship sank into the sea.'

(9)   [$_{PP}$[$_{DP}$[$_{DP}$ umi-no naka]$_1$ [$_{NP}$ huka-ku *pro*$_1$]] –ni]

She considers *umi-no naka* in (8b) as a modifier. What is problematic for her analysis is that (8b) is grammatical even without the adjective as in (8c). Her analysis cannot apply to (8c), because she claims that an adjective is necessary for licensing *pro*. Then we have to assume that different structures underlie the sentences in (8). This is obviously an unfavorable option to take.

    In addition, although she analyzes only the Japanese LCAAd, there are languages that have similar constructions, for example English (10) and Dutch (11). It is possible to claim that there is some relation between these sentences, which her analysis does not say anything about.

(10)   a.   The creature swam from deep under the sea.
        b.   The fisher man dived deep under the sea.   (Steven Clark (p. c.))

(11)   Zij   reisde   tot   diep   in   Afrika.
           she   traveled   to   deep   in   Africa
           'She traveled deep into Africa.'   (Zwarts (1995))

    To sum up, we have shown that Yamakido's (2005) analysis of the locative constructions has two problems. In the next section, I will present an alternative analysis which can solve these problems and shed light on the properties of adpositions.

3.   Proposal

3.1.   *Watanabe (2008)*

    Watanabe (2008, class lecture) claims that the locative PP has the following structure in (12).

(12)
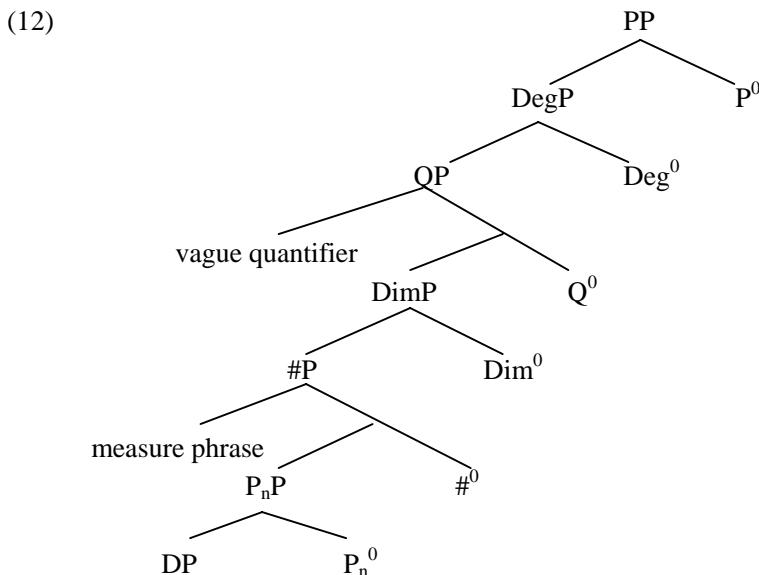
He adopts Zwarts' (1997) vector semantics. DP serves as a reference point and P$_n$P (nominal pre/postpositional

phrase)[5] specifies a direction of the vector. Consider (13).[6]

(13) a. [$_{PnP}$ [$_{DP}$ kuruma-no] mae]   b. [$_{PnP}$ [$_{DP}$ ie-no]   usiro]
          car-GEN   front   house-GEN   behind
          'in front of the car'   'behind the house'

In (13a), the reference point is the car and the direction of the vector is forward, while in (13b) the reference point is the house and the direction of the vector is backward. #P determines the length of the vector, with a measure phrase in its specifier. Dim(ension)P determines whether the projection refers to a location or time. Dim^0 can be covert or overt. Watanabe (2008) considers *tokoro* 'place' as overt Dim^0.[7]

(14) Kuruma-no mae   ni-meetoru-no tokoro ni   neko ga   ita.
      car-GEN   before two-meter-GEN place   at   cat   NOM   was
      'The cat was two meter before the car.'

3.2. Adjectives in the Locative PP

In this section, I would like to claim that the adjectives in the LCAAd are located in the specifier of #P and that this will solve the problems which are pointed out in section 2.2. There are two pieces of evidence for my claim. First, measure phrases and adjectives cannot co-occur as in (15).[8] The impossibility of (15c) and (15d) is easily accounted for by the assumption that measure phrases and the adjectives are in the same position, namely the specifier of #P. The relevant structure of (15) is illustrated in (16).

(15) a. Too-no   ue   taka-ku ni   soosyoku ga   nasareta.
          tower-GEN up   high   at   decoration NOM   was.done
          'They decorated the high top of the tower.'
      b. Too-no   ue   iti-meetoru ni   soosyoku   ga   nasareta.
          tower-GEN up   one-meter   at   decoration   NOM   was.done
          'They decorated 1 meter from the top of the tower.'
      c. *Too-no   ue   iti-meetoru taka-ku ni   soosyoku ga   nasareta.
           tower-GEN up   one-meter high   at   decoration NOM   was.done
      d. *Too-no   ue   taka-ku iti-meetoru   ni   soosyoku ga   nasareta.
           tower-GEN up   high   one-meter   at   decoration NOM   was.done

(16)   [$_{DimP}$ [$_{PnP}$ too-no ue]$_1$ [$_{\#P}$ measure phrase/adjective t_1 $\#^0$] Dim^0]

The second evidence comes from semantics. The adjectives in the LCAAd modify the vector. For example, *huka-ku* 'deep' in the phrase *umi-no naka huka-ku* 'sea-GEN in deep' means that the vector reaches a deep point. The measure phrase also modifies the vector, so it is not unnatural that the measure phrase and the adjective appear in the same position, the specifier of #P. In addition, this argument solves the first problem in the section 2, that is why the adjectives *hiro* 'large' and *sema* 'narrow' cannot be used in the LCAAd, although they are spatial

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[5] It may be even true that what I call P$_n$ here is subclass of N. In many languages, P$_n$ has very noun-like properties. See Takamine (2006) for Japanese, Roy (2006) for French, and Pantcheva (2006) for Persian.
[6] Watanabe (2008) suggests a possibility of R(eference)P between DP and P$_n$P. I do not consider the possibility, since it is not relevant for the argument.
[7] Watanabe (2008) assumes the movement of P$_n$P to the Spec of DimP. P$_n$P precedes a measure phrase as the result of this movement.
[8] This fact is pointed out to me by Akira Watanabe (p.c.).

adjectives. The vector is one-dimensional, so it can be modified by only one-dimensional adjectives.[9] The adjectives in (6) are one-dimensional and they can modify the vector. However, *hiro* 'large' and *sema* 'narrow' are two-dimensional adjectives and they cannot modify the vector. As a result, they cannot be used in the LCAAd.

Let us now turn to the second problem. There are apparently related sentences as in (8), repeated here as (17).[10] We should account for the fact that some relation holds among them. Given the assumption above, we can easily do this. The structure in (18) underlies all of the three sentences in (17). I assume that P_nP can be null, when the adjective exists in the specifier of #P. Then (17a) is attained. When the adjective does not exist, P_nP have to be overt. In this case, we get the sentence in (17c). The sentence (17b) is the sentence with both overt P_nP and the adjective.

(17) a.　Sono　hune　ga　　huka-ku　ni　sizunda.
　　　　　that　　ship　NOM　deep　　to　sank
　　　　　'That ship sank into a deep point.'

　　　 b.　Sono　hune　ga　　umi-no　naka　huka-ku　ni　　sizunda.
　　　　　that　　ship　NOM　sea-GEN　in　　deep　　to　　sank
　　　　　'That ship sank into a deep point in the sea.'

　　　 c.　Sono　hune　ga　　umi-no　naka　ni　　sizunda.
　　　　　that　　ship　NOM　sea-GEN　in　　to　　sank
　　　　　'That ship sank into the sea.'

(18)　　　 $[_{DimP}$ $[_{PnP}$ umi-no naka$]_1$ $[_{\#P}$ huka-ku t_1 $\#^0]$ $Dim^0]$

We can relate these sentences to the English data in (10) and the Dutch data in (11). The relevant structures of (10) and (11) are in (19a) and (19b) respectively.

(19)　　 a.　$[_{DimP}$ Dim^0 $[_{\#P}$ deep $\#^0$ $[_{PnP}$ under $[_{DP}$ the sea$]]]]$
　　　　　 b.　$[_{DimP}$ Dim^0 $[_{\#P}$ diep $\#^0$ $[_{PnP}$ in $[_{DP}$ Afrika$]]]]$
　　　　　　　　　 deep　　　　 in　　Africa

The main difference between Japanese on the one hand and English and Dutch on the other is that P_nP moves to the specifier of DimP in the former, while it does not in the latter.[11]

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[9]　See Winter (2005) and Zwarts (1997) for the discussion of the vector and its modification.

[10]　The sentence in (i) may also seem to be related to the examples in (17), but the meanings are different. In (i), the *–ku* inflected adjective modifies the way that ship sank. The *–ku* inflected adjective before P_nP always modifies the matrix predicate. The example in (ii) is unacceptable, because the way the iron ball dropped cannot be high. Compare (ii) with (iii).

(i)　　 Sono　hune　ga　　huka-ku　umi-no　naka　　ni　　sizunda.
　　　　that　　ship　NOM　deep　　sea-GEN　in　　to　　sank
　　　　'That ship sank into a deep point in the sea.'

(ii)　　*Galilei　ga　　taka-ku　too-no　　ue　　kara　tekkyuu　o　　　otosita.
　　　　 Galilei　NOM　high　　tower-GEN　up　from　iron-ball　ACC　dropped
　　　　'Galilei dropped an iron ball highly from the top of the tower.'

(iii)　 Galilei　ga　　　too-no　　ue　　taka-ku　kara　tekkyuu　o　　　otosita.
　　　　Galilei　NOM　　tower-GEN　up　high　　from　iron-ball　ACC　dropped
　　　　'Galilei dropped an iron ball from a high place on the top of the tower.'

[11]　I have no principled reason for the movement of P_nP to the specifier of #P. I leave this problem open for the future research.

4.　Final Remarks

I conclude this paper with a few words about the temporal expressions. They are very similar to the LCAAd in that the *–ku* inflected adjectives are used and P$_n$P also appears before the adjective as in (20a). It may be possible to analyze them in the same way as the LCAAd as in (20b). In addition, the analysis seems to apply the data in English as in (20c).

(20)　a.　Asa-no　　　　uti　　haya-ku　kara　　Taroo　wa　　hataraku.
　　　　　　morning-GEN　in　　early　　from　　Taroo　TOP　　work
　　　　　　'Taroo works from early in the morning.'
　　　b.　[$_{DimP}$ [$_{PnP}$ asa-no uti]$_1$ [haya-ku t$_1$ #^{0}] Dim^0]
　　　c.　[$_{DimP}$ Dim^0 [$_{\#P}$ early #^{0} [$_{PnP}$ in the morning]]]

In this paper, I have analyzed the data mainly in Japanese and added small pieces of data in English and Dutch. Three languages are too small to conclude that my analysis holds universally. Cross-linguistic study is left for the future research.

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