JAPANESE MOTION VERBS

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1. Introduction

It has been pointed out that English motion verbs can be generally combined with a goal expression, while Japanese motion verbs such as *hashiru* 'run' and *oyogu* 'swim' are not used in quite the same way (Ikegami 1981, 1985, Yoneyama 1986) The combination of these verbs and the particle *e* that expresses a goal sounds unnatural [1]

(1) a ?John-wa   eki-e   hashitta
     John-TOP station-to ran
     'John ran to the station '
  b ?John-wa   kishi-e   oyoida
     John-TOP shore-to swam
     'John swam to the shore '

However, these verbs can take *made* 'as far as' or *e mukatte* 'toward' in natural expressions

(2) a. John-wa   eki-made   hashitta
     John-TOP station-as far as ran
     'John ran as far as the station '
  b John-wa   eki-e mukatte   hashitta
     John-TOP station-toward   ran
     'John ran toward the station '
(3) a John-wa   kishi-made   oyoida
     John-TOP shore-as far as swam
     'John swam as far as the shore '
  b John-wa   kishi-e mukatte   oyoida
     John-TOP shore-toward   swam
     'John swam toward the shore '

Furthermore, if these verbs are made into a serial verb construction with the verb *iku* 'go', they can be compatible with the particle *e* [2]

(4) a John-wa   eki-e   hashitte-itta
     John-TOP station-to running-went
     'John went to the station running '

b   John-wa   kishi-e   oyoide-itta
     John-TOP   shore-to   swimming-went
     'John went to the shore swimming '

Ikegami (1981, 1985) accounts for this behavior of Japanese motion verbs by the notions 'process-oriented' vs 'goal-oriented' Ikegami (1985 300) claims that Japanese motion verbs do not represent a motion as something goal-reaching, but rather as a process that may or may not lead to reaching the goal Yoneyama (1986) also gives a similar explanation and attempts to formalize the semantic structure of Japanese motion verbs in the framework of Conceptual Semantics developed by Jackendoff (1983) However, Yoneyama's analysis is exclusively based on boundedness,[3] and it leaves some problems with his classification of Japanese motion verbs [4]

One of main problems in the previous studies is that they do not explain the differences in compatibility among three types of motion verbs as shown in (5)

(5) a (=1a) ?John-wa   eki-e   hashitta
            John-TOP   station-to   ran
            'John ran to the station '
    b   John-wa   okujoo-e   agatta
            John-TOP   roof-to   went up
            'John went up to the roof '
    c   *John-wa   Mary-no   heya-e   odotta
            John-TOP   Mary-GEN   room-to   danced
            'John danced to Mary's room '

The combination of the verb *hashiru* 'run' and the particle *e* sounds unnatural However, the verb *agaru* 'go up is compatible with *e* On the other hand, the combination of *odoru* 'dance' and the particle *e* is totally inappropriate, no one accepts this combination

Furthermore, there is a contradiction in the constraint on goal expressions

(6) a (=1a) ?John-wa   eki-e   hashitta
            John-TOP   station-to   ran
            'John ran to the station '
    b (=2a) John-wa   eki-made   hashitta
            John-TOP   station-as far as   ran
            'John ran as far as the station '

Both particles *e* and *made* specify a goal However, the previous studies are exclusively based on the notion that *e* specifies a goal The constraint does not apply to a goal expressed by the particle *made*

234

In order to solve these problems, this paper, in the framework of Jackendoff's Conceptual Semantics (1990), examines the nature of the particles and analyzes Japanese motion verbs with different particles in various Path expressions. Finally, the classification of Japanese motion verbs and their conceptual structures will be formalized

2. Jackendoff's Conceptual Semantics

Jackendoff (1983, 1990, 1991) proposes a theory of semantics called Conceptual Semantics, which hypothesizes that there is a form of mental representation called conceptual structure that is common to all natural languages. Conceptual structure is envisioned as a computational form that encodes human understanding of the world, and there is a set of correspondence rules that relate conceptual structure to syntactic structure

The formation rules for conceptual structure include major conceptual categories such as Thing, Event, State, Place, Path, Property, Time, and Amount, each of which can be elaborated into a function-argument structure. The following are basic formation rules for the spatial domain that are relevant to the present discussion

(7) a   [PLACE] → [$_\text{Place}$ PLACE-FUNCTION ([THING])]

b   [PATH] →
$$\left[\begin{array}{c} \left\{ \begin{array}{l} \text{TO} \\ \text{FROM} \\ \text{TOWARD} \\ \text{AWAY} - \text{FROM} \\ {}_\text{Path} \text{VIA} \end{array} \right\} \left(\left[\left\{ \begin{array}{l} \text{THING} \\ \text{PLACE} \end{array} \right\} \right] \right) \end{array} \right]$$

c   [EVENT] → [$_\text{Event}$ GO ([THING],[PATH])]

(7)a indicates that a Place-function such as IN and NEAR has one argument that belongs to the category Thing. The argument serves as a spatial reference point, in terms of which the Place-function defines a region. Similarly, in (7)b each of five Path-functions, TO, FROM, TOWARD, AWAY-FROM, and VIA has one argument belonging to the category Thing or Place. Each Path-function maps a spatial reference Thing or Place into a specified trajectory. (7)c shows that an Event-function GO has two arguments Thing and Path, and it denotes a Thing in motion traversing a Path. Accordingly, Jackendoff (1991 13) gives the following syntactic structure and the corresponding conceptual structure

(8) a   [$_S$[$_{NP}$ Bill][$_{VP}$[$_V$ went][$_{PP}$[$_P$ into][$_{NP}$ the house]]]]
    b   [$_{Event}$ GO([$_{Thing}$ BILL],[$_{Path}$ TO([$_{Place}$ IN([$_{Thing}$ HOUSE])])])]

Here the entire Event can be read as "Bill traverses a path that terminates at the interior of the house" The standard thematic role Theme, the thing in motion, is the conceptual constituent that serves as the first argument of GO, it is shown as [Thing BILL] Also, the thematic role Goal, the point at which the motion terminates, is the constituent that serves as the argument of TO, it is shown as [Place IN([Thing HOUSE])]

3. Path vs. Manner

First, observe the following sentences

(9) a (=5b) John-wa okujoo-e agatta
    John-TOP roof-to went up
    'John went up to the roof'

 b John-wa seki-e modotta
    John-TOP seat-to went back
    'John went back to the seat'

 c ?John-wa yama-no   fumoto-e subetta
    John-TOP mountain-GEN foot-to slid
    'John slid to the foot of a mountain'

 d. ?booru-wa tonari-no   niwa-e   korogatta
    ball-TOP neighbor-GEN garden-to rolled
    'The ball rolled to the neighbor's garden'

As shown in (9)c and d, the verbs *suberu* 'slide' and *korogaru* 'roll' behave the same way as *hashiru* 'run' and *oyogu* 'swim' The combination of these verbs and the particle *e* sounds unnatural [5] However, the verbs *agaru* 'go up' and *modoru* 'go back' behave differently from other motion verbs They are compatible with the particle *e* as shown in (9)a and b As one way of accounting for this behavior, Talmy's (1985) lexicalization types of motion verbs are useful here Talmy distinguishes three types of motion verbs with respect to the particular components of a motion event represented in the verb root motion verbs of Path conflation, Manner/Cause conflation, and Figure conflation Verbs of Path conflation such as *enter* and *exit* express a Path and a fact of motion, verbs of Manner/Cause conflation such as *run* and *swim* express a Manner/Cause and a fact of motion, verbs of Figure conflation such as *rain* and *spit* express a Figure and a fact of motion Under these categories, the verbs *agaru* 'go up' and *modoru* 'go back' are verbs of Path conflation, they express a motion occurring in a certain Path. On the other hand, *suberu* 'slide' and *korogaru* 'roll', like *hashiru* 'run' and *oyogu* 'swim', are verbs of Manner conflation, they express a motion occurring in a certain Manner Accordingly, we can claim that verbs of Manner conflaiton, not Path conflation, have a constraint on goal expressions

Talmy (1985) points out this kind of bifurcation of Path expressions and Manner expressions in many languages having predominant motion verbs of Path conflation In Spanish, for example, if both Path and Manner are expressed in the same sentence, the verb root expresses Path, while Manner is expressed by an adverbial or a gerundive, however, the Manner component is often omitted

(10)   La botella entro   a la   cueva (flotando)
       the bottle moved-in to the cave (floating)
       'The bottle floated into the cave '

Furthermore, Jackendoff (1990) analyzes this behavior as the separation of GO-function and MOVE-function in conceptual structure The GO-function expresses object-external motion that traverses an externally specified Path On the other hand, the MOVE-function expresses Manner of motion, that is, object-internal motion reflecting the internal dispositions and motions of the parts of the object Each conceptual structure is assigned by Jackendoff as follows

(11)   a   GO-function

           $[_{Event} GO([_{Thing}],[_{Path}])]$

       b   MOVE-function

$$\begin{bmatrix} MOVE ([_{Thing}]) \\ _{Event} [_{Manner} X] \end{bmatrix}$$

However, Jackendoff (1990 89) also points out that English, as a marked case, permits GO-function to be optionally incorporated into a motion verb of Manner conflation[6] and gives the following examples

(12)   a   Willy wiggled out of the hole

       b   Debbie danced into the room

The verbs *wiggle* and *dance* express Manner, however, they can occur with Path-expressions These can be contrasted with either Spanish motion verbs or Japanese motion verbs

4. Type of Path-function

The above observation indicates that in order to be compatible with goal expressions, Path must be conflated in the motion verb However, not all verbs of Path conflation are compatible with goal expressions, as shown in (13)

(13) a (=9a) John-wa   okujoo-e   agatta
              John-TOP   roof-to   went up
              'John went up to the roof'

$$\left[\begin{array}{l} \\ _{Lvent}GO\ ([_{Thing}JOHN], \end{array} \left[\begin{array}{l} \text{UPWARD} \\ _{Path}TO([_{Thing}ROOF]) \end{array} \right] \right] \right]$$

b (=9b) John-wa   seki-e   modotta
         John-TOP   seat-to   went back
         'John went back to the seat'

$[_{Event}GO([_{Thing}JOHN],[_{Path}TO([_{Thing}SEAT])])]^7$

c   John-wa   seki-o/*-e   hanareta
        John-TOP   seat-ACC   went away
        'John went away from the seat'

$[_{Event}GO([_{Thing}JOHN],[_{Path}AWAY\text{-}FROM([_{Thing}SEAT])])]$

d   John-wa   kooeN-o/*-e   tootta
        John-TOP   park-ACC   went through
        'John went through the park'

$[_{Event}GO([_{Thing}JOHN],[_{Path}VIA([_{Place}IN([_{Thing}PARK])])])]$

The difference is clear from their conceptual structures The verbs *agaru* 'go up' and *modoru* 'go back' have bounded Path-function TO that specifies a goal However, *hanareru* 'go away' and *tooru* 'go through' do not have the TO-function Path-function AWAY-FROM and VIA are contained in *hanareru* and *tooru* respectively These functions are unbounded, therefore, a goal expression is impossible

Also, it should be noted that the bounded Path-function TO is contained in *agaru* 'go up' and *modoru* 'go back', therefore, these verbs can take the particle *made* 'as far as' that specifies a goal However, they cannot take *e mukatte* 'toward' that expresses an unbounded Path as shown in (14)

(14) a   John-wa   okujoo-made   agatta
         John-TOP   roof-as far as went up
         'John went up as far as the roof'
     b *John-wa   okujoo-e mukatte   agatta
         John-TOP   roof-toward   went up
         'John went up toward the roof'

c   John-wa   seki-made   modotta
    John-TOP   seat-as far as   went back
    'John went back as far as the seat '
d   *John-wa   seki-e mukatte modotta
    John-TOP   seat-toward   went back
    'John went back toward the seat '

Based on the above observation, I conclude that the conceptual structure of motion verbs of Path conflation is a basic Event structure containing GO-function and Path-function as follows

(15) $[_{\text{Event}} \text{GO}([_{\text{Thing}}]_A, [_{\text{Path}}]_A)]^8$

If the verb has the bounded Path-function TO, goal expressions are possible, however, other unbounded Path-functions are not compatible with goal expressions

5. Implicit Path in Manner

In the previous sections, we observed that verbs of Manner conflation have a constraint on goal expressions However, there are two types of verbs of Manner conflation, as shown in the following

(16) a (=1a) ?John-wa   eki-e   hashitta
               John-TOP   station-to ran
               'John ran to the station '
      b (=2a) John-wa   eki-made   hashitta
               John-TOP   station-as far as   ran
               'John ran as far as the station '
      c (=2b) John-wa   eki-e mukatte   hashitta
               John-TOP   station-toward ran
               'John ran toward the station '
      d (=4a) John-wa   eki-e   hashitte-itta
               John-TOP   station-to   running-went
               'John ran to the station running '

(17) a (=5c) *John-wa   Mary-no   heya-e   odotta
               John-TOP   Mary-GEN room-to   danced
               'John danced to Mary's room '
      b   *John-wa   Mary-no   heya-made   odotta
               John-TOP   Mary-GEN room-as far as   danced
               'John danced as far as Mary's room '

239

    c   *John-wa   Mary-no   heya-e mukatte   odotta
           John-TOP Mary-GEN room-toward   danced
           'John danced toward Mary's room '

    d   John-wa   Mary-no   heya-e odotte-ıtta
           John-TOP Mary-GEN room-to dancıng-went
           'John went to Mary's room dancıng '

(18) a   *booru-wa tonarı-no   nıwa-e   hazuNda
           ball-TOP neıghbor-GEN garden-to bounced
           'The ball bounced to the neıghbor's garden '

    b   *booru-wa tonarı-no   nıwa-made   hazuNda
           ball-TOP neıghbor-GEN garden-as far as bounced
           'The ball bounced as far as the neıghbor's garden '

    c   *booru-wa tonarı-no   nıwa-e mukatte   hazuNda
           ball-TOP neıghbor-GEN garden-toward   bounced
           'The ball bounced toward the neıghbor's garden '

    d   booru-wa   tonarı-no   nıwa-e   hazuNde-ıtta
           ball-TOP neıghbor-GEN garden-to bouncıng-went
           'The ball went to the neıghbor's garden bouncıng '

The verbs *odoru* 'dance' and *hazumu* 'bounce' are motion verbs of Manner conflation However, these verbs behave differently from other verbs of Manner conflation. The difference becomes ımmediately apparent, *odoru* 'dance' and *hazumu* 'bounce' do not take any partıcle specifyıng a Path.[9] Thıs means that these verbs cannot express a Path unless they are combıned wıth the verb *ıku* 'go' What accounts for these dıfferences ıs that these verbs ınherently have a dıfference ın meanıng Verbs such as *hashıru* 'run' ımplıes that the subject externally traverses a Path However, verbs such as *odoru* 'dance' and *hazumu* 'bounce' have no such ımplıcatıon[10]   Thıs means that the combınatıon of the verb wıth an ımplıcıt Path such as *hashıru* 'run' and the partıcle *e* ıs not totally ınappropnate, although to many speakers ıt sounds unnatural On the other hand, *odoru* 'dance' and *hazumu* 'bounce', wıthout an ımplıcıt Path, cannot express any Path as the occurrence of the partıcle *e* ıs unacceptable

Accordıngly, two types of motıon verbs of Manner conflatıon should be dıstınguıshed   Verbs such as *hashıru* 'run and *oyogu* 'swım' ımply a Path, that ıs, they have an ımplıcıt GO-functıon ın conceptual structure On the other hand, verbs such as *odoru* 'dance' and *hazumu* 'bounce' do not, they have only MOVE-functıon Each structure ıs assıgned as follows

(19) Verbs of Manner conflatıon wıth ımplıcıt Path

$$\begin{bmatrix} \text{GO}([\text{Thıng }]\wedge,[\text{Path }]\wedge) \\ \text{Event}[\text{Manner } X] \end{bmatrix}$$

(20) Verbs of Manner conflation without implicit Path

$$\left[\begin{array}{l} \text{MOVE}([_{\text{Thing}}\ ]_A) \\ _{\text{Event}}[_{\text{Manner}}\ X] \end{array} \right]$$

Furthermore, the verb *hazumu* 'bounce' shows an interesting characteristic. Examine the following sentences

(21) a (=18a) *booru-wa   tonari-no   niwa-e   hazuNda
           ball-TOP   neighbor-GEN   garden-to   bounced
           'The ball bounced to the neighbor s garden '
    b (=18b) *booru-wa   tonari-no   niwa-made   hazuNda
           ball-TOP   neighbor-GEN   garden-as far as   bounced
           'The ball bounced as far as the neighbor's garden '
    c (=18c) *booru-wa   tonari-no   niwa-e mukatte   hazuNda
           ball-TOP   neighbor-GEN   garden-toward   bounced
           'The ball bounced toward the neighbor's garden '
    d (=18d) booru-wa   tonari-no   niwa-e   hazuNde-itta
           ball-TOP   neighbor-GEN   garden-to   bouncing-went
           The ball went to the neighbor's garden bouncing '

(22) a.   ?booru-wa   teNjoo-e   hazuNda
           ball-TOP   ceiling-to   bounced
           'The ball bounced to the ceiling '
    b   booru-wa   teNjoo-made   hazuNda
           ball-TOP   ceiling-as far as   bounced
           'The ball bounced as far as the ceiling '
    c   booru-wa   teNjoo-e mukatte   hazuNda
           ball-TOP   ceiling-toward   bounced
           'The ball bounced toward the ceiling '
    d   *booru-wa   teNjoo-e   hazuNde-itta
           ball-TOP   ceiling-to   bouncing-went
           'The ball went to the ceiling bouncing '

As observed earlier, the verb *hazumu* 'bounce' is a motion verb of Manner conflation that does not imply an externally traversed Path However, the above examples indicate that the compatibility of this verb and the particles varies depending on its reference point, that is, *tonari no niwa* 'neighbor's garden' or *teNjoo* 'ceiling'

Also, it should be pointed out that *hazumu* 'bounce' expresses one single movement, in which the subject bounces into the air away from a surface By combining with *iku* 'go', such a single movement can change into the repetition of the movement, *hazuNde-iku* 'go-bouncing' expresses the

repetition of bouncing As a result, this verb can express an externally traversed Path However, taking *teNjoo* 'ceiling' as the reference point, *hazumu* can express a single upward movement and, in such a context, the repetition of the movement is not possible Accordingly, the serial verb expression *hazuNde-iku* 'go-bouncing' is impossible as shown in (22)d

6. The conceptual structure of *e, e mukatte,* and *made*

The particle *e* is generally used for a goal expression and English *to* is used as the corresponding preposition. Also, *e mukatte* expresses an unbounded Path and corresponds to English *toward* In conceptual structure the preposition *to* most directly expresses the Path-function TO as formulated by Jackendoff (1983, 1990, 1991) TO defines a Path that terminates at Thing or Place serving as its argument, and the thematic role Goal is assigned to the argument

Jackendoff (1991) develops a family of conceptual features and functions to account for the semantics of noun phrases and applies the machinery to detailed analyses of the Path-function [11] In this analysis, Path and Place can be combined into a subcategory called Space, Place can be regions of any dimensionality, while Path can be only 1-dimensional and must be directed The following structure for TO is assigned by Jackendoff

$$(23) \quad \text{TO } X = \begin{bmatrix} +b, -1 \\ \text{DIM 1d DIR} \\ _{\text{Space}} \text{BDBY}^{+}([_{\text{Thing / Space}} X]) \end{bmatrix}$$

Here TO specifies a 1-dimensional bounded directed Space (i e a bounded Path), the Path is bounded on its positive end by the Thing or Space X that is a Goal

On the other hand, for TOWARD, Jackendoff assigns two possible structures

$$(24) \quad \text{a} \quad \text{TOWARD } X = \begin{bmatrix} -b, -1 \\ \text{DIM 1d DIR} \\ \text{GR} \begin{pmatrix} \begin{bmatrix} +b, -1 \\ \text{DIM 1d DIR} \\ \text{BDBY}^{+}([X]) \end{bmatrix} \end{pmatrix} \\ _{\text{Space}} \end{bmatrix}$$

$$
\text{b} \quad \text{TOWARD X} = \begin{bmatrix} -b,-\imath \\ \text{DIM 1d DIR} \\ _{\text{Space}} \text{BDBY}^+([X]) \end{bmatrix}
$$

TOWARD is described as a 1-dimensional unbounded directed space (i e an unbounded Path) The structure (24)a indicates that TOWARD X is treated as a "ground-up" version of TO X, that is, as the Path of which TO X is composed [12] Alternatively, the structure (24)b indicates that TOWARD X is treated as a space that is bounded by but does not include the Goal X

However, it should be noted that the Japanese particle *e* is not strictly the same as the English preposition *to* It is pointed out that in addition to a Goal expression, the particle *e* expresses an unbounded Path also, that is, *e* can express a similar meaning to *e mukatte* 'toward' This is shown from the following examples as well

(25) a John-wa   Mary-e   chikazuita
        John-TOP   Mary-toward went near
        'John approached Mary '
     b John-wa   eki-e   mukatta
        John-TOP   station-toward went toward
        'John left for the station '

Chikazuku 'go near' and *mukau* 'go toward' are motion verbs in which an unbounded Path is conflated Thus, we expect not *e* but *e mukatte* 'toward to appear However, these verbs actually take the particle *e*, which does not express a goal but specifies an unbounded Path It seems that these explicit unbounded Path verbs neutralize the TO-function of the particle *e* and allow it to express the TOWARD-function Also, in the sentence with the verb of Manner conflation such as *hashiru* 'run' that does not have any specific Path function, if the speaker means *toward* by the particle *e*, the sentence is natural to the speaker as follows

(26) Speaker A   ?John-wa   eki-e   hashitta.
                  John-TOP   station-to   ran
                  'John ran to the station '
      Speaker B   John-wa   eki-e   hashitta
                  John-TOP   station-toward   ran
                  'John ran toward the station '

It is considered that this is also one of the reasons why the combination of the verb *hashiru* 'run and the particle *e* is acceptable to some speakers

Next, I will focus on the particle *made* that corresponds to English *as far as* As already discussed, the particle *made* 'as far as' specifies a goal *Made*, like the particle *e*, defines a Path that

terminates at a certain point This causes a contradiction in the constraint on goal expressions as follows

(27) a (=1a) ?John-wa   eki-e   hashitta
                John-TOP   station-to ran
                'John ran to the station '

     b (=2a) John-wa   eki-made   hashitta
                John-TOP   station-as far as   ran
                'John ran as far as the station '

     c (=2b) John-wa   eki-e mukatte   hashitta
                John-TOP   station-toward ran
                'John ran toward the station '

     d (=4a) John-wa   eki-e   hashitte-itta.
                John-TOP   station-to running-went
                'John ran to the station running '

The verb *hashiru* 'run' is not compatible with the particle *e* that specifies a goal, while it can take *made* that also specifies a goal, as shown in (27)a and b However, if we focus on not only boundedness but also an inherent meaning the particle *made* has, this problem can be solved *Made* not only specifies a goal, but also implies the whole process for attaining the goal Therefore, the particle *made* behaves like a particle specifying an unbounded Path I will assign the following structure to *made* 'as far as'

$$(28) \quad \begin{bmatrix} +b,-\iota \\ \text{DIM 1d DIR} \\ \text{COMP}\left(\begin{bmatrix} -b,-\iota \\ _{Space}\text{DIM 1d DIR} \end{bmatrix}\right) \\ _{Space}\text{BDBY}^+([_{Thing\,/\,Space}\text{X}]) \end{bmatrix}$$

Here *made* specifies a 1-dimensional bounded directed space (i e a bounded Path), however, the Path is composed of an unbounded Path that is terminated by the Goal X *Made* places a boundary on an otherwise unbounded Path

Furthermore, it is worth pointing out that durational adverbial tests for *made* show interesting results [13]

(29) a   John-wa   eki-made   30-pun-*de*   *itta*
            John-TOP   station-as far as 30-minutes-*in* *went*
            'John went as far as the station in 30 minutes

b *John-wa   ekı-made   30-pun-*kan*   *ıtta.*
  John-TOP station-as far as 30-mınutes-*for* went
  'John went as far as the station for 30 mınutes '

(30) a. John-wa   okujoo-made   30-mınutes-*de*   *agatta*
    John-TOP roof-as far as   30-mınutes-*ın*   went up
    'John went up as far as the roof ın 30 mınutes '

b *John-wa   okujoo-made   30-pun-*kan*   *agatta*
  John-TOP roof-as far as   30-mınutes-*for* went up
  'John went up as far as the statıon for 30 mınutes '

(31) a   John-wa   ekı-made   30-pun-*de*   *hashıtta*
    John-TOP station as far as 30-mınutes-*ın*   ran
    'John ran as far as the statıon ın 30 mınutes '

b   John-wa   ekı-made   30-pun-*kan*   *hashıtta*
  John-TOP station-as far as 30-mınutes-*for* went
  'John went as far as the station for 30 mınutes '

Examples (29) and (30) clearly ındicate that an event expressed by the sentence ıs bounded.
However, ın (31), takıng *hashıru* 'run' as the verb, the sentence can be both bounded and unbounded
The verb *hashıru* 'run', unlıke *ıku* 'go and *agaru* 'go up', does not have any specıfic Path-functıon
Therefore, both bounded and unbounded natures of the partıcle *made* appear ın the sentence

In short, the fact that *made* 'as far as' specıfies a bounded Path but ıt also ımplıes an unbounded
Path for attaınıng the goal can account for the contradıctıon ın the constraınt on goal expressıons
The verb *hashıru* 'run' ıs a motıon verb of Manner conflatıon wıth an ımplıcıt Path, and thıs verb ıs
compatıble wıth *made* even though ıt specıfies a goal Thıs ıs because *made* ımplıes an unbounded
process also Accordıngly, Ikegamı's claım that Japanese verbs are 'process-orıented' ıs plausıble
However, we cannot sımply claım that Japanese motıon verbs of Manner conflatıon cannot express a
goal

7. Summary and Conclusıon

Based on our observatıons, Japanese motıon verbs and theır conceptual structures are classıfied
as follows [14]

(32) a   Path conflatıon
    agaru 'go up', orıru 'go down', haıru 'go ın', deru 'go out', hanareru 'go away', saru 'go
    away', yoru 'go near', chıkazuku 'go near', susumu 'go forward', sagaru 'go backward,
    go down', modoru 'go back', mawaru 'go around', tooru 'go through', sugıru 'go past',
    wataru 'go across', koeru 'go across', kuguru 'go through under', mukau 'go toward',
    etc

$$[_{Event}GO([_{Thing}\ ]_A,[_{Path}\ ]_A)] \quad (=15)$$

b   Manner conflation (with implicit Path)
aruku 'walk', hashiru 'run', kakeru 'run', tobu 'fly', hau 'crawl', oyogu 'swim', korogaru 'roll', etc

$$\begin{bmatrix} GO([_{Thing}\ ]A,[_{Path}\ ]A) \\ _{Event}[_{Manner}X] \end{bmatrix} \quad (=19)$$

c   Manner conflation (without implicit Path)
odoru 'dance', haneru 'jump', hazumu 'bounce', etc

$$\begin{bmatrix} MOVE([_{Thing}\ ]A) \\ _{Event}[_{Manner}X] \end{bmatrix} \quad (=20)$$

As observed above, Japanese motion verbs are predominantly verbs of Path conflation As shown in such languages, there is a constraint on Path expressions by verbs of Manner conflation Verbs of Path conflation already contain GO-function and Path-function Therefore, if a bounded Path, that is, the TO-function is contained, these verbs are compatible with particles that specify a bounded Path Characteristically, the particle *e* can have TOWARD sense also depending on the verbs with which it occurs, therefore the TOWARD-function can be compatible with *e*

Verbs of Manner conflation are divided into two types verbs with implicit Path (i e implicit GO-function) and verbs without implicit Path (i e only MOVE-function)   Verbs without GO-function cannot express any Path, they cannot take particles that specify Path However, if the verb implies an externally traversed Path, that is, if it contains an implicit GO-function, a Path expression is possible Since no specific Path-function is contained in these verbs, the verbs can take various Paths

However, there is a constraint on goal (bounded) expressions It is possible that these verbs take the particle *e*, but the expressions sound unnatural to many speakers Furthermore, one interesting point is that these verbs can take *made* 'as far as' that specifies a bounded Path The way of accounting for this behavior is that this particle not only expresses a goal but also implies the whole process for attaining the goal, therefore, *made* can be treated like a particle specifying an unbounded Path

In Japanese motion verbs, then, verb-particle compatibility depends on the verb's conflation patterns Path conflation or Manner conflation This reflects the separation of the GO-function and the MOVE-function, which is suggested by Jackendoff Furthermore, our observation indicates that Talmy's lexicalization types Path and Manner do not strictly correspond to GO and MOVE respectively, some verbs of Manner conflation have an implicit Path as well Therefore, the GO-

function should be included in such verbs of Manner conflation in conceptual structure, the GO-function plays a direct role in expressing Path

Finally, it is worth pointing out the role of the particles   Japanese particles, like English prepositions, directly specify Path. However, as shown above, it is not the case that there is a clear-cut one-to-one correspondence between particles and functions   The particle *e* is an example of this   This particle, unlike English *to*, may have both the TO-function and the TOWARD-function, this means that *e* can specify both bounded and unbounded Paths   Therefore, this obviously affects verb-particle compatibility   Furthermore, the choice of TO or TOWARD may depend on the speaker or contexts   Also, the behavior of the particle *made* shows that the simple bounded vs unbounded distinction is not enough to explain all facts of motion verbs   Accordingly, we cannot simply claim that Japanese motion verbs of Manner conflation cannot be compatible with bounded Path   However, the verb-particle compatibility is obviously influenced by the concept of boundedness, and Ikegami's claim that Japanese verbs are 'process-oriented' is supported by the observed behavior of motion verbs

NOTES

[1] Some Speakers accept the sentences (1)a and b   I will discuss this matter later

[2] The verb *iku* 'go' is compatible with the particle *e*
    John-wa   eki-e   itta
    John-TOP   station-to went
    'John went to the station '

[3] The bounded/unbounded distinction is based on the actualization of a terminal point (or a delimiter)   In Path expressions, for example, *to the house* specifies a Path that attains a goal (i e a bounded Path), while *toward the house* does not specify the goal of a Path (i e an unbounded Path)

[4] Yoneyama claims that in Japanese most motion verbs are based on Manner   However, Japanese motion verbs are predominantly Path-based   The list of Japanese motion verbs will be shown in the final section

[5] Also, these verbs can take *made* 'as far as' or *e mukatte* 'toward', and further, if combined with *iku* 'go', they can be compatible with *e*

[6] English is known as a language having predominant motion verbs of Manner conflation   Jackendoff (1990) proposes a language-particular rule (GO-adjunct rule) that accomplishes this incorporation   For detailed discussion see Jackendoff (1990)

[7] *Modoru* has a *selectional restriction* (general semantic restrictions on arguments, explicit information about its arguments is supplied by the verb) on the argument of Path-function TO, Thing must be a "former point or place" The lexical conceptual structure of *modoru* is as follows
$$[_{Event}GO([_{Thing}\ ]_A,[_{Path}TO([_{Thing}FORMER\ POINT])]_A)]$$

[8] An argument marked by the *linking subscript A* must be expressed by a syntactic argument This treatment is discussed in Jackendoff (1990 ch 11, and also 1991)

[9] If the sentence expresses a single movement of *hazumu* 'bounce', the use of the particle *e* or *made* can be acceptable However, such an expression requires a particular context I will discuss this matter later

[10] In a sense, *hazumu* 'bounce' has an implicit vertical Path However, this is different from the externally traversed Path that Jackendoff means by Path Therefore, I put verbs like *hazumu* 'bounce' and verbs like *odoru* 'dance' into the same category

[11] The features such as boundedness ($\pm$b), internal structure ($\pm$i), dimensionality and directionality, and the functions such as PL (plural), ELT (element of), COMP (composed of), GR (grind), PART (part of), CONT (containing), BD (bound) and BDBY (bounded by) are proposed For detailed discussion, see Jackendoff (1991)

[12] GR (grind) is an extracting function its output is a sub-entity of its argument The inverse of GR is COMP (composed of) that is an including function it maps its argument into larger entity that includes the argument

[13] *30-pun-de* 'in 30 minutes' can be added to bounded propositions, while *30-pun-kan* 'for 30 minutes' can be added to unbounded propositions

[14] Verbs listed here are based on data in Wienold (1995)

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