

Motion verbs without motion semantics: The case of Japanese^{*}

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*The present study investigates the encoding of motion in Japanese motion verbs. Kita (1999) claimed that two Japanese motion verbs *hairu* ‘enter’ and *deru* ‘exit’ do not encode motion in transition but only encode change of state. Thus, *hairu* would not mean ‘enter’ but rather means ‘become inside’. Tsujimura (2002) replied to Kita (1999) by stating that his arguments do not hold and that these motion verbs pattern like other motion verbs, i.e. they encode transition. However, Tsujimura (2002) proposes another analysis of Japanese motion verbs whereby verbs that occur in transitive-intransitive pairs have properties of verbs of putting alongside their directed motion semantics, i.e. they can be interpreted in two ways. Other motion verbs that do not have a transitive counterpart do not display this putting verb semantics. This study aims at disentangling these two accounts by means of an acceptability judgment task in which participants judge sentences as descriptions of video clips. A comparison is made between directed motion verbs that do have a transitive counterpart and those that do not. In addition, a cross-linguistic comparison is made between Dutch and Japanese to investigate whether there is a substantial difference between the semantics of motion verbs in these languages. The findings suggest that Japanese motion verbs behave as Dutch motion verbs and do encode motion in transition.*

1 Introduction

In Kita (1999) it is claimed that some motion verbs in Japanese do not denote the dynamic component of the motion event. The two examples given by Kita are *hairu* ‘enter’ and *deru* ‘exit’. According to Kita, *hairu* encodes that at time 1 an entity is not inside, while at time 2 the entity is inside. The English translation given in (1) should actually be ‘John was not inside the room at one point and was inside the room at a later point’.

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- (1) Jon-ga heya-ni hait-ta
John-NOM room-LOC enter-PST
'John entered the room' (Kita 1999: 309)

This type of motion encoding challenges the notion of motion itself since the core of a motion event is often described to be the “displacement of a figure in space along a trajectory” (Levinson and Wilkins, 2006: 18). When adopting this definition, motion is described as a durative event with the figure passing through an indefinite number of points in space over time, i.e. *translocation*. However, not all languages seem to encode the durative trajectory in motion events but describe motion in a non-durative manner; e.g. in the Mayan language Yukatek the verbs ‘enter’ and ‘descend’ do not denote a translocation but a “punctual change of location” (Levinson and Wilkins, 2006). Motion as change of location can be described as: at time 1 Figure is at Source, at time 2 Figure is no longer at Source, or at time 1 Figure is not yet at Goal, at time 2 Figure is at Goal. The Japanese type of motion conceptualization is claimed to be another type of non-durative motion (Kita, 1999), namely change-of-locative relation. This type can be described as: at time 1 Figure is in locative relation R1, at time 2 Figure is in locative relation R2. An example of change-of-locative relation in Japanese is the situation where a ball moves from outside a ring to the inside of the ring, which can be described in the same way as when the ring is moved and put around the ball. This is possible because the dynamic component of the movement is not encoded and it is thus irrelevant whether the ball moved or the ring moved.

On the basis of these different types of motion encoding Levinson and Wilkins (2006) propose a new typology of motion conceptualization that distinguishes between a durative motion conceptualization type, i.e. *translocation*, and two non-durative types, i.e. *change of location* and *change of locative relation*. There is still much research needed into this new typology of motion and methods are needed to establish whether motion verbs of a certain language belong to one type or another. Moreover, opposing opinions exist on the change-of-locative relation type in Japanese. First of all, in Japanese not all motion verbs seem to exhibit a change-of-locative-relation semantics which raises doubts on the frequency of occurrence of this type. Furthermore, some scholars claim that motion is encoded in Japanese *hairu* and *deru* which raises the question whether the third type of motion conceptualization, i.e. change-of-locative-relation, actually exists.

The aim of this experimental study is to find out whether Japanese motion verbs semantically encode motion and if this holds true for all motion verbs or whether a distinction can be made between a class of verbs that does not encode motion and a class of verbs that does encode motion. To make a proper

comparison between motion verbs of the change-of-locative-relation type and motion verbs of the translocation type, the Japanese motion verbs are compared with Dutch motion verbs by means of a sentence acceptability task based on the same video clips in the two languages. Dutch is an adequate language for comparison since all motion verbs are conceptualized as a durative trajectory and thus encode the transition phase of the movement (van Staden, Bowerman and Verhelst, 2006: 500).

This paper is outlined as follows: in section 2 Levinson and Wilkins' types of motion conceptualization are further exemplified and arguments for and against the motionless Japanese motion verbs are discussed. Additionally, the notion of regular polysemy is discussed since some of Japanese motion verbs are proposed to show regular polysemy which is then put forward as an explanation for the uncommon behaviour of Japanese motion verbs. In the third section the hypotheses that follow from the theoretical background are discussed. The fourth section describes the method, section 5 gives an overview of the results which are discussed in section 6. In the last section some conclusions are drawn with respect to the encoding of motion in directed motion verbs in Japanese and Dutch and, in light of the findings, the typology of motion conceptualization proposed by Levinson and Wilkins (2006) is discussed.

2 Theoretical background

To better understand the three types of motion conceptualization of Levinson and Wilkins' typology it is in the first place necessary to identify the differences between the three types. In Kita (1999) the distinction between a motion verb that encodes a translocation, a motion verb that encodes a change of location and a motion verb that encodes a change of locative relation is visualized in the following manner:

- (2) a) Durative: translocation
 -----xxxxx*DDDDDDD*yyyyyy-----Time----
- b) Non-durative: change of location
 -----xxxxxxx*yyyyyy-----Time----
- c) Non-durative: change of locative relation
 -----xxxxx*-----*yyyyyy-----Time---
- = time axis
 DDD = dynamic phase
 xxxx = static phase
 yyyy = static phase
 * = definite point in time

The difference between the durative motion conceptualization in (2a) and the two non-durative types in (2b) and (2c) is the dynamic phase. In motion verbs that encode translocation the entity denoted by a certain argument is in dynamic transition from the first definite point in time to the second definite point in time. In motion verbs of the two non-durative types there is no dynamic phase and these verbs do not encode how the change of state is brought about. The difference between the two non-durative types (i.e. (2b) and (2c)) is that the change of location involves only one definite point in time whereas the change of locative relation involves two distinct time points. Semantically this implies that the change of location denotes a punctual change of state whereas the change of locative relation focuses on the spatial relationship of the figure and ground before the motion and the spatial relation between the figure and ground after the motion, disregarding the durative trajectory between the two definite time points.

Engelberg (1999) makes some interesting comments about non-durative and durative verbs. However, he does not distinguish between the two types of non-durative motion as described in Kita (1999) and Levinson and Wilkins (2006), his notion of non-durative verbs corresponds with the change of location type with only one definite point in time. According to Engelberg (1999) non-durative verbs that denote a change of state are not likely to occur with adverbials denoting a span of time (e.g. *in two minutes*) unless “a preceding event can [...] be anchored in context” (Engelberg, 1999: 2). If a non-durative verb occurs with an adverbial denoting a span of time the adverbial refers to the endpoint of the event, see (3), while if it occurs with durative verbs the adverbial refers to the beginning of the event, see (4).

- (3) John will win the race at five.
- (4) John will clean up his room at five.

Moreover, when non-durative verbs occur with a durative adverbial (e.g. *for two minutes*) they get an iterative interpretation (see (5)).

- (5) John hit the wall for two minutes. (= repeatedly)

Another restriction that occurs with punctual verbs is that they do not occur as complements of aspectual verbs like *to start*, or *to stop*. In the following paragraphs it will be discussed whether the restrictions that hold for non-durative verbs described by Engelberg (1999) hold for the change-of-locative-relation verbs in Japanese.

As mentioned in the introduction, the motion verbs *hairu* ‘enter’ and *deru* ‘exit’ in Japanese are claimed to not denote the dynamic component (Kita, 1999). Kita (1999) gives four arguments that argue for this interpretation of *hairu* and

deru. First, he claims that the transition phase is defeasible in the semantics of these verbs. The verb *hairu* can be used even when there is no movement of an object involved at all, as in (6):

- (6) Taro-ga totemo okina en-o kai-ta node,
 Taro-NOM very big circle-ACC draw-PST because,
 shikaku-ga en-ni hait-ta.
 square-NOM circle-LOC enter-PST.
 ‘Because Taro drew a very large circle, the square entered the circle’
 (Kita, 1999: 311)

In sentence (6) neither the circle nor the square has been moved, but the verb *hairu* ‘enter’ is used. If this verb would indeed encode movement, it is unlikely to find it for the description of this situation. In fact a more accurate translation of *hairu* in this context would be ‘become inside’. These types of situations are also referred to as ‘beaming in/beaming out situations’ since something ‘magically’ appears inside or outside and Kita claims that *hairu* and *deru* can be used to describe these types of situations.

A second argument that Kita (1999) gives is the impossibility of the progressive reading when the enter/exit verb is combined with the aspect marker *-te iru*. In Ogiwara (1998) the ambiguity of *-te iru* is investigated and its interpretation is dependent on the verb class. The *-te iru* marker can give a progressive reading or a resultative reading depending on whether the verb is an action verb (i.e. a durative verb) or a change verb (i.e. a non-durative verb); action verbs get a progressive reading whereas change verbs get a resultative reading. The two enter/exit verbs pattern with the change verbs and get a resultative reading when combined with *-te iru* (see (7)).

- (7) Uma-ga saku-no soto-ni de-te-iru
 Horse-NOM fence-GEN inside-LOC exit:ASP:PRES
 ‘A horse has been inside the fence-enclosure.’
 * ‘A horse is exiting the fence enclosure.’ (Kita, 1999: 315)

The third argument given by Kita is the impossibility of these verbs to occur in simultaneity constructions. In Japanese these constructions are formed with the subordinating suffix *nagara*. The construction “S1-*nagara* S2” means ‘as the process denoted by S1 continues, the event denoted by S2 happened’ (Kita, 1999: 315). It is impossible to have *hairu* or *deru* as a main verb in the S1 clause, which, according to Kita, provides evidence for the lack of a dynamic phase in these verbs (see (8)).

- (8) *Taroo-ga heya-ni hairi-nagara, tabako-ni
 Taro-NOM room-LOC enter-as cigarette-LOC
 hi-o tsuke-ta.
 fire-ACC light-PST
 ‘As Taro entered the room, he lit a cigarette.’ (Kita, 1999: 316)

The English translation of (8) is perfectly grammatical which is claimed to reflect the fact that *enter* in English does encode the movement during the transition phase and thus has a dynamic phase.

A final argument that Kita (1999) gives for the motionless semantics of the enter/exit verbs is the low acceptability of adverbial modification of the transition (see (11)).

- (9) ???Taroo-ga yukkurito heya-ni hait-ta
 Taro-NOM slowly room-LOC enter-PST
 ‘Taro entered the room slowly’ (Kita, 1999: 316)

The English counterparts of these verbs (i.e. *enter*, *exit*) all allow this type of modification.

Tsujimura (2002), in a reply to Kita’s article, claims that the four pieces of evidence given by Kita do not prove that there is no encoding of motion (i.e. no encoding of a transition phase) in Japanese enter/exit verbs. Instead, Tsujimura remarks that enter/exit verbs do not behave differently than other motion verbs in Japanese. In contrast to Kita, Tsujimura claims that *hairu* and *deru* can get a progressive reading when combined with the postposition *-te iru*. To make the progressive reading more readily available, it is necessary to add a time adverbial ‘now’ and the postposition *-kara* (see (10)).

- (10) Uma-ga ima umagoya-kara de-te iru.
 horse-NOM now barn-ABL exit-PROG/RES
 ‘The horse that is exiting from the barn right now.’ (Tsujimura, 2002: 168)

Furthermore, Tsujimura states that the presence or absence of a transition phase in the verb semantics does not determine the choice of the progressive or resultative interpretation. Alternatively, he claims that verbs such as *toku* ‘arrive’, *iku* ‘go’ and *kuru* ‘come’ all have a dynamic phase, but since these are achievement verbs, i.e. verbs that describe events that are punctual, they get the resultative reading of *-te iru* (see (11)).

- (11) Gakusei-ga nihon-ni it-te iru.
 student-NOM Japan-ALL go-RES
 ‘A student is gone to Japan.’ (Tsujimura, 2002: 168)

However, if enter/exit verbs pattern together with *tuku* ‘arrive’ and *iku* ‘go’ (i.e. if enter/exit verbs are achievement verbs) it is unlikely to find the progressive interpretation as given in (10).

Concerning the simultaneity construction, Tsujimura (2002) follows the same line of argumentation. He claims that achievement verbs such as *tuku* ‘arrive’ cannot occur in the S1 clause in *nagara*-constructions. However, although Tsujimura claims that enter/exit verbs are achievement verbs, which should explain why enter/exit verbs cannot occur in *nagara*-constructions, Tsujimura states that (12) is acceptable.

- (12) Taroo-ga heya-ni hairi-nagara kaigi-no
 Taro-NOM room-LOC enter-as meeting-GEN
 koto-o kangae-ta
 things-ACC think-PST

‘Taro thought about the meeting as he entered the room.’

(Tsujimura, 2002: 169)

Tsujimura (2002) contradicts herself since she first gives examples of *hairu* and *deru* in which they get a progressive interpretation and argues that they can occur in simultaneity constructions while later she argues that *hairu* and *deru* are achievement verbs which implies that they would get a resultative interpretation with *-te iru* and that they cannot occur in simultaneity constructions. The fact that she does not discuss the strongest argument in favour of the discrete change of state interpretation of *hairu* and *deru*, i.e. that these verbs can be used to describe situations in which no movement is involved at all, gives rise to further doubts.

What is interesting about Kita’s arguments in favour of the motionless semantics of *hairu* and *deru* is that they correspond with the arguments that hold for achievement verbs, which are non-durative and describe the moment that involves the transition to the result state. It is then not surprising that Tsujimura analyses these verbs as achievement verbs. As described by Engelberg (1999), non-durative change of location verbs cannot describe events that last over time and can therefore not occur in simultaneity constructions or with adverbials denoting a time span such as ‘slowly’ or ‘for two minutes’. It remains unclear what the exact distinction is between change of locative relation and change of location and how to disentangle the two types.

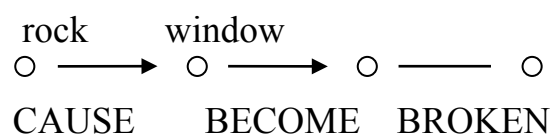
Tsujimura (2002) proposes another analysis of Japanese motion verbs in which *hairu* and *deru* pattern analogously to other Japanese motion verbs and do have a dynamic phase. However, in some circumstances *hairu* and *deru* only encode a change of location. Tsujimura states that *hairu* and *deru* exhibit

properties as verbs of putting (i.e. change of location verbs) as a consequence of “regular polysemy” (Apresjan, 1974). Regular polysemy is defined as follows: “polysemy of the word A with the meanings a_i and a_j is called regular if, in the given language, there exists at least one other word B with the meanings b_i and b_j , which are semantically distinguished from each other in exactly the same way as a_i and a_j and if a_i and b_i , a_j and b_j are nonsynonymous” (Apresjan, 1974: 16). Japanese demonstrates a large number of verb pairs that have a transitive and intransitive part and exhibit a causative-inchoative relationship. What is argued by Tsujimura is that intransitive motion verbs exhibit “the semantic property of putting verbs when their morphologically related transitive counterparts are available” (p. 175). In (13) a list of motion verbs with their transitive counterpart is given.

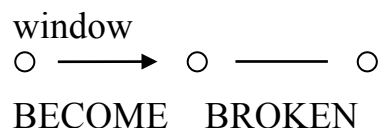
(13) inchoative (intransitive)	causative (transitive)	gloss (intransitive/transitive)
hairu	ireru	enter/ put in
deru	dasu	exit/ take out
agaru	ageru	ascend/ raise
sagaru	sageru	go down/ lower
noru	noseru	get in/ put up
tikazuku	tikazukeru	approach / make something closer
toozakaru	toozakeru	go far off/ keep something away
toru	toosu	go through/ pass

The intransitive verbs in (13) are all directed motion verbs (i.e. motion verbs in which the direction of motion is specified in their semantics) that have a change of location verb (i.e. a verb of putting) as their transitive counterpart. According to Tsujimura the intransitive verbs are polysemous and have (i) directed motion semantics and (ii) inchoative semantics related to their transitive counterparts. The verb pairs are thus not only morphologically related but also semantically which can be made visible by Croft’s causal chain model (1991). In this model events are classified into three causal-aspectual verb types: causative, inchoative and stative. This categorization corresponds to the syntactic division between stative and processual verbs, in which the latter category can be further subdivided into transitive and intransitive verbs. Croft’s causal network makes the semantic connection between the three verb types visible (see (14), from Croft 1991: 262).

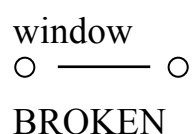
- (14) a) Causative: The rock broke the window.



- b) Inchoative: The window broke.

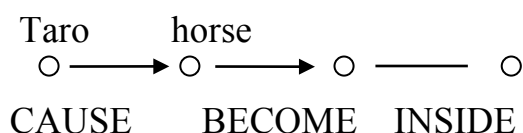


- c) Stative: The window is broken.

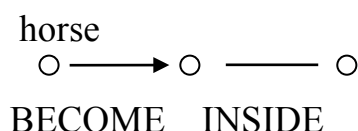


This causal network shows that the three event types are not independent, and that the inchoative (intransitive) counterpart of the causative (transitive) event is simply the second and the third sequence of the causative type. When applied to the Japanese directed motion verbs, a similar causal chain reveals the semantic relationship between the transitive and intransitive verb pairs (see (15)).

- (15) Causative: Taro-ga uma-o saku-no naka-ni ireta
 Taro-NOM horse-ACC fence-GEN inside-into put in
 'Taro put the horse inside the fence'



- Inchoative: Uma-ga saku-no naka-ni haitta.
 Horse-NOM fence-GEN inside-into entered
 'The horse entered inside the fence'



What can be gleaned from (15) is that the transitive verb *ireru* relates to its intransitive counterpart *hairu* by means of the causal network. The transitive verb has a causative change of location semantics whereas the intransitive verb has an inchoative change of location semantics, represented by the second and the third sequence of the chain. When the verbs get this interpretation the focus is not on the motion but on the result state.

Not all directed motion verbs in Japanese have a transitive counterpart (e.g. *iku* ‘go’, *kuru* ‘come’, *toku* ‘arrive’, *noboru* ‘climb’) and on the basis of the distinction between verbs with a transitive counterpart and verbs without a transitive counterpart it is possible to make predictions for the two classes of verbs. If it is indeed the case that directed motion verbs with a transitive counterpart have an inchoative semantics alongside their motion semantics it is expected that these verbs can be used for events where no motion is visible but where motion is implied by change of location. For example, in a situation where somebody enters a house but only the result state is visible and the preceding motion is implied, *hairu* could be used. However, in a situation where somebody arrives at a house but only the result state is visible, *toku* ‘arrive’ cannot be used since this verb does not have a transitive counterpart and thus no inchoative semantics available.

3 Hypotheses

In the present study two hypotheses are tested, the first hypothesis concerns the encoding of motion in Japanese directed motion verbs. Kita (1999) described the semantics of the motion verbs *hairu* and *deru* and claimed that these verbs do not encode motion in transition but only encode discrete change of state. Thus, *hairu* does not mean ‘enter’ but rather means ‘become inside, while first being outside’. If Kita’s claims are correct it is expected that *hairu* and *deru*¹ can be used to describe situations in which no motion is visible. To test this hypothesis, I designed an acceptability judgment task using video clips. In this task, two video clips are combined with the same written sentence containing a motion verb. One of the video clips shows the transition phase whereas the other only shows the result state of the movement. If indeed some of the motion verbs lack semantic encoding of motion it is expected that Japanese participants find the sentences combined with a video clip depicting only the result state acceptable. For cross-linguistic comparison, the same experiment is carried out with Dutch motion verbs. In Dutch, motion verbs encode a translocation and it is therefore expected that the sentences combined with video clips in which no motion is visible will be judged as unacceptable by the Dutch speakers. The same sentences combined with the video clip in which the transition phase is visible are expected to be judged as acceptable descriptions.

The second hypothesis concerns Tsujimura’s proposal about directed motion verbs with a transitive counterpart. Tsujimura (2002) replied to Kita (1999) by stating that his arguments do not hold and that *hairu* and *deru* pattern like other motion verbs, i.e. they encode the dynamic phase. However, as described in the

¹ This possibly applies to other directed motion verbs. Kita (1999) suggests that the same might hold for other verbs, but does not specify which verbs.

previous section, Tsujimura (2002) does propose another analysis of Japanese motion verbs. The aim of this research is to test this hypothesis by investigating whether verbs that occur in transitive-intransitive pairs express motion semantics, whether they just express change of location semantics or whether they express both translocation and change of location semantics. In the judgment task some of the sentences contain motion verbs with a transitive counterpart and some sentences contain motion verbs without a transitive counterpart. If Tsujimura's proposal is correct it is expected that the sentences with motion verbs that have a transitive counterpart are considered acceptable descriptions of video clips depicting the result state of the movement and of video clips depicting the whole movement. Although the two classes of verbs only exist in Japanese, the same comparison is made for the Dutch sentences to establish whether – if a difference is found between the two verb classes in Japanese – it is a particular characteristic of Japanese motion verbs or if the same pattern is found for Dutch motion verbs as well. In the following section the method is described more thoroughly.

4 Method

This study adopts a sentence-video clip acceptability judgment task to investigate whether some of Japanese motion verbs actually encode motion. In the task participants are shown short video clips (the duration of the clips ranges from 4 to 12 seconds) after which a sentence appears. Participants are asked to report whether they consider the sentence an acceptable description of the video clip by means of moving a slider. The slider must be moved completely to the right when the participant considers the sentence an acceptable description of the video clip and completely to the left when the participant finds the sentence an unacceptable description of the video clip. The slider is subdivided in a 10-point scale for which 100 is the maximum score and corresponds to acceptable whereas 0 is the minimum score and corresponds to unacceptable. Although the slider was technically subdivided into a 10-point scale this was not visible for the participants, i.e. the slider seemed continuous.

The acceptability judgment task is constructed in two versions; a Japanese version and a Dutch version. The experiment is built in a programme (ED²) that allows conversion to a website and all participants carried out the experiment online. First some background questions (e.g. age, language background, place where you grew up) were asked after which the instructions appeared (see appendix II). The total duration of the test was approximately 15 minutes. In section 4.1 the participants' characteristics are outlined and in section 4.2 the

² Built by Dirk Jan Vet, University of Amsterdam.

video clips and the sentences are described in detail. Section 4.3 gives a short overview of how the analysis is carried out.

4.1 Participants

Two groups participated in this study, a Japanese group consisting of 18 native speakers of Japanese and a Dutch group consisting of 39 native speakers of Dutch. The Japanese participants were recruited at Tohoku University in Sendai³ and received a small reward for participation. The Dutch participants were recruited at the University of Amsterdam and through social media. In Table 1 the characteristics of the two groups are given.

Table 1: Characteristics of the participants per group.

	Number	Mean Age	Gender (% male)
Japanese participants	18	22.9	50 %
Dutch participants	39	30.2	38.5 %

4.2 Test items and analysis

In appendix I all 34 video clips are described and the English translations of the Japanese and Dutch sentences are given (together with the Japanese and Dutch motion verbs in the target language). The criteria for the sentences and video clips are best understood in the light of the two hypotheses.

The first hypothesis concerns the encoding of motion for the verbs *hairu* and *deru*. There are four video clips that are coupled with Japanese sentences containing *hairu* and three video clips with Japanese sentences containing *deru*⁴. One of the video clips for *hairu* and two of the video clips for *deru* depict a situation in which only the result part of the movement is visible, in this case a person that already entered or exited a building and where no boundaries are crossed. The other video clips depict the whole movement in which a boundary (e.g. door, tunnel) is crossed. All video clips are coupled with a sentence in which the verb form is in the perfective aspect (with the particle *-ta*, e.g. *haitta* ‘entered’ and *deta* ‘exited’). In the Dutch sentences the verb form is in the past tense (with the particle *-de/te* or the irregular past tense inflection, e.g. *naderde* ‘approached’ or *ging binnen* ‘entered’). In the analysis a comparison is made between the acceptability of the Japanese sentences as descriptions of the result

³ I would like to thank Heiko Narrog for his help with the recruitment of the participants.

⁴ Originally there were four video clips for *deru* but due to technical problems one item had to be eliminated.

state video clips and the Dutch sentences as descriptions of the same video clips⁵. For every video clip sentence pair the mean score is calculated. All statistical tests are carried out on the basis of these mean scores.

The second hypothesis concerns the distinction between a class of directed motion verbs that have a transitive counterpart and a class of motion verbs that do not have a transitive counterpart. In the test sentences eight directed motion verbs have been used that do have a transitive counterpart and four directed motion verbs that do not have such a counterpart. Each of these verbs has been coupled with two video clips, one depicting an event in which only the result state of the movement is visible and one depicting an event in which the whole movement is visible. This results in a comparison between the acceptability judgments of the result state video clips for the four motion verbs without a transitive counterpart and those for the eight motion verbs with a transitive counterpart. The same comparison is made for the whole movement video clips.

In addition to the sentences with directed motion verbs there are three sentences containing a manner of motion verb (e.g. row, walk). These sentences are added as filler items and are not included in the analysis. The filler items are included to distract the participants' attention from the purpose of the study.

In the Japanese version of the experiment, the twelve result state video clips are shown an additional time at the end of the experiment. The clips are combined with the same sentences, however, put in the past progressive tense. This was done to control for the fact that the change of location semantics of the motion verbs is only due to the perfective aspect of the verb. If the past progressive sentences are judged unacceptable descriptions of the result state video clips this shows that it is not the *-ta* particle that gives the change of location semantics since this particle is also part of the past progressive construction.

5 Results

In this section the results of the video clip sentence acceptability judgment task are given. In section 5.1 the results for the sentences containing *hairu* and *deru* are given and compared with the corresponding items in the Dutch test. In section 5.2 the results are given for all the items (except the filler items) and a comparison is made between the two classes of verbs in Japanese. Again, the

⁵ Dutch is a typical example of a satellite-framed language whereas Japanese is a verb-framed language (Talmy, 1985). In some of the sentences, this fact results in somewhat unsuitable translations (e.g. *toozakaru* 'go far off', which is translated as *weggaan* 'leave, go away' because a more suitable translation is not available). This item was eliminated from the Dutch data.

results are compared with the corresponding items in the Dutch test. In section 5.3 the results are given for the twelve result state video clips and a comparison is made between the acceptability of these clips with the sentences in the past tense and the acceptability with the sentences in the past progressive tense.

5.1 ‘Hairu’ and ‘Deru’

In table 2 the mean scores for the seven *hairu/deru* items are given for both the Japanese and the Dutch participants.

Table 2: Mean scores of the enter/exit scenes for Japanese and Dutch participants

	Japanese	Dutch
<i>Enter</i> – whole movement, boundary crossed	92.22	88.21
<i>Enter</i> – whole movement, boundary crossed	82.22	82.56
<i>Enter</i> – whole movement, first part of object crossed boundary	81.11	88.71
<i>Enter</i> – result state, no boundary crossed	68.89	67.44
<i>Exit</i> – whole movement, boundary crossed	80.56	77.44
<i>Exit</i> – result state, no boundary crossed	89.44	84.10
<i>Exit</i> – result state, no boundary crossed and not nearby	46.11	37.69

What can be gleaned from this table is that Japanese and Dutch speakers judge the sentences in a similar way. The result state interpretation is acceptable for both enter and exit scenes except for the exit scene in which the crossed boundary is further away. In this item a woman is outside the supermarket and moves further away with her shopping cart. The motion of exiting the supermarket is implied but the crossing of the boundary is more distant compared to the other result state items. Contrary to the predictions made by Kita (1999) the acceptability of the result state scenes is not unique for Japanese. An independent *t* test further examined the differences between the whole movement scenes and the result state scenes, no significant differences were found for neither the Dutch participants ($p = .13$) nor the Japanese participants ($p = .21$). Furthermore, an independent *t* test was carried out to see whether there were significant differences between the Japanese and the Dutch judgments, but no significant differences were found.

5.2 Directed motion verbs with a transitive counterpart

In order to give a clear overview of the items containing verbs with a transitive counterpart and the items containing verbs without a transitive counterpart the items are subdivided into four classes: Transitive counterpart – whole movement;

Transitive counterpart – result state; No transitive counterpart – whole movement; No transitive counterpart – result state. In Table 3 the mean scores for these four classes are given for both the Japanese and the Dutch judgements.

Table 3: Mean scores of Japanese and Dutch judgements on the two verb classes

	Japanese (SD)	Dutch (SD)
Transitive counterpart – whole movement (Tr_Whole)	71.9 (15.3) N = 8	85.3 (6.4) N = 7
Transitive counterpart – result state (Tr_Result)	62.2 (27.0) N = 8	55.5 (26.5) N = 8
No transitive counterpart – whole movement (NoTr_Whole)	74.3 (13.1) N = 4	81.0 (6.5) N = 4
No transitive counterpart – result state (NoTr_Result)	37.1 (8.4) N = 4	30.5 (6.2) N = 4

What Table 3 shows is that Japanese speakers do not judge the items very differently from the speakers of Dutch. For all four classes the mean scores are very similar. However, the mean acceptability rates for the video clips depicting result states are somewhat higher for the Japanese speakers. A one-way ANOVA further examined the differences between the four classes for the Japanese judgements. No differences are expected between the whole movement video clips with respect to the transitive vs. no transitive counterpart items. However, for Japanese differences are expected between the result state video clips with respect to the transitive vs. no transitive counterpart items. There was a significant effect between the four conditions for the Japanese judgements [$F(3, 20) = 3.42, p = .037$]. Post-hoc comparisons using Bonferroni's test indicated a significant difference between the Tr_Whole and the NoTr_result conditions ($p = .049$). However, no significant difference was found between the result state video clips for the two classes of verbs. Since the numbers are rather small in this study it is important to look at the actual means for these conditions, which show that Japanese speakers, as expected, judge the Tr_result state video clips much lower ($M = 37.1$) than the NoTr_result state video clips ($M = 62.2$).

A one-way ANOVA was carried out to examine the differences for the four classes for the Dutch judgements. There was a significant effect between the four conditions for the Dutch judgements [$F(3, 18) = 11.9, p < .001$]. Post-hoc comparisons using Bonferroni's test indicated a significant difference between the Tr_Whole and the Tr_result condition ($p = .017$), between the Tr_Whole and the NoTr_Result condition ($p < .001$) and between the NoTr_Whole and the NoTr_result condition ($p = .002$). Similar to the Japanese judgements the Dutch native speakers judge the NoTr_Result video clips much

lower ($M = 30.5$) than the Tr_Result video clips ($M = 55.5$), although this difference was not significant.

In addition to the comparison between the four conditions a comparison is made between the Japanese and the Dutch judgements. An independent sample t test showed no significant differences between the Japanese and the Dutch judgements. However, the non-significant results might be due to the large amount of variation at the item level. For this reason Table 4 gives the mean acceptability rates for the seven items for which the difference between the Dutch and the Japanese judgements at the item level is significant⁶.

Table 4: Items with significant differences in acceptability scores

Item	Japanese mean	Dutch mean	P-value
Descend – whole movement	39.4	82.8	$p < .001$
Get in – whole movement	75.0	93.3	$p = .05$
Get in – result state	83.3	40.3	$p < .001$
Approach – whole movement	64.4	82.1	$p = .03$
Climb – whole movement	55.0	82.8	$p = .009$
Climb 2 – whole movement	56.7	91.5	$p < .001$
Arrive – result state	48.3	27.2	$p = .03$

The number of items for which there are significant differences in acceptability rates is small. Of these items only the ‘get in’ result state clip is expected to show these differences. For the ‘descend’ and the ‘climb’ items the low acceptability ratings by the Japanese speakers are unexpected. In the case of ‘arrive’ both Japanese and Dutch speakers have the tendency to rate the item as unacceptable; however, this tendency is much stronger in the Dutch speakers.

What is interesting to note is that of these items the whole movement clips are always judged less acceptable by the Japanese speakers while the result state clips are judged less acceptable by the Dutch speakers. This might be due to the more flexible use of motion verbs in Japanese which extended to situations where no motion is visible; an explanation that is further discussed in the following section.

⁶ The difference between the scores on the items containing the verb *toozakaru/weggaan* is also significant, but these are not reported here since the differences are most likely a result of the unavailability of an equivalent translation (see footnote 5).

5.3 Result state video clips: their acceptability as a function of tense/aspect

The twelve result state video clips were judged twice by the Japanese speakers, the first time in combination with the sentences with perfective aspect and the second time in combination with the sentences in the past progressive. In Table 5 the mean scores of the judgements for the two sentences are given.

Table 5: Mean scores for result state scenes for past progressive and past perfective condition

		past progressive	past perfective
Transitive counterpart	Enter	42.9	68.9
	Exit	83.5	89.4
	Ascend	52.4	60.6
	Descend	15.3	10.0
	Get in	20.6	83.3
	Go far off	74.1	49.4
	Approach	84.1	89.4
	Pass	62.9	46.7
No transitive counterpart	Arrive	15.3	48.3
	Come	11.8	33.9
	Go	8.2	28.3
	Climb	21.8	37.8

What can be gleaned from this table is that, as expected, the sentences in the past progressive are generally judged less acceptable than the sentences in the perfective. However, a paired sample *t* test showed that this difference was not significant ($p = .08$). Again it is important to look at the actual numbers for every item since the huge variation between items may outweigh statistical significance. A trend that becomes visible by looking at the mean scores is that in the past progressive condition sentences with verbs without transitive counterparts are rated less acceptable than sentences with verbs with a transitive counterpart.

6 Discussion

The overall pattern that follows from the results described in the previous section is that the Japanese speakers judge the video clips in a similar way as the Dutch speakers. Most items have similar acceptability scores and there does not seem to be a clear pattern that distinguishes the Japanese acceptability rates from

the Dutch acceptability rates. In this section the results will be described on the basis of the two hypotheses proposed in section 3.

The first hypothesis relates to Kita's (1999) claim about the semantics of the Japanese motion verbs *hairu* 'enter' and *deru* 'exit' which has later been challenged by Tsujimura (2002). The video clip acceptability task shows that Japanese speakers accept sentences with the motion verbs *hairu* and *deru* to describe scenes in which only the result state of the motion is visible. However, this interpretation does not seem to be the preferred one since the items in which the whole movement is visible get higher acceptability rates. Moreover, the acceptability of these sentences as descriptions of result state situations does not seem to be unique to Japanese. In fact, the Dutch speakers judge the sentences in a similar manner despite the fact that Dutch motion verbs (i.e. in this case *binnengaan* 'enter' and *uitgaan* 'exit') encode translocational motion (van Staden, Bowerman and Verhelst, 2006: 500). What this result shows is that despite the special status that Kita ascribes to *hairu* and *deru*, there does not seem to be anything inherently different in the semantics of these motion verbs compared to the Dutch motion verbs.

However, a question that needs to be asked is whether the acceptability of these descriptions with motion verbs in combination with events depicting result states are due to the past tense/perfective particle that allows this interpretation or whether this interpretation is available as a result of the lexical meaning of the verb. In the case of Japanese, to rule out the possibility that the acceptability of the sentences is due to the perfective morpheme *-ta* the video clips were judged a second time at the end of the test in combination with a sentence in the past progressive tense. In Japanese the past progressive is formed by the particle *-te* followed by the verb form *iru* 'come/go' with the perfective morpheme (i.e. *itta*). The rationale behind including these sentences in the acceptability task was that if the interpretation is available due to the perfective particle *-ta*, this interpretation should also be available for the sentences in the past progressive with the same particle. Accordingly, if the past progressive sentences are judged as unacceptable descriptions of the video clips, the 'no motion' interpretation cannot be coming from the particle *-ta*. When looking at the acceptability rates for the sentences in the past progressive tense the results are somewhat problematic to interpret. In general the acceptability rates for the sentences in the past progressive are lower but this result is not significant and does not hold for all the items. It is therefore impossible to rule out the possibility that the acceptability of these sentences for scenes depicting the result state is due to the perfective particle *-ta*. A possible follow-up study should include sentences without the past tense/perfective morpheme. Nonetheless, since *hairu* and *deru* pattern like their Dutch counterparts that encode translocational motion a

preliminary conclusion would be that these Japanese motion verbs encode the same type of motion.

The second hypothesis tested concerns the polysemous nature of Japanese motion verbs that have a transitive counterpart. Based on Tsujimura's (2002) claims it was expected that the punctual change of state semantics (i.e. the semantics of putting verbs) is available for these verbs while this is not the case for verbs without such a counterpart. The Japanese acceptability rates for the class of motion verbs with a transitive counterpart in the result state condition are indeed higher than for the class of motion verbs without such a counterpart. However, as was the case for the *hairu* and *deru* items the same pattern is found for the Dutch acceptability rates.

These findings seem to indicate that there is a distinction between the class of motion verbs with a transitive counterpart and the class of motion verbs that does not have a transitive counterpart. However, this distinction is more likely a result of the semantic properties of each of these verbs in this class since it would otherwise be unlikely that the same differences in acceptability rates are found for the Dutch motion verbs where there is no class of causative-inchoative verb pairs. When looking at the lexical semantics of the verbs in the two classes there is no difference between the two, i.e. both classes contain achievement and accomplishment verbs.

However, several other factors might have been of influence on the acceptability of these sentences such as the entailment of arrival (i.e. whether the motion verb has an inherent endpoint (Nakazawa, 2006)), direction of motion, and the duration of the movement visible in the video clip. One of these factors or an interaction of them might explain the acceptability rates that were found. What is important to notice is that whatever factors might be at play here, they seem to apply to both Dutch and Japanese motion verbs.

Besides looking at the overall pattern of the responses given by the Japanese and the Dutch native speakers it is important to investigate the items individually. Every video clip is constructed with the same motivation but due to semantic and technical constraints it is impossible to control for all the variables in each video clip. In the previous section the seven items with large differences in acceptability rates between the Japanese and the Dutch speakers were given. Of these items two depicted result state scenes and can be explained on the basis of a softer version of Kita's hypothesis. It might be the case that Japanese is somewhat more flexible in describing events without motion using motion verbs which, in addition to these two items, explains the overall higher acceptability rates of the items depicting result state scenes by the Japanese speakers. That is, the lexical meaning of motion verbs in Japanese might have extended to situations in which motion does not play a prominent role. Or, to put it differently, Japanese motion verbs that are non-durative might focus more on the

change of state, whereas their Dutch counterparts focus more on the preceding or following implied movement. However, this seems to be only a tendency and it is unclear whether this interpretation is a result of the perfective particle *-ta*. It is important to keep in mind that there is nothing significantly different going on with Japanese motion verbs in comparison with Dutch motion verbs.

In addition to the two result state items that show large differences in acceptability rates between the two languages, there are a few items depicting whole movement scenes. These items are, contrary to expectations, considered to be unacceptable descriptions of the video clips by the Japanese speakers. A possible explanation for this fact could be that a certain degree of directionality is expressed by these verbs and its arguments in Japanese⁷ (i.a. *climb* and *descend*). It is suggested that in general these motion verbs are used for situations in which the figure moves away from the hearer while in the video clips corresponding to these items the figure does not move away but enters from the right side and disappears by exiting on the left side. The unacceptability of these sentences as descriptions of the video clips might thus not be a result of the semantics expressed by these verbs in the sense of motion/no motion but a result of the direction in which the motion takes place.

In this study the focus is on situations in which no motion is visible, i.e. situations depicting the final part of the movement. However, this study does not look at ‘beaming in/out’ situations which according to Kita (1999) can be described by sentences with *hairu* and *deru*. It is unclear why these verbs can be used to describe such situations but it does not seem to be related to the encoding of motion of these verbs. A possible explanation comes from Kawachi (2008) who argues that *hairu* and *deru* are non-durative change of state motion verbs which can be used for ‘beaming in/out’ situations under restricted conditions that involve reversal of the verb’s arguments⁸. Kawachi (2008) shows that in the Cushitic language Sidaama the enter/exit verbs can be used to describe the same situations. However, in this language these motion verbs are durative like the English verbs *enter* and *exit* and clearly encode motion. Hence, the fact that a language can use enter/exit verbs for describing ‘beaming in/out’ situations cannot be ascribed to the lack of motion encoding of these verbs. Further research should be done to investigate why enter/exit verbs can be used to describe ‘beaming in/out’ situations in some languages and what these languages have in common.

⁷ A suggestion made by K. Wanrooij, personal communication.

⁸ It is not within the scope of this paper to discuss this proposal in detail but I would like to refer to Kawachi (2008) for a complete discussion.

7 Conclusion

The present study was designed to determine whether some of the Japanese motion verbs actually encode motion. One of the more significant findings to emerge from this study is that Japanese motion verbs in a video clip acceptability judgment task are judged in a similar manner as Dutch motion verbs. This finding suggests that Kita (1999) was wrong in assigning a special status to Japanese enter/exit verbs; these verbs behave like other motion verbs in Japanese and like Dutch motion verbs that encode translocation. In addition, Tsujimura's (2002) claim concerning the polysemous nature of motion verbs with a transitive counterpart does not seem to hold. Although there is a distinction between the two proposed classes of verbs, this characteristic is not a result of regular polysemy since the same acceptability ratings are found for the Dutch translations.

A broader implication of this study concerns Levinson and Wilkins (2006) typology of motion conceptualization. Based on the results of this study there is no evidence that change of locative relation is a type of motion conceptualization. If something different is going on with these verbs it is expected that these differences would have shown up in the acceptability rates of these sentences. In addition, even if *hairu* and *deru* would encode a change of locative relation in certain conditions it does not seem fruitful to classify Japanese as a change of locative relation language since this classification only applies to a few cases in very specific conditions.

One of the things this study has not looked into is the use of *hairu* and *deru* for 'beaming in/out' situations. It remains unclear whether, and if so why, these motion verbs can be used to describe such situations and future research should further investigate this issue.

8 References

- Apresjan, J. (1974). Regular polysemy. *Linguistics* 142: 5–32.
- Croft, W. (1991). *Syntactic categories and grammatical relations*. Chicago: University of Chicago Press.
- Engelberg, S. (1999). 'Punctuality' and verb semantics. In: J. Alexander, N. Han and M. Minnick Fox (eds.) *Proceedings of the 23rd Annual Penn Linguistics Colloquium. University of Pennsylvania Working Papers in Linguistics* 6,1. Penn Linguistics Club, Philadelphia, 127–140.
- Kawachi, K. (2008). Japanese enter/exit verbs are motion verbs. In: K. Stensrud, R. Edwards P. Midtlyng C. and Sprague (eds.) *Proceedings of the 41st Annual Meeting of the Chicago Linguistic Society*. Chicago: Chicago Linguistic Society, 223–238.

- Kita, S. (1999). Japanese enter/exit verbs without motion semantics. *Studies in Language* 23: 307–330.
- Levinson, S. C. and Wilkins, D. (2006). *Grammars of Space: Explorations in Cognitive Diversity*. Cambridge: Cambridge University Press.
- Nakazawa, T. (2006). Motion event and deictic motion verbs as pathconflating verbs. In S. Müller (ed.) *The Proceedings of the 13th International Conference on Head-Driven Phrase Structure Grammar*. Stanford: CSLI Publications, 284–304.
- Ogihara, T. (1998). The ambiguity of the *-te iru* form in Japanese. *Journal of East Asian Linguistics* 7: 87–120.
- Talmy, L. (1985). Lexicalization patterns: Semantic structure in lexical forms, In: T. Shopen (ed.) *Language typology and semantic description: Grammatical categories and the lexicon*. Cambridge: Cambridge University Press, 36–149.
- Talmy, L. (2000). *Toward a Cognitive Semantics*, Cambridge (MA): MIT Press.
- Tsujimura, N. (2002). Japanese enter/exit verbs revisited. *Studies in Language* 26: 165–180.
- Van Staden, M., Bowerman, M. and Verhelst, M. (2006). Some properties of spatial description in Dutch. In D. Wilkins and S. Levinson (eds.) *Grammars of space: Explorations in Cognitive Diversity*. Cambridge: Cambridge University Press, 475–511.

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Appendix I – Testitems

	Video clip (description of scene)	Sentence	Japanese verb/ Dutch verb
1	Young woman descending stairs (filmed from the side)	The girl descended	Sagaru/ Naar beneden gaan
2	Young woman exiting a lift that just descended	The girl descended	Sagaru/ Naar beneden gaan
3	Man ascending stairs to roof (filmed from below)	He ascended on the roof	Agaru/ Omhoog gaan
4	Man steps on the roof (filmed from above)	He ascended on the roof	Agaru/ Omhoog gaan
5	Young woman passes through tunnel	The girl went through the tunnel	Tooru/ Doorgaan
6	Young woman exits the tunnel (filmed from the side)	The girl went through the tunnel	Tooru/ Doorgaan
7	Tin on table rolls towards a cup	The tin approached the cup	Tikazuku/ Naderen
8	Tin on table is put closer to the cup (no motion visible, only change of location)	The tin approached the cup	Tikazuku/ Naderen
9	Woman gets in car (whole movement visible, filmed from outside)	The woman got in the car	Noru/ Instappen
10	Woman is on car and closes the door (filmed from inside)	The woman got in the car	Noru/ Instappen
11	Woman exits house (filmed from inside, whole movement visible)	She exited the house	Deru/ Uit gaan
12	Woman closes front door and walks away (filmed from the front)	She exited the house	Deru/ Uit gaan
13	Woman walks away from the supermarket with shopping cart (filmed from the side)	The woman exited the supermarket	Deru/ Uit gaan
14	Little boy goes through the fence of a playground (filmed from behind)	The little boy entered the playground	Hairu/ Naar binnen gaan
15	Young woman closes a garden gate (filmed from inside)	The girl entered the garden	Hairu/ Naar binnen gaan
16	Dog enters a house (whole movement filmed from the side)	The dog entered the house	Hairu/ Naar binnen gaan
17	Train starts entering a tunnel (filmed from behind)	The train entered the tunnel	Hairu/ Naar binnen gaan
18	Young woman on bikes, bikes off (filmed from behind)	He went far off	Toozakaru/ Weggaan
19	Man bikes off but movement is not visible because of cars before	He went far off	Toozakaru/ Weggaan
20	Man arrives at the house (whole movement filmed from the side)	The man arrived at the house	Tuku/ Aankomen
21	Man stands in front of a house and rings doorbell (filmed from the side)	The man arrived at the house	Tuku/ Aankomen
22	Man climbs a hill (whole movement visible, filmed from the side)	The man climbed the hill	Noboru/ Klimmen
23	Man arrives at the top of the hill (movement not visible, filmed from the front)	The man climbed the hill	Noboru/ Klimmen
24	Man climbs a ladder (movement in progress)	The man climbed the balcony	Noboru/ Klimmen

	Video clip (description of scene)	Sentence	Japanese verb/ Dutch verb
25	Bus is approaching the bus stop but the stop is not reached (movement in progress)	The bus arrived at the bus stop	Tuku/ Aankomen
26	Woman enters the supermarket (filmed from outside)	The woman went to the supermarket	Iku/ Gaan
27	Young woman is doing shopping in the supermarket	The woman went to the supermarket	Iku/ Gaan
28	Young woman approaches the pond (whole movement visible)	The girl came to the pond	Kuru/ Komen
29	Young woman stands near the pond (movement not visible)	The girl came to the pond	Kuru/ Komen
30	Young woman walks in the park (filmed from behind)	The woman walked in the park	Aruku/ Lopen
31	Two women walk in the park (filmed from the side)	The women walked in the park	Aruku/ Lopen
32	A man rows on the river (filmed from behind)	The man rowed	Kawa/ Roeien

Appendix II – Instructions

Welcome and thanks for participating.

In this experiment you will be shown several short video clips. After each video clip a sentence appears on the screen. Your task is to decide whether the sentence is an acceptable description of the video clip you just saw. You do this by moving a slider like the one below.

If you think the sentence is a good description of the video clip, move the cursor completely to the right (to acceptable). If you think the sentence is an unacceptable description of the video clip, move the cursor completely to the left (to unacceptable). If you think it is a reasonable description move the cursor a little bit to the right, etc.. You have to move the cursor to proceed with the test, so even if you want to put the cursor in the middle you first have to click on it.

To start the test, move the slider and click on the button ‘start’.

The test will take about 15 minutes.

Good luck!