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The Semantics of some Verbs of Separation in Japanese*

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1. Introduction

A century ago, Ferdinand de Saussure argued that, in language, "everything depends on relations" (Saussure 1916 [1983]: 121). No linguistic form makes sense on its own, but only in relation to other forms. He made an analogy to the game of chess, where the value of each piece depends on its position on the chessboard, and the positions of the other pieces (p. 88). The value of a linguistic form is more than the sum of its parts; it is determined by the relationships between the form and other forms in the system (p. 112-113).

> "The French word *mouton* may have the same meaning as the English word *sheep*; but it does not have the same value. There are various reasons for this, but in particular the fact that the English word for the meat of this animal, as prepared and served for a meal, is not *sheep* but *mutton*. The difference in value between *sheep* and *mouton* hinges on the fact that in English there is also another word *mutton* for the meat, whereas *mouton* in French covers both." (Saussure 1916 [1983]: 114)

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Saussure contended that "concepts... are defined not positively, in terms of their content, but negatively by contrast with other items in the same system. What characterizes each most exactly is being whatever the others are not" (p. 115).

Within more recent, cognitive approaches to linguistics, MacWhinney (1987) argues that it is essential to consider *lexical competition*, or the nearest competing lexemes, in order to fully understand a form's lexical semantic potential.

This paper investigates the distribution of meaning in a (sub-)system, within the complex adaptive system that is language (Steels 2000). To what extent are forms sensitive to other forms, as Saussure claimed? How much overlap can be tolerated? To ask these questions, I consider the system of describing separation events in Japanese, focusing on the lexical competitors *nukeru*, *toreru,* and *hazureru*[1], which appear to overlap significantly, as could all be translated into English as "come out/off", and are all potentially available for use in some situations.

Specifically, I ask what categories of meaning are relevant to the three verbs, and how they are distributed in the system. To what extent is there real, and not merely apparent, overlap? Is there any evidence that the forms are sensitive to each other, or that they are defined negatively, as "whatever the others are not"?

I will conclude that, using the metaphor of semantic space as physical space, meaning in the system is apportioned in a way such that, while overlapping landscapes define the distribution of each word, salient peaks and valleys belong to just one of the verbs.

1.1 Background

There have been many types of information hypothesized or shown to be relevant to, and encoded in, terms for spatial relations crosslinguistically. These include the geometry of the Ground[2] (Talmy 1983, 2000, Jackendoff and Landau 1991), the geometry of the Figure (Levinson 1996), the geometric relation between the Figure and the Ground (Bowerman and Pederson 1992a, Feist and Genter 2003, Herskovits 1986, Talmy 1983), certain qualitative physical characteristics of the

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[1] In addition to these verbs, the larger system contains their transitive counterparts and other morphologically-related forms, including *nuku, nukasu, hazusu, hazure,* and *toru*. Because they are beyond the scope of this portion of the project, they will not be discussed here, and a fuller description is left to future research.

[2] I use the terms *Figure* and *Ground* as in Talmy (2000) to refer to the located entity (*Figure*) and to the locating entity or reference point (*Ground*).

scene, such as support and inclusion (Bowerman and Choi 2001, Bowerman and Pederson 1992a, Talmy 2000), the animacy of the Figure (Feist 2000), the Function of the Ground (Vandeloise, 1991, 1994, Coventry, Carmichael, and Garrod, 1994), the relative size of Figure and Ground (Feist 2004), among others (see also Coventry and Garrod, 2001, 2004).

Spatial relations research is relevant to cognitive science (and specifically to linguistics, psychology, cognitive anthropology, and philosophy, as well as computational linguistics and artificial intelligence) because it reveals dimensions of cognitive processing, categorization, and mental representations of knowledge. A deeper understanding of how languages structure and describe spatial relations would be valuable in many ways. Spatial relations can be said to exist in the external world, and therefore is conducive to efforts to understand or map the relationship between language and thought, as it anchors one corner of the triangle of language, thought, and real-world referent to tangible and visible reality. Variation in spatial relations terms across languages is easier to measure than most other lexical fields, as the real world situation can be kept consistent or adjusted in a controlled manner. Foreign language learners would also benefit from a more accurate description of spatial terms in the target language – this may be the single most difficult area to master when learning a foreign language (see e.g. Becker and Carroll 1997).

1.1.1 Relevance to other studies / Points of comparison

Bowerman and Choi (2001, Choi and Bowerman 1991) discuss Korean verbs of removal, including *ppayta* 'remove from tight fit; separate fitted, meshed, or interlocked objects with a bit of force' (with lexical alternatives *kkita* 'fit, interlock' and *kkenayta* 'remove from loose fit'), so, given the often-noted similarities between Korean and Japanese, we might look to their description of these verbs in order to undertake a comparison with similar verbs in Japanese. Some semantic features that they describe as being relevant for *ppayta* include tight fit, interlocking geometry, and force. We will see that these are relevant to the use of *nukeru, toreru*, and *hazureru*, but that they are distributed differently – with one verb specializing in each of these semantic features – and there are additional categories relevant to the verbs in Japanese as well.

1.2 Overview of the paper

First, in study 1 (described below in section 2), in-depth interviews with seven (*nukeru)* or eight (*toreru, hazureru*) native speakers revealed a large number of categories relevant to the use of these terms ("rich semantics"), two semantic categories not previously discussed in the literature ("new semantics"), and a significant extent of both overlap of the terms and of inter-speaker variation. It also distinguished the verbs based on their geometric specifications by showing that *nukeru* respects the IN/ON continuum (Bowerman and Pederson 1992a), but *toreru* and *hazureru* are applicable to all categories of the continuum if certain factors are present.

Based on the questions that arose from the in-depth interviews, study 2 (described below in section 3, prior to the general discussion in section 4 and the conclusion in section 5) further investigated the semantic potential of *toreru* and *hazureru* by collecting acceptability judgments from 70 native-speaking volunteers (ranging in age from 19 to the mid 60s) for these verbs based on 8 drawings in 25 different contexts (described in section 3). It will be seen, based on the results of both studies, that the verbs are specialized in the following way:

Nukeru: exit an IN relationship, broadly construed, involving tight fit.
Toreru: exit a spatial relationship by overcoming resistance (Force Dynamics[3]).
Hazureru: exit a spatial relationship via "unlocking".

The similarities and interrelationship of "tight fit", "resistance", and "unlocking" are striking. Things that are locked together necessarily have a tight fit, and to separate from a tight fit would seem to always (at least potentially) involve overcoming resistance. However, evidence will be presented suggesting that, despite a great extent of overlap, the verbs are also extremely sensitive to each other, respecting the area of specialization of the others in the system.

2. Study 1: In-depth interviews

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[3] I use this term as in Talmy (2000) to refer to the semantic category of ways in which entities interact with respect to force.

2.1 Methods

To research the range of spatial relationships to which each term can apply, as well as extra-geometric factors involved in their use, I used the Topological Relations Picture Series (TRPS; Bowerman and Pederson 1992b). While it was designed to elicit static spatial relations terms, such as those of the IN/ON continuum (Bowerman and Pederson 1992a, etc.), the (selected drawings from the) TRPS served in this project to test a wide range of possibilities for uses of verbs of separation as well.

Initially, I interviewed seven or eight native Japanese speakers about *nukeru, toreru* and *hazureru,* covering 41 of the 71 drawings in the TRPS in detail. I instructed speakers to imagine that they and a friend or two witnessed the scene pictured, and then they walked out of sight, leaving their friend(s) alone in the original location. Then, I asked them what it might mean if they heard their friend say *nuketa*, *toreta*, or *hazureta*, e.g. in a surprised manner - they could not see the scene, so what did they imagine?

When one of these verbs was judged impossible (which I defined to them as not possible to be uttered by a native speaker), or thinking of an appropriate context proved impossible, I adjusted the background context of the drawing, saying (e.g.) that the Figure had originally been glued to the Ground before the utterance, and speakers would sometimes change their judgments based on these contextual changes.

2.2 Results

A large number of semantic factors were seen to be relevant in the semantics of the verbs, including two which have not been described elsewhere in the literature, to my knowledge: a) the animacy of the Ground, and b) the requirement that the shape of the Ground be maintained, or the relationship between Figure and Ground be easily conceptualizable, even after the separation event.

2.2.1 *Nukeru*

My dissertation and later work (Benom 2007, 2009, 2010a, 2010b) addressed *nukeru* (in addition to the motion verbs *toori-nukeru* and *tooru*, and English *through*, which do not describe separation), and here I will only briefly describe the relevant results of that research, in order to focus on *toreru* and *hazureru*.

As for the verbs' geometric specifications, *nukeru* was shown to apply

specifically to a series of geometric relationships that forms a part of the IN/ON continuum – but a broader spectrum than related lexemes, such as *toori-nukeru,* or English *in* or *through*, as seen below.

Table 1- *Nukeru* and the IN/ON continuum, including some related lexemes
(Bowerman and Pederson 1992, Benom 2007, 2010a, b)

	Spatial relation	Example					
ON	Support from below	Cup on table					
	Marks on a surface	Image on postage stamp					
	Clingy attachment	Spider on ceiling					
	Hanging over/against	Picture hanging on wall					
	Fixed attachment	Doorknob on door				*over, across*	*on, off*
	Point-to-point attachment	Apple on branch					
	Encircling with contact	Ribbon around candle					
	Impaled/ spitted on	Apple on stick					
	Pierces through	Stick in apple	*tooru* 通る	*nukeru* 抜ける	*toori-nukeru* 通り抜ける	*through*	*in, out*
	Partial inclusion	Flowers in vase					
IN	Inclusion	Apple in bowl					

In addition to these geometric specifications, a tight fit before the separation event is generally[4] necessary for the felicitious use of *nukeru* – all speakers rejected *nukeru* if a loose ring came off of a finger, but many accepted it if the ring had been tight.

The final semantic specificiation of *nukeru* that I will mention here (for a more complete description, see Benom 2007) – one which also applies to the other two verbs (*toreru* and *hazureru*) – is that the relationship between Figure and Ground must be easily cognizable, and therefore that the shape of the Ground must be maintained, even after the event. For instance, the following sentence was rejected if there are only eighteen candidates, but accepted (by six of seven subjects) if there are a thousand (from Benom 2007:316):

[4] Tightness was not always required with conventionalized expressions, such *ha ga nuketa* '(my) tooth fell out', though presumably it is (or was historically) motivated by the tight fit teeth typically have in gums.

1) *minna sugoku yoka–tta kedo, jyuu–nin ka*
everyone very good–PAST but ten.people or

jyuugo–nin ***nuke–nai*** *to ik–e–nai*
fifteen.people come.out–NEG assoc go–POT–NEG
'Everyone was really good, but ten or fifteen people have got to come out / be taken off the list.'

By removing 15 names from a list of 18, the resulting Ground (with only three names remaining) is no longer easily conceptualizable as a larger, stable locating entity from which the Figure was separated. Similarly, given a scene in which a wine cork came out of a bottle, speakers nearly unanimously accepted *nukeru*, but if the separation event involved the neck of the bottle breaking, they unanimously rejected *nukeru.* Finally, if the cork moves directly into the bottle (even if it is due to the application of pressure, such as air being forced at the cork, pushing it into the bottle), the use of *nukeru* was rejected. It may be that another semantic feature, which we might refer to as functional directionality, is responsible for this, but in general terms the spatial relationship between the Figure and Ground must be easily conceptualizable: it must be easy to "see" that the Figure "came out/off" of the Ground, even after the event is complete.

2.2.2 *Toreru* and *hazureru*

As for *toreru* and *hazureru*, the IN/ON continuum was not seen to play any role in their use, as they could be applied to scenes from both ends of the continuum, depending on whether various other factors were present. In addition to the requirement that the relationship between Figure and Ground be maintained, as was described in 2.2.1 above, the following factors were tested:

2.2.2.1 Caused motion vs. Spontaneous motion - *toreru* and *hazureru*

For instance, with the drawing of a cup on a table (TRPS stimulus #1[5]), nobody permitted the use of *toreru* with spontaneous motion, but 7 of 8 speakers permitted *toreru* to be used with caused motion (such as an adult expressing surprise when a small child manages to grab the cup).

[5] All stimuli referred to by number are presented as an index, other than those presented in section 3.1 below.

2.2.2.2 Animacy of Figure- *toreru* and *hazureru*

E.g. Judgments for stimulus #7 (a spider on the ceiling) depend on whether the spider is real or a toy. With a real spider and spontaneous motion, not a single speaker accepted either verb. With a toy spider that moves spontaneously (falls), 6 of 8 speakers accepted *toreru* and 7 of 8 *hazureru*.

2.2.2.3 Animacy of Ground – *toreru* and *hazureru*

E.g. Judgments for stimulus #5 (a hat on a head) depend on whether the Ground is a human or a mannequin (animacy), and whether the hat is glued or taped to the head (sticky attachment, Force Dynamics). To ascertain if these trends were significant, responses to this stimulus were researched further in study 2, described below.

2.2.2.4 Stickiness / Attachment – *toreru* and *hazureru*

E.g. No subjects accepted spontaneous uses of *toreru* with stimulus #8 (a book on a shelf), but if told that the book was glued down, most[6] accepted it. If a cigarette falls out of a person's mouth (stimulus #39), just one subject accepted *toreru*, and none *hazureru*, but if told that it had been glued on, all eight accepted *toreru,* and seven *hazureru.*

2.2.2.5 Overcoming resistance and unlocking– *toreru* and *hazureru*

If the leaves on the tree pictured in stimulus #41 were real, half of the subjects accepted both verbs. When asked about fake leaves, all subjects accepted *toreru*, and six of eight accepted *hazureru.* However, if the fake leaves had been screwed in, all eight subjects accepted *hazureru*.

For stimulus #58 (a ladder leaning against a wall) and spontaneous motion, no one accepted *toreru*, and just two subjects accepted *hazureru*. After being presented with a situation in which there were small hooks on the ladder attached to the wall, nearly all subjects accepted both verbs. However, it was uncertain if this may have been (partially) due to the Force Dynamic property of resistance, or due to the unlocking of the hooks.

For stimulus # 44 (painting on a wall), there was considerable variation in responses based on whether the string holding the painting broke, or the nail came

[6] Five of the eight subjects agreed absolutely, and one with reservations.

out of the wall, or the painting fell due to an earthquake. It was unclear which condition was most closely linked to which verb.

Being told that the papers came off the spike in stimulus #22, five subjects accepted *toreru* and six subjects accepted *hazureru*. However, when told that the papers did not come vertically up and off, but were blown by a strong wind such that they ripped off horizontally, seven subjects accepted *toreru*, and just two accepted *hazureru*.

However, agreement was not unanimous, and due also to the real-world overlap of unlocking and resistance, it was difficult to draw a firm conclusion based on these data. Therefore, all three of these stimuli were employed again in study 2 in an effort to obtain data from more subjects and differentiate these factors.

2.2.2.6 (Conceptual) Differentiability of material structure - *hazureru*

E.g. for stimulus #68 ("UCLA" letters on shirt), *hazureru* was not used by a single subject if the letters had been printed on the shirt, but if they had been sewn on, it was accepted by six of the eight subjects.

Additionally, when presented with a situation in which the drawing in #68 is viewed with graphic design software such as Adobe Photoshop, and the layer with the UCLA on it is accidentally moved away from the background layer with the shirt on it, *hazureru* was accepted by all eight speakers. A similar pattern was also seen for #28 (face on stamp). Interestingly, if the layer with the image was not moved, but deleted, speakers did not accept *hazureru.* This is due to the relationship between Figure and Ground must be easily cognizable, even after the event.

It could well be that speakers considered this to be a type of unlocking. However, due to the unusual nature of this factor, it was further investigated in study 2.

2.2.2.7 Tightness of fit and sticky attachment

Tightness of fit is seen in both *nukeru* (in 2.1.1 above) and the Korean verbs described by Bowerman and Choi (2001), but it did not seem to be directly relevant for *toreru* and *hazureru* in and of itself. However, as it is closely related to both resistance and being interlocked, whether it played a role was not always certain.

Overlap of the categories of resistance and interlocking geometry, as well as tight fit and sticky attachment, can make it difficult to be certain which is relevant in some cases, and there is also the possibility that several factors may be relevant simultaneously. For example, with the hat coming off the man's head (stimulus #5), it seems that the addition of stickiness affected speakers' judgments, but there is a dangerous possibility that the hat being glued implies tightness of fit, and it is this basis on which speakers are changing their judgments. Some data that hinted at clarifying things were responses to #21 (a shoe on a foot, looking like there is a reasonably tight fit), for which two subjects said that they would use *toreru* to describe the shoe coming off the foot if and only if it had been glued there. Due to the limited number of such judgments, this question was further pursued using this stimulus in study 2.

2.3 Discussion

After examining the results of study 1, the semantic specifications of *nukeru* are relatively clear, but the distinction between *toreru* and *hazureru* remains muddy. When the separation event was due to caused motion, there were more "acceptable" responses and some distinctions between the words appeared to collapse. It also proved difficult to distinguish between various semantic categories, as described in 2.2 above. Therefore, study 2 was undertaken.

3. Study 2: *Toreru* and *hazureru*

3.1 Goals

The goals of this study were to address questions and test hypotheses that arose based on the results of study 1, as well as to attempt to substantiate trends found in the in-depth interviews with more data, and to distinguish between *toreru* and *hazureru* despite significant overlap of applicability. The specific goals, and the stimuli used in an effort to achieve those goals (named in parentheses at the end of each entry; also see Figure 1 below), were:

a) To distinguish between **tight fit** and **sticky attachment** and ascertain which is (are) relevant, to which verb(s), and to what degree (Shoe/Foot)
b) To distinguish between **sticky attachment** and **resistance** and ascertain which is (are) relevant, to which verb(s), and to what degree (Hat/Head)
c) To distinguish between **unlocking** and **resistance** and ascertain which is (are)

relevant, to which verb(s), and to what degree (Papers/Spike, Leaves/Tree, and Ladder/Wall)

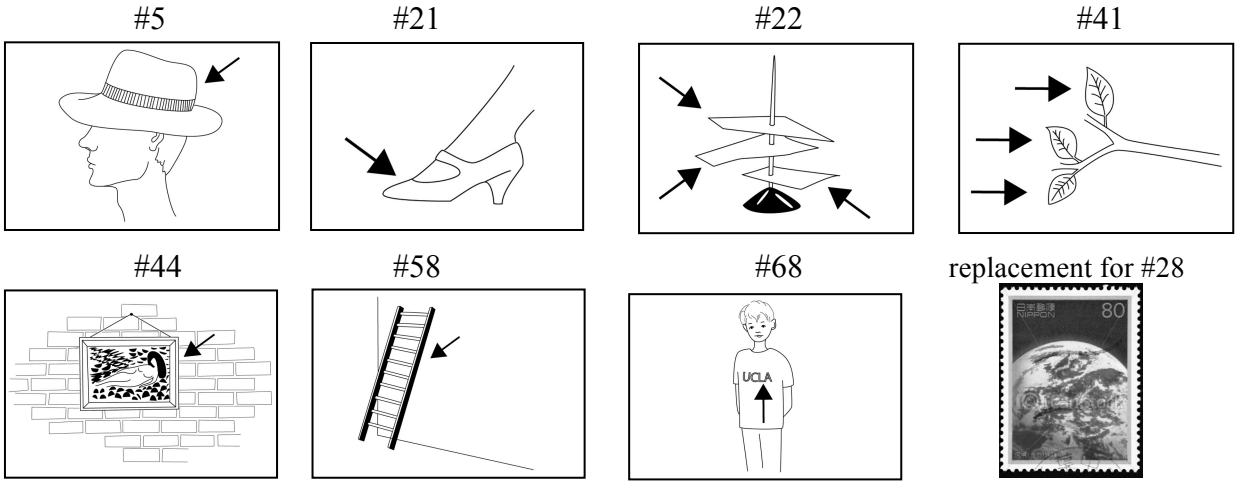
d) To ascertain if / to what degree the **animacy of the Ground** is relevant (Hat/Mannequin's head)

e) To attempt to substantiate trends seen in study 1 (Image/Stamp, Painting/Wall, Writing/Shirt)

3.2 Methods

In study 2, selected drawings from the TRPS were used to elicit acceptability judgments from 70 native speakers in order to focus more narrowly on distinguishing and defining these two terms. The drawings are presented below; stimulus #28, a drawing of a (European) stamp, was judged to be difficult to interpret, and therefore a representation of a Japanese stamp was substituted.

Figure 1- The eight stimuli used in study 2



Subjects responded to written, forced-choice acceptability judgments for both *toreru* and *hazureru* based on these eight stimuli. They were instructed that it was possible that neither of the verbs, or both verbs, might be applicable for any given situation (and, therefore, "forced choice" refers only to their judgments for a single verb, for which they were forced to respond that it was either acceptable or unacceptable). They were told that the separation event was due to spontaneous, not caused, motion, as caused motion resulted in higher acceptability judgments

and collapsed some distinctions between the words in study 1. They were asked first about a stimulus without conditions given[9], and then asked about various imagined scenarios, including the following conditions applying (e.g. before the separation event):

#5: The hat had been glued or clipped onto the man's head/hair, or the head is that of a mannequin, not a man.
#21: The shoe had been glued on the foot.
#22: The papers came off the spike in the default way, or they were ripped off horizontally (e.g. by the wind[10]).
#41: The leaves were fake, or they were fake and had been screwed into the tree.
#44: The painting was shaken off of the wall (e.g. by an earthquake), or the string broke, or the nail came out of the wall.
#58: The ladder had been hooked or glued on to the wall, or both glued and someone was still on the roof, and needed to get down, when it fell.
#68: The letters had been printed, or sewn on the shirt.
#28 (new stimulus): The image was removed by sunlight, or chemicals, or it was a "layer" in a graphic design program such as Photoshop, and the layer was accidentally removed (but still existed elsewhere afterward).

3.3 Results

A pairwise comparison was used to compare responses for the stimulus "as is" to those involving added conditions (e.g. the shoe coming off the foot compared to the shoe coming off the foot despite having been glued on) through the application of Pearson's chi-squared test. The factors that were seen to be significant are presented below in Table 2. The cells of the table are formatted in this way: The first line of each cell is for Stimulus + Condition, and the second line displays the change in number of "acceptable" responses and (+/-) direction of change (number of subjects accepting the form in the neutral or default condition > introduced condition), and the statistical significance of the effect.

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[9] However, in some cases their conceptualization of the situation was shaped by the question, such as being told that the hat came off of a man's head.

[10] Such situations were considered to exemplify "spontaneous" motion by the subjects in study 1.

Table 2 – Factors affecting *toreru* and *hazureru*, including strength of effect[11]

Toreru		Hazureru
OVERCOMING RESISTANCE (FORCE DYNAMICS) + STICKY ATTACHMENT		**INTERLOCKING GEOMETRY**
Ladder falls + glued on +47 (4 > 51); $\chi2 = 585$; $p < 0.0001$		UCLA not printed but sewn on + 36 (3 > 39); $\chi2 = 451$; $p < 0.0001$
Papers come off spike + rip off sideways +23 (26 > 49) $\chi2 = 32$; $p < 0.0001$		Papers come up off spike + rip sideways -44 (46 > 2); $\chi2 = 122$; $p < 0.0001$
Shoe falls off foot + glue +22 (27 >49); $\chi2 = 29$; $p < 0.0001$		Hat falls off head + clipped on +21 (26 > 47); $\chi2 = 26$; $p < 0.0001$
Ladder falls + hooked on +9 (4 >13); $\chi2 = 21$; $p < 0.0001$		Fake leaves fall off tree + screwed in +20 (28 > 48); $\chi2 = 23$; $p < 0.0001$
ANIMACY OF GROUND		Ladder falls + hooked on +17 (41> 58); $\chi2 = 17$; $p < 0.0001$
Hat falls off head + mannequin -17 (53 > 36); $\chi2 = 22$; $p < 0.0001$		Art falls off wall + shaken off +13 (42>55); $\chi2 = 10$; $p < 0.01$
SEMANTIC SPACE BELONGING TO *HAZURERU*		**FUNCTIONALLY INTERLOCKING**
(Fake) leaves fall off tree + screwed in -25 (54 > 32); $\chi2=39$; $p < 0.0001$		Leaves fall off tree + fake +25 (3 > 28); $\chi2 = 217$; $p < 0.0001$
Glued ladder falls down + person above -21 (51>30); $\chi2 =31$; $p < 0.0001$		Image off stamp was Photoshop layer +19 (3 > 22); $\chi2 = 125$; $p < 0.0001$
Hat falls off of man's head + clips -18 (53 > 35); $\chi2=25$; $p < 0.0001$		Glued ladder falls down + person above +10 (25 > 35); $\chi2 = 6$; $p < 0.05$
Image off stamp was Photoshop layer -10 (45>35); $\chi2 = 6$; $p < 0.05$		**ANIMACY OF GROUND**
		Hat falls off head + mannequin +14 (26 > 40); $\chi2 = 11$; $p < 0.0005$
Ambiguous		**SEMANTIC SPACE BELONGING TO *TORERU***
Image off stamp from chemicals, not sun +11 (45 >56): $\chi2 = 7.5$; $p < 0.01$		Ladder falls down off wall + glued -16 (41 > 25); $\chi2 = 15$; $p < 0.0001$
		Ambiguous
		Hat falls off head + glued on +10 (26 > 36); $\chi2 = 6$; $p < 0.05$

[11] In this study all N = 70, and two-tailed p-values are used.

3.4 Discussion

Based on these results, a clear division of labor was visible, including the specialization of *hazureru* for scenes involving the separation of interlocking geometry, and that of *toreru* for scenes involving separation despite resistance. For instance, if the papers on the spike came off in the typical way, it could be considered a case of unlocking (as it is functionally the opposite of "locking" the papers on the spike), and relatively many subjects (N=46) used *hazureru*, while fewer used *toreru* (N=26). However, if the papers were ripped off horizontally, almost nobody was willing to use *hazureru* (N=2), but comparatively many subjects were willing to use *toreru* (N=49).

In addition to such cases, there were some that require more discussion. First, it appears that *toreru* involves a preference for sticky attachment, since it was accepted significantly more often when glue was applied to both the ladder and the shoe (though not the hat). However, it is not clear if it is the fact of sticky attachment that is motivating this, or simply the fact that separation involves overcoming resistance. The fact that adding the condition of glue to the hat did not improve acceptability for *toreru* could be due to the fact that subjects were already quite willing to use *toreru* for the hat coming off the man's head (N=53)[12] before being told that it was glued.

Judgments of *hazureru* when the Figure was glued were also difficult to make sense of. With the shoe, being glued did not change acceptability, but with the ladder, *hazureru* became significantly less acceptable. Conversely, adding glue to the hat/head slightly increased acceptability for *hazureru*. I am not able to explain this pattern. However, it is interesting that there is a slight increase of acceptability of *hazureru*, but not *toreru,* with a glued hat, and the converse is true for the glued shoe and ladder. For some reason a glued hat coming off makes *hazureru* more acceptable, but it is exclusively that condition, among those tested involving glue, in which *toreru* becomes less acceptable. This is more evidence that the verbs behave as a system, respecting one another's "territory".

The fact that *hazureru* was preferred when the image was removed from the stamp if the image was a layer in a graphic design software program such as

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[12] It is relevant to mention here that, for either verb with any stimulus and any condition, the highest level of acceptance was 58 of 70 subjects. Therefore, this might be considered a ceiling effect.

Photoshop (N=22, as compared to N=3 if the image was removed due to sunlight or chemicals) may be seen as a case of unlocking – the layer with the image had been fixed or "locked" in the appropriate place. *Toreru*, on the other hand, was less acceptable given the Photoshop scenario, possibly because of the reduced resistance as compared to other scenarios (N=35, compared to N=45 for the sun removing the image). *Toreru* increased in acceptability when chemicals removed the image from the stamp (presumably relatively quickly), as compared with the sun removing the image (presumably more slowly; N=56 and N= 45, respectively). It may be that subjects considered the chemicals to separate the image from the stamp in a more forceful way.

Another point that was difficult to understand was that adding hooks to the ladder increased the acceptability of both verbs (Ladder/Wall). It is possible that subjects were imagining the hooks breaking, and therefore a Force Dynamically active situation for *toreru*, but they imagined the hooks slipping open (unlocking) for *hazureru*. This is simply conjecture, however; what we can say with certainty is that *hazureru* (N=41) was relatively well accepted with the ladder falling down off the wall, but not *toreru* (N=4). Adding the glue resulted in *hazureru* getting the highest level of acceptance of any stimulus under any condition in study 2 (N=58), but *toreru* was still rejected by the vast majority of subjects (13 of 70 accepted it).

Let us now discuss evidence supporting the idea that the verbs are extremely sensitive to each other, and function as part of a system. If the leaves on the tree were fake, most subjects (N=54) accepted *toreru*, and fewer accepted *hazureru* (N=28). If the fake leaves were screwed into the tree, however, acceptability of *hazureru* increased dramatically (N=48), but acceptability of *toreru* decreased dramatically (N=32). The results for *hazureru* make sense if it is about unlocking, but the results for *toreru* are difficult to understand – why would it become less acceptable? Is there some decrease in resistance if the leaf is screwed in before separating, rather than being attached in some other way? Were subjects imagining the leaf unscrewing, instead of being pulled off? This is possible, but I will argue that it is the sensitivity of *toreru* to the semantic range of *hazureru* that leads to this situation.

More evidence for the sensitivity of the terms includes the fact that *hazureru* is far better-accepted if the hat falling off of the man's head was clipped on (N=47) than if it had not been (N=26), but we also see a similarly robust change

in the acceptability of *toreru* in the opposite direction (N=53 if the man was wearing the hat, but N=35 if it was clipped on). It is not obvious that the acceptability of *toreru* should change, given the clipped condition – in fact, it appears counter-intuitive, given the increase in resistance – but this seems to be due to *toreru* respecting the semantic space of *hazureru*.

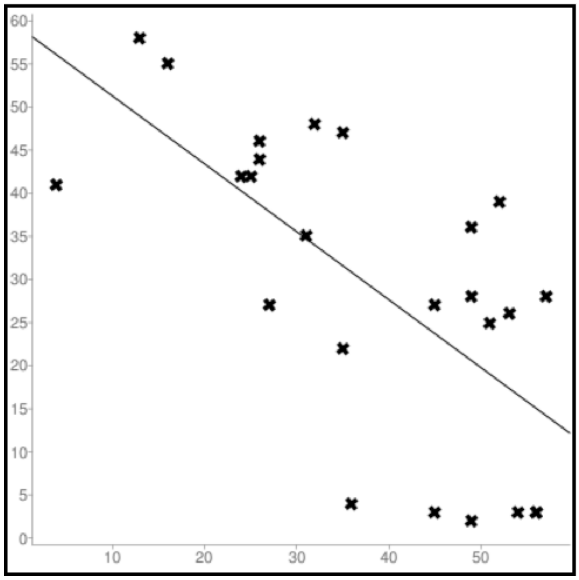
Yet more evidence for the claim that the verbs are sensitive to each other involves responses to the painting falling off of the wall (stimulus #44). If the painting falls because the nail comes out of the wall, or the string holding the frame to the nail breaks, *hazureru* is quite well accepted (N=44 and 42, respectively), whereas *toreru* is less accepted (N= 26 and 24, respectively). However, if the string comes off of the nail without breaking, as in an earthquake, effectively "unlocking" the nail/string device used to "lock" the painting onto the wall (in the functionally opposite direction of locking), *hazureru* becomes even more acceptable (N=55), whereas *toreru* becomes less acceptable (N=16). Note that, despite the real-world force of such an earthquake, which could conceivably increase acceptance of *toreru*, the characteristic of unlocking outweighs any other facet of the situation, and *toreru* allows *hazureru* to assert its relevance.

The best evidence for the sensitivity of the verbs involves the results for the ladder falling down off of the wall. If the ladder is glued, increasing the resistance that must be overcome, *toreru* gains acceptability as compared to a situation with a ladder that is merely leaning on the wall (N=51 and N= 4, respectively; this was the largest change seen in the study). However, the addition of glue should, theoretically, not have much of an impact on the use of *hazureru*, as it does not alter the extent of unlocking – in fact, if anything, a glued ladder would seem to be "more locked" to the wall. Despite this, the acceptability of *hazureru* decreased significantly (from N= 41 without glue to N=25 with glue). This can most easily be explained if *hazureru* is respecting the semantic specialization of *toreru*. Additionally, given the condition that there is a person stuck above on the roof, and that s/he is depending on the ladder, which was glued in place, to get down, acceptability of *hazureru* increased (from N=25 to N=35), whereas the acceptability of *toreru* decreased (from N=51 to N=30). There is nothing about the situation that should lead to a decrease in the acceptability of *toreru* – there is no change in sticky attachment, or resistance – apart from the fact that the condition encroaches on the semantic range of *hazureru*.

In order to test statistically for a relationship between responses for *toreru*

and *hazureru*, a linear regression was used, and a strong negative relationship between responses for the two verbs was seen ($y = -59 + 0.789x$, $r^2=.45$, $df = 68$, $p < .01$). Therefore, it is clear that the verbs are influencing each other strongly. This is shown below in Figure 2.

Figure 2 - Linear regression of *toreru* (X-axis) vs. *hazureru* (Y-axis).



The animacy of the Ground was shown to play a significant role with both verbs, but in opposite directions; instead of the hat falling off of a man's head, if subjects were told that it was a mannequin's head, acceptability decreased significantly for *toreru* (from N=53 to N=36) but increased significantly for *hazureru* (from N=26 to N= 40), whereas in study 1 it increased for both verbs. Why the trends should be in the opposite direction for *toreru* in the two studies is not known at this time, and I am forced to leave this question unanswered. What is most relevant are the facts that the animacy of the Ground played a role in the acceptability of both verbs, and that, again, the increase in acceptability of one verb correlated with a decrease in acceptability of the other (in the larger study).

Finally, it is interesting to note that the highest acceptability outcome of any condition was N=58, which means that there were still 12 subjects who considered such uses unacceptable, and while the lowest was N=2, 41 of the 50 questions (25 conditions times 2 verbs) received 20 or more "acceptable" responses from the 70 subjects.

At this point, we will return to our original goals for study 2. The data

somewhat successfully distinguished between a) tight fit and b) sticky attachment or resistance for *toreru*, based on stimulus #21 (Shoe/Foot), showing that when tight fit is insufficient, sticky attachment (or greater resistance) was sufficient to increase acceptability substantially. As the acceptability of *toreru* with stimulus #5 (Hat/Head) did not increase when glue was added, subjects seemed more concerned with the tightness of the hat, and sticky attachment played no role with *toreru*. The results from stimulus #22 (Papers/Spike), stimulus #41 (Leaves/Tree), and stimulus #58 (Ladder/Wall) successfully distinguished between unlocking and resistance, showing that *toreru* is concerned with resistance, whereas *hazureru* is concerned with unlocking. The animacy of the Ground was shown to be relevant for both verbs, though for *toreru* the effect was in the opposite direction from what was observed in study 1. Finally, the trends seen in study 1 were mostly substantiated, including (stimulus #28) the chemical removal of the image on the stamp being interpreted as Force Dynamic, the Photoshop layer removal being interpreted as unlocking, and the removal of letters on the shirt (stimulus #68) only being interpreted as unlocking if they were sewn on, but not if they were printed on.

4. General Discussion

The data show that the verbs are specialized in the following way:

Nukeru: to exit from an IN relationship, broadly construed, involving tight fit.
Toreru: to separate by overcoming resistance (Force Dynamics).
Hazureru: to separate by "unlocking".

However, other semantic factors apply, leading to considerable overlap in their application. The overlapping semantic fields are shown below.

- Caused vs. Spontaneous motion (all three verbs)
- The shape of the Ground and/or relationship between Figure and Ground must be maintained, even after the event (all three verbs)
- Animacy of Figure (*toreru* and *hazureru*)
- Animacy of Ground (*toreru* and *hazureru*)

In this way, a positive definition of the three verbs is possible. However,

a) *Toreru* and *hazureru* were each shown to be strongly responsive to the other.
b) The extent of semantic overlap was considerable.
c) There was great variability in subjects' acceptability judgments.

Overall, it seems that this is precisely what we would expect, given Saussure's claims that lexical competitors are defined negatively by contrast with other items in the same system.

Given the evidence that language should be seen as a living system that is continuously evolving and adapting (Steels 2000), questions such as the following arise: how and why would a language maintain both such an extent of overlap and such variability in a system? Is it the case that, as a form (or system) acquires more complex and interrelated functions, speakers are more likely to apply idiosyncratic interpretations in the process of acquisition, and so instead of clearly defined categories across a population of speakers, they become less coherent, or even somewhat chaotic? Are the terms especially susceptible to both dialectal and diachronic variation due to their rich and overlapping semantics? Or is such overlap and variability the norm?

An effort was made to assess the relevance of dialect in the data. 58 of the 70 subjects spoke dialects from Kyushu, but controlling for dialect and applying the Cochran–Mantel–Haenszel test did not show that it played any role in subjects' responses.

These results also speak to the probabilistic variation defining the distribution of meaning, as speakers' opinions often clashed, and some speakers would accept two of the three verbs in some situations for which other speakers would not accept any of the verbs. For instance, for the shoe coming off of the foot (stimulus #21), of the 70 subjects in study 2, seven accepted both verbs, 20 accepted only *toreru*, 20 accepted only *hazureru*, and 23 rejected both verbs. In study 2, as stated earlier neither verb was accepted by more than 58 of the 70 subjects, and 42 of the 50 sentences (25 sentences for each of the two verbs) were accepted by 20 or more subjects, revealing the great extent of variation.

5. Conclusion

In this paper, in-depth interviews and questionnaires were used to analyze the distribution of meaning of some verbs of separation in Japanese. Quantitative methods were employed and revealed the great extent of variation in the system, as well as the unique specialization of each verb and the great extent to which subjects' acceptability judgments depended on their judgments of lexical competitors in the same situation.

The results described in this paper support Saussure's conception of the distribution of meaning in a system. Part of the lexical semantic potential of each form was shown to be based on the semantic specialization and preferences of competing forms, and its contribution to a larger system only became apparent with knowledge of the entire system. The verbs were shown to have a great deal of sensitivity and responsiveness to the roles of the other verbs in the system. The great extent of overlap and variation seen makes it clear that the larger population of speakers is not always in agreement in how to differentiate the forms, but it was revealed that, as the situation being described approaches the prototype of one form, other forms lose acceptability, suggesting that, while individual speakers may not always agree, there is a larger perspective – that of the speech community – in which the verbs are distinguished through probabilistic variation.

Bibliography

Benom, C. 2007. *An Empirical Study of English through: Lexical Semantics, Polysemy, and the Correctness Fallacy*. PhD Dissertation, University of Oregon.

Benom, C. 2009. Cross-linguistic support for polysemy analyses: The case of English *through* and three Japanese verbs (*tooru, nukeru*, and *toorinukeru*). In *Proceedings of the Ninth Annual Meeting of the Japanese Cognitive Linguistics Association*, 34-38.

Benom, C. 2010a. The IN/ON Continuum and Three Japanese Verbs. *KUPL* 31, pp. 89-108.

Benom, C. 2010b. On the (Im)possibility of Translation. *Kyudai Eibungaku*, pp. 47-63.

Becker, A. and M. Carroll. 1997. *The Acquisition of Spatial Relations in a Second Language.* Amsterdam; Benjamins.

Bowerman, M., and S. Choi. 2001. Shaping Meanings for Language: Universal and Language-Specific in the Acquisition of Spatial Semantic Categories. In M. Bowerman and S. Levinson, eds., *Language Acquisition and Conceptual Development*, 475-511. Cambridge: Cambridge University Press.

Bowerman, M. and E. Pederson. 1992a. Crosslinguistic perspectives on topological spatial relations. Paper presented at the annual meeting of the American Anthropological Association, San Francisco, December.

Bowerman, M and E. Pederson. 1992b. Topological relations picture series. In Stephen C. Levinson (ed.), *Space stimuli kit 1.2*: November 1992, 51. Nijmegen: Max Planck Institute for Psycholinguistics.

Choi, S. and M. Bowerman. 1991. Learning to express motion events in English and Korean: The influence of language-specific lexicalization patterns. *Cognition* 41: 83- 121.

Coventry, K., R. Carmichael and S. Garrod. 1994. Spatial Prepositions, Object-specific Function, and Task Requirements. *Journal of Semantics 11,* 289-309.

Coventry, K. and S. Garrod. 2001. Towards the Development of a Psychologically-Plausible Model for Spatial Language Comprehension Embodying Geometric and Functional Relations. *Proceedings of the 2nd Annual Language and Space workshop: Defining Functional and Spatial Features*. Indiana: University of Notre Dame.

Coventry, K. and S. Garrod. 2004. *Seeing, Saying, and Acting: The Psychological Semantics of Spatial Prepositions*. Great Brittan, USA, and Canada: Psychology Press.

Feist, M. I. 2000. *On in and on: An investigation into the linguistic encoding of spatial scenes*. Ph.D. dissertation, Northwestern University.

Feist, M. I. 2004. Talking about space: A cross-linguistic perspective. *Proceedings of the Twenty-Sixth Annual Meeting of the Cognitive Science Society.*

Feist, M. I., and D. Gentner. 2003. Factors involved in the use of in and on. *Proceedings of the Twenty-Fifth Annual Meeting of the Cognitive Science Society.*

Herskovits, A. 1986. *Language and spatial cognition: An interdisciplinary study of the prepositions in English*. Cambridge, England: Cambridge University Press.

Jackendoff, R. and Barbara Landau. 1991. Spatial Language and Spatial Cognition. In D. J. Napoli and J. Kegl, eds., *Bridges Between Psychology and Language: A Swarthmore Festschrift for Lila Gleitman*, 144-169. Hillsdale, NJ: Erlbaum.

Levinson, S.C. 1996. Relativity in spatial conception and description. In J. Gumperz, J. and S.C. Levinson, eds., *Rethinking linguistic relativity,* 177–202. Cambridge, MA: Cambridge University Press.

MacWhinney, B. 1987. The competition model. In B. MacWhinney, ey (Ed.,) *Mechanisms of* Language Acquisition, 249-308. Hillsdale, New Jersey: Erlbaum.

Saussure, F. de ([1916] 1983). *Course in General Linguistics* (trans. Roy Harris). London: Duckworth.

Steels, L. (2000) Language as a complex adaptive system. *Lecture Notes in Computer Science. Parallel Problem Solving from Nature - PPSN-VI.* Volume Editor(s) : Schoenauer & al, Springer-Verlag, Berlin.

Talmy, L. 1983. How Language Structures Space. *Berkeley Cognitive Science Report No. 4*, January 1983.

Talmy, L. 2000. *Toward a cognitive semantics*. 2 vol. Cambridge, MA: MIT Press.

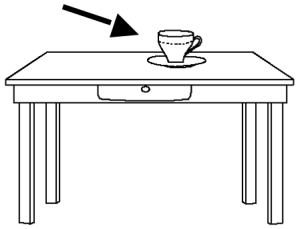
Vandeloise, C. 1991. *Spatial prepositions: A case study from French*. Chicago: University of Chicago Press.

Vandeloise, C. 1994. Methodology and Analyses of the Preposition *in*. *Cognitive Linguistics* 5, 2, 157-184.

Appendix 1: Topological relations pictures mentioned

(Excluding those already presented in section 3.1)

Designed by Melissa Bowerman and Eric Pederson (1992)



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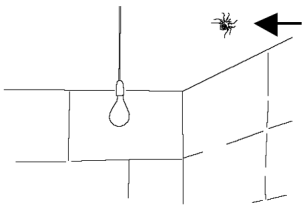

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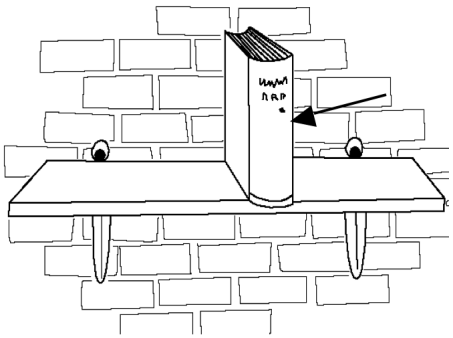

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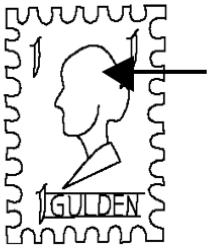

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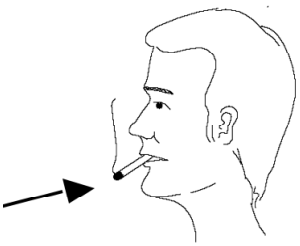


39

Appendix 2: Stimuli Used in Study 2 (condensed excerpts)

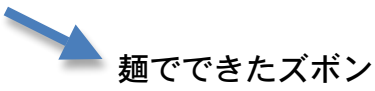
下線を引いた二つの表現のうち、前後の文脈に合う表現があれば、丸を付けてください。

この場合の「 前後の文脈に合う表現 」とは、日本語のネイティブ・スピーカーが話している内容が、容易に想像できるという意味です。

例：私はラーメンを 食べた ／ 渡った。

また、無理矢理にでも、なんらかのシチュエーションが想像できる場合には、その表現に矢印を添えて、説明を付け加えてください。

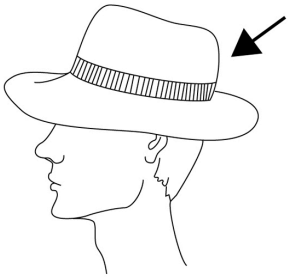
例：私はラーメンを 食べた ／ 履いた。



両方に丸をつけても、両方ともつけなくてもかまいません。
例：昨日私が 買った／読んだ 本はドイツの作者。
例：心から 長い ／ 持つ。

注意：「誰かが物を動かした」など人為的なシチュエーションではなく、「物が落ちた」などの自然に起こるシチュエーションを考えてください。
注意:考えられるシチュエーションがあれば、あまり普段起こらないような内容になったとしても遠慮なく自由に書いてください。
第一印象で書いて、後からなるべく消さないで下さい。
質問には上から順に、一つずつ答えてください。
質問のはじめに、図が出てきます。図の中の矢印で指されている物が質問の対象物になります。

図１



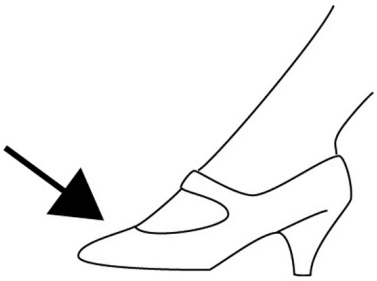
(a) 男性の頭と帽子です。
(１a)男性の帽子が　取れる／ 外れる　前の様子です。

(b) もしも図1の帽子が糊で頭にくっついていたなら、／ 接着されていたなら、
(１b)男性の帽子が　取れる／ 外れる　前の様子です。

(c) もしもクリップで髪の毛に帽子をしっかり留めていたとしたら
(１c)男性の帽子が　取れる／ 外れる　前の様子です。

(d) もしもこの男性が人間ではなく、マネキンだとしたら
(１d) マネキンの帽子が　取れる／ 外れる　前の様子です。

図２



(a) 女性のあしと靴です。糊等で接着されていない。
(2a)靴が　取れる／外れる　前の様子です。

(b)もしも靴が女性の足にしっかり糊付けされていたとしたら
(2b) 靴が　取れる／外れる　前の様子です。

日本語の離脱動詞と意味の分布

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本稿ではソシュールの「概念（...）は、その内容によって積極的に定義されるものではなく、同じ体系の他の項目との対比によって消極的に定義されるものである。それぞれの項目を最も正確に特徴づけるのは、他のものがそうではないということである。（ソシュール1916 [1972]: 164）」という主張を吟味する。そのため、類似の語彙の体系における意味の分布を調べて、どの程度ソシュールが主張するように、ある言語形式は他の形式により、あるいは他の言語形式に応じて定義されるのかという問題を考察する。その際、すべて“come off/out”と英訳される「抜ける」、「取れる」、「外れる」の三つの動詞の語彙競合（lexical competition)に焦点をあて、日本語での離脱事象(separation event)を記述する語彙体系を考える。具体的には、どのような意味範疇が三つの動詞に関係し、そしてそれらは体系的にどのように分布するのか、三つの動詞の意味の重複はどの程度真の重複で，どの程度が見せかけ（例えば翻訳による）のものか、三つの動詞はお互いの意味の影響をうけているのか、または体系の中で他のものがそうではないとして消極的に定義されている証拠があるか、などを考察する。日本語を母語とする被験者の綿密な面接調査によりある仮説に至り、それは７０人の被験者に対するアンケートによりその妥当性が検証された。データの定量分析により、体系における意義深い重複と変異、ならびに各動詞の特殊化と被験者の直感がどれだけ同じ状況での語彙競合の判断に依存するかが明らかとなる。

（受理日 2012年3月31日　　最終原稿受理日 2012年8月3日）