

Cognitive structures of the verbs of 'breaking' and the classifiers in Japanese *

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日本語の「破壊」を表す動詞と 分類辞に見られる認知構造の研究

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要 旨

本研究は認知意味論の観点から日本語の「破壊」を表す動詞である「折る」「割る」「破る」「くずす」「こわす」を取り上げ、以下の2つの点に関して分析したものである。まず第1は、これらの動詞の具体物の破壊を表す意味から、比喩的な意味に到るまで、それぞれの動詞カテゴリーがどのような認知的内部構造によって意味のつながりを持っているのかを探った。第2には、これらの動詞が具体物の破壊を意味するときにプロトタイプのに共起する具体物とそれに伴う分類辞を取り上げ、それらの分類辞と動詞との相関関係を検討した。第1の調査の結果、それぞれの動詞カテゴリーにおいては、プロトタイプのな具体物の破壊を表す意味から周辺のな比喩的な意味に到るまで、それぞれが連鎖(Chaining)によって結びついていることがわかった。つまり、中心的な構成員が他の成員と結びついていて、それは更に他の成員と結びついているという構造を持っているということである。従って、比喩的な意味は中心的な意味と独立して存在するものではないことを示した。

一方、第2の調査の結果では、動詞が具体物の破壊を意味するときにプロトタイプのに共起する具体物を表す名詞とそれに伴う分類辞と動詞との間に相関関係があることがわかった。日本語においては、名詞は一方で分類辞(classifiers)によって分類(カテゴリー化)されている。名詞と分類辞の関係は、これまで多くの場合、認知意味論の対象として研究されてきた。カテゴリー化という人間の認知的作用が言語構造上に明確な形で現れている典型的な例だからである。本研究では、この認知的作用が、名詞という言語上の1品詞にのみ表層化して現れているのではなく、言語構造上の他の部分、この場合、動詞にも影響を与え、名詞と同様のカテゴリー化が認められることを示したものである。

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1. Introduction

Categorization is basic to our thought, perception, action and speech. It is almost impossible for humans to live in the physical world or in our social and intellectual lives without the ability to categorize. A new theory of categorization, called prototype theory, in contrast to the classical theory, has come to light and become an important issue in cognitive semantics since the 1980s.

Over the centuries the classical theory of categorization had been taken as granted and unproblematic. It was believed almost automatically. According to the classical theory, categorization is independent of people and defined only by the characteristics of category members and not in terms of any human characteristics. In prototype theory, on the other hand, categorization is based on human experience and imagination -- experience of perception, motor activity, and culture on the one hand, and imaginative aspects of reason -- metaphor, metonymy, and mental imagery on the other (Lakoff 1987). In the classical theory, things are categorized together if and only if they have shared properties but in prototype theory, categories have "best examples," that is, prototypical members, as well as marginal members, and they are continuously related, thus forming continuum. In other words, there is a chaining mechanism that connects prototype members with marginal members within a category. Recent studies of the human categorization system (noun classification in Dyirbal: Dixon 1982, Lakoff 1987; the English category "over": Brugman 1981, Lakoff 1987; the Japanese classifier "hon": Downing 1984, Lakoff 1987) illustrate this chaining mechanism. In this spirit, the first goal of this paper is to examine the internal structure of the categories of five Japanese verbs of 'breaking' including metaphorical expressions and to try to illustrate the chaining mechanism of each category.

One of the other interests of cognitive linguistics has been focused on the ways grammars of various languages mark certain conceptual categories. One of the strongest pieces of linguistic evidence for the structure of human conceptual categories is the way languages classify objects. It has often been assumed in cognitive semantics that the categorization of objects is a problem of nouns (cf. Lakoff 1987, Craig 1986, etc.) and classifier systems are an apparent manifestation of how languages classify objects. Japanese is one of those languages which categorize nouns using a classifier system.

On the other hand, drawing from Keil and Thomason, Denny (1986) claims that there might be a link between noun classifiers and verbs. That is, classifiers express ontological categories which are special concepts telling us which verbs can go with which nouns. It is, therefore, possible to infer that not only nouns but also verbs mark human conceptual categories of objects. Thus, the second goal of this paper is

to empirically demonstrate that the categorization of objects relates not only to nouns but also to verbs by showing that there is a correlation between the prototypical members of the categories of the five Japanese verbs of 'breaking' and the classifiers which co-occur with the objects acted upon by those verbs.²⁾

2. The five Japanese verbs of 'breaking'

The Japanese language has various verbs corresponding to "break" in English. Consider the following examples. (The words after the translations are the simple present forms of the verbs.)

- | | | | | | | |
|-----|---|------|----------------|------------|----------------|---------------|
| (1) | watashi | -wa | ashi-o | ot | -ta | |
| | I | -TOP | leg -ACC | break-PST | | |
| | 'I broke my leg.' | | | | | <i>oru</i> |
| (2) | watashi-wa | | koppu-o | wat | -ta | |
| | I | -TOP | cup -ACC | break-PST | | |
| | 'I broke a cup.' | | | | | <i>waru</i> |
| (3) | barikeido-ga | | yabur-are | -ta | | |
| | barricade-NOM | | break-PASS-PST | | | |
| | 'The barricade was broken down.' | | | | | <i>yaburu</i> |
| (4) | watashi-ga | | kodomo-no | tsukut-ta | sunayama -o | kuzushi-ta |
| | I | -NOM | child -GEN | make -PST | sand.hill -ACC | break -PST |
| | 'I broke the sand hill that my child made.' | | | | | <i>kuzusu</i> |
| (5) | watashi-ga | | terebi-o | kowashi-ta | | |
| | I | -NOM | TV -ACC | break -PST | | |
| | 'I broke the TV.' | | | | | <i>kowasu</i> |

Which 'break' verb is used is depending on the object that is broken. The usage of each verb will be described and the internal structure of each category will be examined below.

²⁾ As Denny (1986) summarized, it might be expected that the ontological categories expressed by noun classifiers would be the same as those required by verbs. The findings in this paper show that they are not exactly the same. However, it can be claimed that from the typological point of view there is definite parallelism and correlation between the classification of the verbs of 'breaking' and the classifiers which co-occur with the objects acted upon by those verbs in classifier languages. For the typological study of languages with and without classifiers, refer to Fujii (1997 forthcoming).

2.1. *Oru*

The basic meaning of *oru* is to bend a long and thin, or two dimensional object until it folds. In order to be able to be bent, an objects must be flexible. Example (6) is an example in which a two dimensional object is folded.

- (6) origami-o *oru*
 origami-ACC *oru*
 'to fold *origami*'

Oru can be used with paper, newspaper, sheets, cords, strings, etc. When we use *oru* with these objects, the objects must be folded.

In its most basic sense, *oru* is used with flexible objects, but in an extended sense it can be used with certain kinds of inflexible objects. Bones in a body are inflexible but we can bend our arms or legs or folds our fingers since there are joints in places.

- (7) yubi -o ot -te kazoeru
 finger-ACC *oru*-GRD count
 'to count by folding fingers'

- (8) hiza-o *oru*
 knee-ACC *oru*
 'to kneel'

Example (7) expresses a scene in which someone is counting on their fingers (by folding them down). Example (8) describes a scene in which a person is kneeling in a traditional Japanese sitting posture. The expression, *koshi-o oru* 'to bend down (from the waist)' is possible as well. In this kind of usage, *oru* can be used with long objects which are made of inflexible materials but which can bend at a joint. Compact umbrellas which have hinges are an example of this.

- (9) kasa -o ori-tatamu
 umbrella-ACC *oru*-fold
 'to close an umbrella'

The verb compound expresses the action of bending and folding. The mental image of an object being bent until it folds includes the sharp refraction of the material. Folding an umbrella requires the sharp refraction of its ribs. The image allows *oru* to be extended in the following way.

- (10) sono michi -wa migi -ni oreru³⁾
 that road -TOP right -GL oru.intr.
 'The road turns to the right.'

To apply *oru* to roads, the roads must not have a simple bend but instead a sharp turn which has an angle. Even if the bend is very sharp like a hairpin bend, *oru* can not be used. The turn must have an sharp angle as an umbrella bends at a hinge.

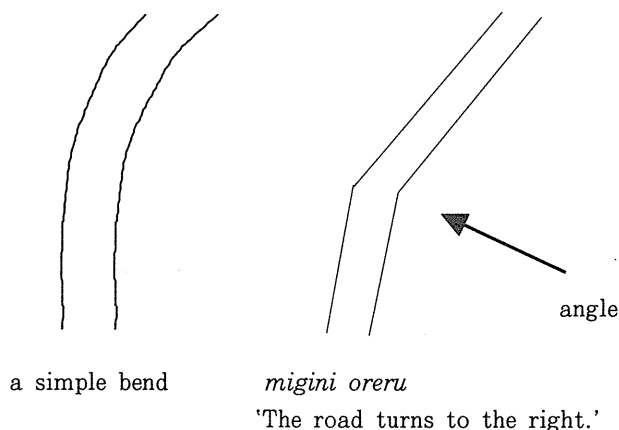


Figure 1: 'The road turns to the right.'

The verb *oru* can be used not only with the above flexible objects but also with long, thin, and inflexible objects such as bones, sticks, pencils, baseball bats, tree branches, and dry spaghetti as well.

- (11) hone-o oru
 bone-ACC oru
 (lit.) 'to break a bone'

In Japanese, the above expression can be used as an indefinite expression referring to legs, arms, or any bone in the body. The image of the action of bending allows us to apply *oru* to inflexible objects. When we bend long, thin, inflexible objects, the

³⁾This is an intransitive version *oru*. The difference between transitive and intransitive versions is not pursued in this paper, since it is assumed that the difference is not directly relevant to this paper.

object bends as far as it can, enduring the force from outside and breaking when the force surpasses the strength of the object. As a result, the object is separated into two parts. Therefore, when *oru* is used with long, thin, inflexible objects, the meaning of the verb changes to 'to break.' The action of bending long, thin, or two dimensional flexible objects makes them fold and the same action makes long, thin, inflexible objects break. Furthermore, *hone-o oru* in example (11) has a metaphorical meaning, 'to take a lot of trouble.' It is easy to see that this expression comes from the concept of 'to work until bones are broken.'

The next example shows one of the prototypical long, thin, one dimensional inflexible objects to which *oru* can be applied.

- (12) *enpitsu-no shin-o oru*
 pencil -GEN lead-ACC *oru*
 'to break a lead of a pencil'

Another object of this type is *fude* 'a writing brush' used in the old days in Japan. The expression *fude-o oru* '(lit.) break a writing brush' is metaphorically extended to mean 'stop writing a novel (essay, paper, etc.).'

The image of breaking a long, thin, inflexible object can be metaphorically extended to an abstract thing; a talk.

- (13) *hanashi-no koshi-o oru*
 talk -GEN waist-ACC *oru*
 'to interrupt one's talk'

This metaphor describes a situation where someone interrupts someone else's speech. As a result, the person who is talking loses the will to continue talking or forgets what s/he was talking about. The stream of speech is broken. A talk has a story line, and the image of the story line is associated with a long, thin and inflexible object. This is a case of the type which Lakoff (1987) describes as an image-schema transformation.

a story line schema \longleftrightarrow long, thin, inflexible object schema

Once long, thin, inflexible objects break, they are in separate pieces. Similarly, in the situation in (13), once the talk is interrupted, the story line is separated, thus, broken.

Finally, I should mention here that the objects which can be used with *oru* in the sense of 'to break' are classified by the classifier *hon*. *Hon* classifies long, thin objects: sticks, canes, pencils, candles, trees, ropes, strings, etc. Among these objects, *oru* with the meaning 'break' can be used with inflexible objects. *Oru* is sensitive to the strength of the material that the object is made of.

2.2. *Waru*

The verb *waru* means to destroy the original shape of an object by hitting it, strongly pushing it into something else, or dropping it. It is prototypically applied to thin, fragile, and inflexible objects: glasses, cups, window panes, pairs of glasses, plates, vases, Japanese roofing tiles, etc. When these objects are broken, they shatter into pieces.

- (14) osara-o otoshite wat -te shimat-ta
 plate-ACC drop *waru*-GRD end.up-PST
 'I dropped the plate and broke it.'

These objects and the broken state are the central image of the verb *waru*.

The usage of *waru* can be extended to less representative cases. *Waru* can also apply to hard, non-fragile inflexible objects which can be broken into pieces. Although neither stones, walnuts, nor ice can be broken as easily as the above objects, they can be broken with various kinds of tools or by being strongly pushed into something. Imagine breaking a small stone or a block of ice with a hammer. We cannot usually control the resultant state. The stone or ice will be broken into pieces resulting in a state similar to that of broken glass or plates. This association makes it possible to use *waru* with hard, non-fragile inflexible objects.

Note that objects such as stones and walnuts are too hard and inflexible to break accidentally. When the verb *waru* is used with them, the action usually takes place intentionally even though the resultant state is not controlled.

- (15) take -no -bou -de suika -o *waru*
 bamboo-GEN-stick-INST watermelon-ACC *waru*
 'break a watermelon with a bamboo stick'

When a watermelon is hit with a stick, the resultant state cannot be controlled but the watermelon is usually divided into two or three pieces. From here, *waru* can be extended to cases where we intentionally separate something into several pieces. The meaning of the verb *waru* becomes 'to divide' and can be used with fruits, *manjuu* (a Japanese traditional sweet, a bun with a bean-jam filling), rice crackers, cookies, etc. The resultant state is usually what the agent intends.

- (16) riNgo-ga hitotsu shika nakat -ta -node,
 apple-NOM one only EX.NEG-PST-RSN,

 futatsu-ni wat -te otouto -to tabe-ta
 two -DAT *waru*-GRD young.brother-ASSO eat -PST

'Since there was only one apple, I divided it into two pieces and ate it with my younger brother.'

In the above example, the speaker (agent) wanted to divide the apple into two pieces so that s/he and her/his younger brother can share it. The action *waru* here is intentional and the resultant state of the apple is what the actor intended. This extension from the meaning of 'to break' to 'to divide' makes it possible for *waru* to be used to express division in mathematics.

- (17) 8-wo 2-de waru
 8-ACC 2-INST waru
 'to divide 8 by 2'

The next example is ambiguous between the core meaning (which would be glossed in English as 'break') and the 'to divide' meaning (which would be glossed as 'crack open' in this case).

- (18) tamago-o wat -ta
 egg -ACC waru-PST
 '(I) broke/cracked open an egg.'

One of the interpretations of this clause is that the speaker accidentally broke an egg. Since an egg-shell is thin, fragile, and inflexible, it can be a central/prototypical member of this category. The other interpretation is found when the action is intentional as when an egg is purposely cracked open for use in cooking. As a result, the egg-shell is divided into two pieces. *Waru* is used to mean 'to divide' in this case as well.

As a result of the cracking of the egg, not only the egg-shell is divided into two pieces but the contents, the egg yolk and white, also come out. This motivates the following metaphorical extension.

- (19) hara -o wat -te hanasu
 belly -ACC waru-GRD speak
 'to speak frankly to have a heart-to-heart talk'

When we open ('break') our belly which is metaphorically resembles an egg-shell, the contents, that is, what we are thinking or how we feel, will come out.

- (20) kuchi -o waru
 mouth-ACC waru
 'to confess'

Example (20) has the same motivation as (19); when we talk, we open our mouths and what we are thinking or sometimes something we are keeping secret will come out. The image of opening a mouth is like the image of cracking an egg-shell; both actions cause the contents to come out.

Going back to the concept of dividing, *waru* in the sense of 'to divide' can be extended to non-objects.

- (21) futari -no keNka -ni wat -te hairu
 two.person-GEN quarrel -LOC waru-GRD go.into
 'to step in between the two as peace-maker'

In this case, *waru* is applied to people. The people in (21), who can be considered as one unit when they have a fight, are divided by another person. The person goes into the unit and divides it. As a result, at least for the moment, the fight ceases and it is expected that they will come to be reconciled. Other examples of this use of *waru* are found in expressions such as *tou-o futatsu-ni waru* 'divide the political party into two,' and *kuni-o futatsu-ni waru* 'divide the nation into two.'

The idea that something goes into one unit and divides it makes the following extension possible.

- (22) uisukii -o mizu -de waru
 whisky -ACC water-INST waru
 'to mix whisky with water'

The image in this expression is: whisky as a unit or a non-discrete object is divided into unrecognizably small pieces as another object goes into them, and as a result, they are mixed. The sense of *waru* can be interpreted as something like 'to mix' in this case.

By being mixed with water, the concentration of whisky becomes lower than 100 percent. If we take 100 percent as a standard, the resultant state is below the standard. This image that something is below the standard, applies to the following expressions as well.

- (23) kion -wa 20-do -o wat -ta
 temperature-TOP 20-degree-ACC waru-PST
 'The temperature dropped below the level of 20° C.'

- (24) oubosha -wa teiin -o wat -ta
 applicant -TOP fixed.number-ACC waru -PST
 'The number of applicants is below the fixed number.'

Example (23) is used when the temperature is expected to be over 20 degrees, for instance, in August, but actually is below 20 degrees. In this case, the speaker or world knowledge fixes 20 degrees as a standard. Example (24) expresses a situation in which the number of applicants, say, for a university, does not reach the number that the university needs. The number is below the one that the university fixed as a standard. In both cases we see that *waru* can be used for a state which is below the standard.

The standard can be taken as a limit of something as well. In example (23), 20 degrees is the lowest limit at which a temperature can be considered as normal in summer. The assumption of example (24) is that there are usually more applicants for the university than the fixed number which the university needs. In this sense, the fixed number is also a lower limit. When something goes below or beyond this limit, *waru* can be used. The image of something going beyond the limit links to the following use of *waru*.

- (25) yokozuna-wa korae -rare-zu, tsuini dohyoo -o wat -ta
 yokozuna-TOP endure -can -NEG, finally sumo.ring-ACC waru -PST
 'The champion *sumo* wrestler couldn't hold, and was finally pushed out of the ring.'

This sentence describes a scene in which a champion *sumo* wrestler was beaten. The wrestler is defeated when he goes out of the *sumo* ring. In this case, the edge of the ring is taken as the limit inside which the wrestlers must stay. Therefore, when the wrestler goes beyond the limit *waru* can be used.

We have seen several usages and metaphorical extensions of *waru*. As introduced at the beginning of this section, the central meaning of the verb is 'to break something into pieces.' The prototype objects are thin, fragile, and inflexible objects such as panes of glass, cups, pairs of glasses, vases, tiles, etc. Although cups and vases are three dimensional, they are made of the same material as two-dimensional objects (e.g. saucers) which are counted with *mai*. In addition, two-dimensional objects made of these materials are classified with the classifier *mai*. *Mai* classifies thin and flat objects. More details about the relationship between classifiers and the five verbs of 'breaking' will be examined later.

2.3. *Yaburu*

The verb *yaburu* can be used with thin, flat, and flexible objects: paper, cloths, vinyl, nets, etc. When *yaburu* is used with these objects, it can be glossed as 'to tear.'

- (26) kookoku -o yabut -te sute -ta
 advertisement-ACC yaburu-GRD throw.away-PST
 'I tore the advertisement and threw it away.'

Unlike the English verb, *yaburu* specifies that the action involves strong friction or pressing and that as a result the objects are torn or partially broken.

- (27) biniiru-no fukuro-ga yabure⁴⁾ -te ekitai-ga de -te ki -ta
 vinyl -GEN bag -NOM yabureru-GRD liquid-NOM come.out-GRD come-PST
 'The vinyl bag was broken open and the liquid inside came out.'

In example (27), it could be glossed as 'an object is partially broken so the contents inside came out.'

- (28) tamago-no kara -o yabut -te,
 egg -GEN shell -ACC yaburu-GRD,
 hina -ga de -te ki -ta
 young.bird-NOM go.out-GRD come-PST

'Breaking an egg-shell, a young bird came out.'

In contrast to *waru*, *yaburu* means that the object is not broken into pieces but is only partially broken. This is because the central objects mentioned above are so flexible that it is impossible to break them into pieces in an instant. In example (28), although egg-shells are not flexible, a young bird breaks a part of the egg-shell so that it can come out. The image of only a part of the whole being broken makes it possible for *yaburu* to be used in this case.

This image can be extended to hard, non-flat objects, as in the example below.

- (29) suidookaN -o yabut -te mizu -ga de -te ki -ta
 water.pipe -ACC yaburu-GRD water-NOM come.out-GRD come-PST
 'Water broke the water pipe and came out.'

First of all, although water pipes are not flat, the material that water pipes are made of is thin and hard. However, the strong pressure of water can break through part of the pipe. The image of something breaking through a part of a thin, flat and flexible object through friction or the application of pressure makes it possible

⁴⁾ *Yabureru* is an intransitive version of *yaburu*.

to use *yaburu* in this situation. Second, the image of something coming out after breaking a part of a barrier, e.g., a baby bird coming out of an egg-shell, allows us to apply *yaburu* to this situation as well.

The image of breaking a part of a thin, flat object and then having something come out makes it possible for *yaburu* to be used with thin⁵⁾ and very hard objects such as walls, barricades, gates, and embankments.

- (30) hageshii nami-ga tsuini teiboo -o yabut -ta
 furious wave-NOM finally embankment-ACC yaburu-PST
 'Furious waves finally broke the embankment.'

The image here is that of a barrier, such as a tall wall, being broken by the pressure of something which then comes through the barrier.

This image can be expanded to a scene in which a prisoner breaks out of prison, a robber breaks open a safe in a bank, or an animal breaks out of a cage. The mental images of breaking open a door in a prison, the door of a big safe in a bank, or a part of a cage allow us to apply *yaburu* to the whole part: a prison, a safe in a bank, a cage.

- (31) hitori -no shuujin -ga rou -o yabut -ta
 one.person-GEN prisoner-NOM jail -ACC yaburu-PST
 'One prisoner broke out of prison.'

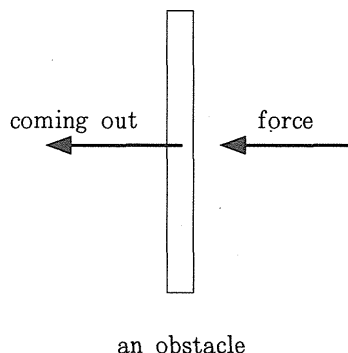
- (32) kinko -ga yabu -rare -ta
 safe -NOM yaburu-PASS-PST
 'A safe was broken open.'

- (33) raion-ga ori -o yabut -ta
 lion -NOM cage-ACC yaburu-PST
 'A lion broke out of a cage.'

What Lakoff (1987) calls metonymy can be claimed here as well in that *yaburu* used with part of the whole image stands for the whole event.

The image-schema of *yaburu* can be illustrated as follows.

⁵⁾By 'thin,' I mean thickness of two dimensions of an object relative to the third dimension. For example, the concrete banks in example (30) are not definitely thin. But compared to the width of the part which faces the waves, the thickness is relatively small.

Figure 2: Image-schema of *yaburu* 1

Even invisible obstacles like the speed of sound limit can be broken in expressions using *yaburu*.

- (34) sono hikooki -wa tuini on -soku-no kabe-o *yabut* -ta
 that airplane-TOP finally sound-speed-GEN wall-ACC *yaburu*-PST
 'The airplane finally broke the speed of sound.'

A limit is a barrier for us to break, so more general expressions like *genkai-o yaburu* 'break the limit' are possible as well. Furthermore, a world record or the best record is always an invisible but big obstacle for challengers to overcome. This association makes it possible to use *yaburu* for world records or other kinds of record and so on.

When we break a world record, we overcome the former record which had seemed to be a big barrier in front of us. This image extends to a situation in which we defeat competitors in sports, games and so forth. Competitors are always perceived to be a barrier or a big obstacle in front of us.

- (35) oozeki-ga yokozuna-o *yabut* -ta
 oozeki-NOM champion-ACC *yaburu*-PST
 'An *oozeki* (sumo wrestler of the second highest rank) defeated the champion.'

In *sumo* wrestling, when one wrestler defeats another, *yaburu* is used. Therefore, it can be claimed that when we break down barriers or big obstacles in front of us, including not only world records, but also competitors and enemies, and finally we go beyond them, *yaburu* can be used.

Metaphorically *yaburu* can be used with abstract concepts such as promises, laws, contracts and so forth. It could be claimed that these are extended cases from

a central object: paper. Since promises, laws, and contracts are written on paper, when we break them, the verb *yaburu* which can be used with paper can be used with these abstract things as well. The association of these abstract things with the paper is clearly illustrated in another expression as well. When we cancel a promise or a contract, we say:

- (36) *yakusoku/keiyaku-o hakushi -ni modosu*
 promise/contract -ACC white.paper-GL return
 'to cancel one's promise/a contract'

Literally this means that 'we return the promise or contract to a blank piece of paper.' In other words, the promise or contract will revert back to its original state.

Promises, laws, or contracts can be considered as deals which are settled. This image can be extended to abstract concepts such as silence, calm, peace, dreams, balance, monotony and all concepts which describe settled states. *Yaburu* can be used with these concepts as well, and in this case sense of the verb becomes 'to break or disrupt a settled, balanced, or calm situation.' Consider the following example.

- (37) *bareriina-ni naru yume -ga yabure -ta*
 ballerina-DAT become dream-NOM *yaburu.intr*-PST
 'My dream of becoming a ballerina was broken.'

Here the speaker's dream of becoming a ballerina has been determined; thus, it is a settled dream. Therefore, when it is broken, *yaburu* can be used. The image-schema of these cases is shown as in Figure 3.

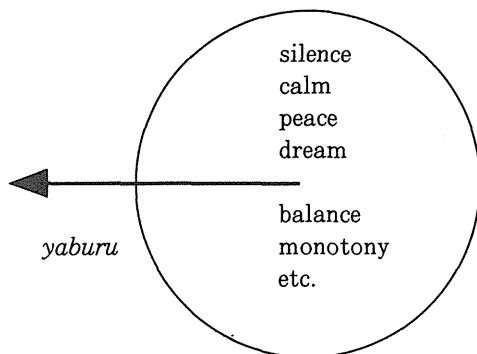


Figure 3: Image-schema of *yaburu* 2

Remember that the prototypical objects for *yaburu* are thin, flat, flexible objects. Note that these are classified by the classifier *mai*, which also classifies the prototypical objects for *waru*, as we have seen above. The distinction between *waru* and *yaburu* and other details about the relations between the verbs of 'breaking' and classifiers will be discussed later in this paper.

2.4. *Kuzusu*

Kuzusu means to partially break and transform the shape of a mass of objects. It can be used with objects such as lumps of sugar, sandhills, and mountains. Note that when we partially break and transform these objects, the sugar, the sand and the mountain themselves are essentially unchanged; that is, they do not lose their value.

- (38) yama -o kuzushi-te tsuchi -o hakobi-dashi-te iru
 mountain-ACC *kuzusu* -GRD soil -ACC carry-out -GRD be
 '(They) break the mountain and carry out the soil.'

This image allows us to apply *kuzusu* to letters,⁶⁾ postures, and money as well.

- (39) Mary-wa itsumo ji -o kuzusu-node, yomi-nikui
 Mary-TOP always letter-ACC *kuzusu*-RSN, read-hard
 'Since Mary always writes characters in the running style, they are hard to read.'
- (40) douzo hiza-o kuzushi -te kudasai
 please knee-ACC *kuzusu* -GRD PLT
 'Please sit at ease/make yourself at home.'

For example, when we write characters using the cursive style (in fast writing), the shape of the characters is slightly altered, but they do not change in meaning. The meaning 'make yourself at home' in example (40) comes from its literal meaning, i.e., 'loosen up your knees.' The traditional sitting style in Japanese culture is to kneel with one's legs tightly folded directly under the body. When we loosen up this sitting style, the knee joint also loosens up and so we can make ourselves at home. Even if one loosens one's knees, however, that does not change the fact that one is sitting. We could also use *shisei* 'posture' in example (40) instead of *hiza* 'knee,' and that means 'make yourself at home' as well.

⁶⁾In particular, *kuzusu* is used for Chinese letters when they are written in fast style.

When we write characters in the cursive style or loosen our knees or posture, that does not mean that they are totally broken or changed into something else but instead that they lose their balance. Therefore, the following extension of meaning is possible as well.

- (41) sukii-o shite -ite Mary-wa baraNsu-o kuzushi-ta
 ski -ACC do.GRD-COP.ASP Mary-TOP balance -ACC kuzusu -PST
 'While skiing, Mary lost her balance.'⁷⁾

When you break money to make change, the value of the money does not change. Therefore, *kuzusu* can be used in the expression 'to break money' as well.

- (42) giNkoo-de ichi-maN -en satsu-o kuzushi-te morat -ta
 bank -LOC one-10000 -yen bill -ACC kuzusu -GRD receive -PST
 'I had a ten thousand yen bill broken at the bank.'

The prototypical objects for *kuzusu*, a lump of sugar, a hill of sand, and characters, are classified with *tsu*, the general classifier for objects, or *yama* 'mountain.' The following section will be devoted to the discussion of the verbs of 'breaking' and their correlation with classifiers.

2.5. *Kowasu*

The verb *kowasu* can be used with objects which are artificially made and have functional relationship to human beings: radios, TV's, watches, chairs, toys, keys, buildings, etc.

- (43) tokei -o otoshi-te kowashi-te shimat-ta
 watch-ACC drop -GRD kowasu -GRD end.up -PST
 'I dropped my watch and it broke.'

The above objects are complex and have value for human beings. As a result of being broken, the objects lose their function and value.

In addition to the central members of this category listed above, *kowasu* can be used with the human body or body parts, for example:

- (44) karada-o kowashi-te gakko-o yasuN -da
 body -ACC kowasu -GRD school-ACC absent -PST
 'I was absent from school because of losing my health.'

⁷⁾ The meaning of 'balance' here is more concrete than that mentioned in the section of *yaburu*. 'Balance' in example (41) can be paraphrased as 'posture.'

- (45) onaka-o kowashi -ta
 belly -ACC *kowasu* -PST
 'I had stomach/intestine trouble.'

Example (45) is usually interpreted as meaning that the speaker is suffering from diarrhea. Although the body, stomach, and intestines are not artificially made, they are considered as things which human beings can control to some extent (at least they are relatively controllable compared to some other parts, such as the brain). However, since brains and heads are considered to be difficult for us to control, *kowasu* cannot be used with these objects.

Plans and marriage arrangements are things made by humans, and *kowasu* can be used with these as well.

- (46) Mary-wa Taro-to -no eNdaN -o kowashi-te
 Mary-TOP Taro-ASS-GEN marriage.arrgmt-ACC *kowaru* -GRD
 chigau hito -to kekkoN -shite shimat-ta
 differnt person-ASS marriage-do.GRD end.up -PST

'Breaking her engagement with Taro, Mary got married to a different person.'

It can be claimed that *kowasu* used in this case means 'to annul.'

So far, we have seen that *kowasu* can be used with things that are artificially made or arranged, or have some direct value to human beings like the above mentioned central members. *Kowasu* cannot normally be used with natural things such as trees, lakes, or mountains. However, it can be used with things like ponds or pools in the back yard which are artificially made. Furthermore, *kowasu* can sometimes be used with the more abstract and general idea of nature which human beings find valuable from our point of view. Examine the following cases:

- (47) utsukushii shizeN-o *kowasu* -no -wa yoku -nai
 beautiful nature-ACC *kowasu* -NM -TOP good -NEG
 'It is not good to destroy our beautiful nature.'
- (48) seikeishujutsu -wa kanojo-no shizeN -no utsukushisa-o
 plastic.surgery -TOP she -GEN nature-GEN beauty -ACC
 kowasu-koto-ni naru
kowasu -NM -DAT become

'To undergo plastic surgery is to destroy her natural beauty.'

Nature, natural beauty, and beautiful scenery are whole in and of themselves. We, humans, often find they have a direct value for us and take advantage of them. When they are destroyed, they lose their value to the people who considered them valuable. In this way, this image of *kowasu* is the same as when we break the central members of this category.

Here I should note that *kowasu* can also be used with objects like cups, glasses, pairs of glass, vases, plates, walls, barricades, embankments, and umbrellas, with which other verbs that we have seen can be used as well. The explanation for this is that when we use *waru*, *yaburu* or *oru* with these objects, our focus is on the material of which the object is made rather than its function. In other words, when we are concerned about the loss of its function, we can apply *kowasu* to the above objects. The more artificial an object is, the more possible it is for *kowasu* to be used with them. *Kowasu* cannot be used with paper, bones, tree branches, ice, baseball bats, canes, or scales. Paper, bones, tree branches, and ice are considered to be materials rather than artificially made objects. And although baseball bats, canes, and scales are human-made objects, it can be claimed that they are not considered as being made with enough complexity to be used with the verb *kowasu*. They are relatively simple. However, note that *kowasu* can be used with such objects if they are created with many functions and sufficient complexity, for example, James Bond's secret weapons.

3. Correlation between classifiers and the verbs of 'breaking'

The chaining construction of each of five verb categories of 'breaking' has been illustrated in the former section. Here the correlation between the prototypical objects of each category and the classifiers for those objects will be examined.

Japanese has a numeral classifier system.⁸⁾ Downing (1986: 346) claims that while dictionaries and lists of classifiers in present-day use in Japanese may include

⁸⁾Allan (1977: 286-287) presented four types of classifier languages:

1. Numeral classifier languages in which a classifier is obligatory in many expressions of quantity.
2. Concordial classifier languages in which classifying formatives are affixed (usually prefixed) to nouns, plus their modifiers, predicates, and pro-forms.
3. Predicate classifier languages in which a verb stem varies according to certain discernible characteristics of the objects or objects conceived as participating in an event whether as actor or goal.
4. Intra-locative classifier languages in which noun classifiers are embedded in some of the locative expressions which obligatorily accompany nouns in most environments.

as many as 200 to 300 different forms, the classifier inventory actually used by individual speakers in daily life is much more limited, typically falling in the range of 30 to 80 items. An even more restricted group of forms figures in the vast majority of actual uses. Among her lists of classifiers with relatively high frequency (more than one percent in the frequency distribution of classifiers), the classifiers which can be used with the objects of the 'breaking' verbs (including paper and cloth) are shown in Table 1.

Table 1. Frequency distribution of classifiers which classify prototypical objects of verbs of 'breaking' (from Downing 1987: 347)

Classifiers	Objects	Frequency (%) ⁹⁾
<i>tsu</i>	inanimates, general	2 4
<i>hon</i>	long, thin objects	6
<i>mai</i>	flat, thin objects	6
<i>ken</i>	buildings	2
<i>ko</i>	small, roundish objects	2
<i>tuu</i>	letters, documents	1
<i>dai</i>	vehicles, furniture, etc.	1
<i>men</i>	flat surfaces	1
<i>satsu</i>	books	1

Denny (1979: 319-321) reported that most numeral classifier systems seem to have a variable of extendedness in the three dimensions. According to his definition, extendedness refers to the relative size of an object in the three spatial dimensions: a one-dimensional (1D) object such as a stick or a string is relatively larger in one dimension at the expense of the other two; a two-dimensional object (2D), such as cloth or tile, is relatively larger in two dimensions than a three-dimensional object (3D), such as a ball or a box, which is roughly equidimensional. These features are what Denny (1976) describes as one kind of interaction between humans and their world encoded by noun classifiers, that is, physical interaction. He describes three types of human interaction conveyed by noun classifiers: *physical interaction*, *func-*

⁹⁾Frequency is measured in a 500-item sample drawn from both oral and written sources (Downing 1986: 346).

*tional interaction, and social interaction.*¹⁰⁾ Among these, physical interaction with objects is further classified into *spatial configuration* and *strength of materials*. The present-day Japanese classifiers that occur with high frequency, as indicated in Table 1, reveal two kinds of human interaction with objects: that is, physical (*hon, mai and ko*) and functional interaction (the others).

On the other hand, examining the prototypical concrete objects of the five verb categories of 'breaking' in the former section, we have found that the objects can be divided into four groups: 1) 1 dimensional (1D) objects, 2) 2 dimensional (2D) objects, 3) 3dimensional (3D) mountain-shaped objects, and 4) the objects with which humans have a functional relation whatever the spatial configuration. Table 2 illustrates the correlation between the categories of objects with classifiers and the co-occurring verbs of 'breaking.'

¹⁰⁾Classifiers of social interaction are those which distinguish men from women, adults from children, clergy from laity, people from animals and so on (Denny 1976). This type of interaction is not expressed in the Japanese classifier system (Denny 1979: 329). As a matter of fact, the Japanese classifier system simply distinguishes people from animals and birds. The classifiers, however, do not reveal social interaction because all people are simply classified by the classifiers *nin* or *ri* in the same way that (almost) all animals are classified as *hiki* and birds as *wa*. Here, what Denny pointed out is that the Japanese classifier system for people does not reveal a social hierarchy even though classical Japan was a complex agricultural society with a well-developed social hierarchy. Therefore, I will concentrate on the first two classifications.

Table 2. Objects, classifiers and co-occurring verbs of 'breaking'

Dimension/Shape	Objects	Classifiers	Verbs
1 D inflexible	bats, umbrellas, bones, sticks, tree branches, etc.	<i>hon</i>	<i>oru</i>
flexible	strings, ropes, etc.		(<i>kiru</i>)
2 D inflexible	glass, plates, vases, cups, tiles, etc.	<i>mai</i> ¹¹⁾	<i>waru</i>
flexible	paper, books, cloths, plastic bags, nets, etc.		<i>yaburu</i>
3 D, mountain-shaped	mountains, sand castles, mountain-like objects, etc.	<i>yama</i> , ¹²⁾ <i>tsu</i>	<i>kuzusu</i>
Functional	boxes, radios, TV's, clocks, chairs, toys, buildings, cars etc.	<i>dai</i> , <i>ken</i> , <i>ko</i> , <i>tsu</i> , ¹³⁾ etc.	<i>kowasu</i>

Table 2 shows that the 1D and 2D objects are simply classified by one classifier based on *spatial configuration* (thus, *hon* for 1D objects and *mai* for 2D objects) and that the 3D objects are classified by many kinds of classifiers based not only on their spatial configuration (thus, *yama* for mountain-shaped objects) but also on *functional interaction* with humans, especially when the objects are artifacts (thus, *dai* for cars and TV's, *ken* for houses or buildings, and *tsu* for boxes, radios, clocks and so on).¹⁴⁾

¹¹⁾ Again, although cups and vases are three dimensional, they are made of the same material as two-dimensional objects (e.g. saucers) which are counted with *mai*.

¹²⁾ This is the only classifier that does not appear in Downing's list of classifiers with high distributional frequency. *Yama* is applied to mountains or something shaped like a mountain.

¹³⁾ In many cases, *ko* and *tsu* are used interchangeably although *ko* seems to convey a definite concept and have the meaning three dimensional. Denny (1979: 325) claims that the fact that *tsu* is semantically unmarked whereas *ko* has the meaning 'three-dimensional' leads to preferences in cases where both can be in fact used for the same object.

On the other hand, Kageyama (1987) claims that the general classifier *ko* is for those objects which have almost the same size of depth, width and height and *ko* is rather used for smaller objects than *tsu*.

¹⁴⁾ Denny (1979:321) claims as follows:

"As societies grow more complex it seems to be the three-dimensional class which expands because this is the unmarked class into which many objects, some of quite complex structure, can be placed since they are not markedly one- or two- dimensional."

On the other hand, the verbs of 'breaking' classify the 1D and 2D objects not only by spatial configuration but also by the other factor of physical interaction, *strength of material*. All 1D objects are classified by *hon*, but the verbs they are used with depends on their flexibility. The verb *oru* is used with inflexible 1D objects, while the verb *kiru* 'to cut' is used with flexible 1D objects such as string, wire, thread, and rope. In the same way, 2D objects are classified by *mai*, but the verbs they are used with depends on their flexibility. The verb *waru* is used with inflexible 2D objects such as glasses, plates, and tiles, while the verb *yaburu* is used with flexible 2D objects such as paper, cloth and nets.

The objects of the verb *kuzusu* are relatively parallel to the category of objects with the classifier *yama*. The verb, *kowasu*, on the other hand, classifies objects to which humans have a functional relation no matter what shape they have although these artifacts are classified in more detail by several classifiers.¹⁵⁾

To summarize, Japanese classifiers arrange objects by virtue of *spatial configurations*, one of the variables of physical interaction, and *functional interaction*. On the other hand, the verbs of 'breaking' further classify objects by the other variable of physical interaction, *strength of materials*.

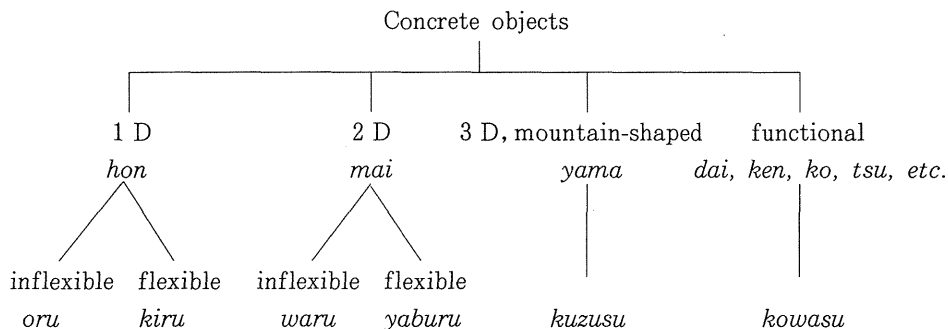


Figure 4. Correlation between the categories of classifiers and verbs of 'breaking'

Figure 4 shows how the categorization systems of the verbs of 'breaking' and of classifiers co-occurring with objects acted upon by the verbs are correlated with each other. Thus, in Japanese, the categorization of objects also is related to the categorization of those verbs of 'breaking,' which express the direct manipulation of concrete objects by humans.

¹⁵⁾ The other classifiers, for instance, are *ki* for powered machines, *soo* for boats, *kyaku* for chairs and so on. As explained, when we are concerned about the loss of function of objects, we can use *kowasu* to describe the 'breaking' of these objects.

4. Conclusion

This paper has examined the internal structure of five verb categories of 'breaking' in Japanese, and the correlation between the categorization of the five verbs of 'breaking' and the classifiers for the prototypical objects co-occurring with the verbs.

The examination of the internal structure of the five verb categories illustrates that every meaning from the prototype meaning to the peripheral ones is connected by a chaining relation. Each verb has prototypical object for the action of 'breaking.' Prototypical members are linked to other members, which are linked to other members including metaphorical expressions; thus, form a chaining construction. One extended sense may serve as the basis for further extensions via chaining. Lakoff (1987: 113) points out that extensions from the center of categories are neither predictable nor arbitrary, but instead are motivated, demonstrating the ecological¹⁶⁾ character of the human mind. The peripheral usage of each verb in examples examined in this paper may not be predictable from the prototypical meaning. However, mental images or image-schema transformations can consistently account for not only the central usages but also the metaphorical ones.

Furthermore, I have shown that the prototypical meanings of the verbs and the classifiers for the prototypical objects are somewhat correlated with each other. In particular, this result empirically proves Denny's (1986) claims that classifiers express ontological categories which are special concepts telling us which verbs can go with which nouns. Denny (1976) suggests that classifiers are concerned with communicating a few especially important classes that objects fall into by virtue of the ways in which we interact with them. As we see in this paper, the categorization of verbs of 'breaking,' verbs which represents a high degree of human interaction with objects, has a correlation with the categorization of objects in a language. Thus, the linguistic correlation and interaction of the categorization of nouns with that of verbs, particularly those which describe the manipulation of concrete objects, reveal the fact that conceptual structure has an effect on more than one linguistic category and thus, makes them interact in a systematic way. Although there is much room for further investigation, this study illustrates an example of the relationship between internal structure of categories and the way the categories cognitively and linguistically interact.

¹⁶⁾By 'ecological,' Lakoff (1987) means a system with an overall structure, where effects cannot be localized - that is, where something in one part of the system affects things elsewhere in the system.

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