Cognitive principles underlying predicational metonymy: Metonymic preference of aspect of predicates in Japanese intermediary causative constructions

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Cognitive principles underlying predicational metonymy:
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Metonymy of a predicate, in which the source event implies the target event, is called *predicational metonymy*. This paper focused on a Japanese productive predicational metonymy, ACTION FOR CAUSATION, and described its linguistic preference in terms of aspectual construal based on a corpus-driven quantitative investigation. The results revealed that an event that is bounded and durative is preferred as the metonymic vehicle in ACTION FOR CAUSATION metonymy. The two cognitive principles, BOUNDED OVER UNBOUNDED and DURATIVE OVER PUNCTUAL, were proposed to explain the linguistic preference. It was suggested that the two principles can be subsumed under the fundamental cognitive principle of GOOD GESTALT OVER POOR GESTALT, and that this general principle governs metonymic preference of both predicates and nominal phrases.

Keywords: predicational metonymy, linguistic preference, aspect, cognitive principle

1. Introduction

With the advent of cognitive linguistics, it has been understood that metonymic expressions manifest a basic linguistic strategy to express our thought effectively. Metonymy is "a cognitive process in which one conceptual entity, the *vehicle*, provides mental access to another conceptual entity, the *target*, within the same idealized cognitive model" (Radden and Kövecses 1999: 21). In the majority of the literature, it has been assumed that metonymy provides a nominal expression with an indirect reference (e.g., Lakoff and Johnson 1980). For example, *the ham sandwich* in *The ham sandwich is waiting for his check* metonymically stands for the person who ate the ham sandwich. In this respect, nominal phrases have been the primary target of linguistic research on metonymy.

However, there has been a growing interest in metonymic processes in other aspects of language structure, such as predicates (Panther and Thornburg 2000; 2003c; Ruiz de Mendoza Ibáñez and Pérez Hernández 2003) and speech acts (Thornburg and Panther 1997; Panther and Thornburg 1999; Brdar-Szabró and Brdar 2003; Panther 2015). Panther and Thornburg (2007: 247) argued that a given conceptual metonymy may function referentially, predicationally, and illocutionarily. For example, the metonymy ABILITY FOR ACTUALITY is manifested at the level of reference in ***Her ability*** *to convince the board of trustees impressed everyone* (*ibid.*), at the level of predication in *She* ***was able to convince*** *the board of trustees* (Panther and Thornburg 2007: 247), and at the level of speech act in ***I***

can assure *you that she will convince the board of trustees*. In line with the cognitive linguistic approach to metonymy, which covers a broad range of linguistic functions, this paper describes a Japanese transitive construction in terms of metonymy of predicates.

Radden and Kövecses (1999: 54) outlined a comprehensive and integrated framework of research on metonymy, which involves doing at least the following:

A. Identifying the ontological levels at which metonymy occurs;
B. Specifying the types of relationships that hold between elements in a metonymic relationship;
C. Establishing those cognitive principles that explain the most conventionalized or most 'natural' vehicle-target routes; and
D. Discovering the conditions under which non-default routes can be selected.

The focus of previous studies on metonymy of predicates and speech acts (Panther and Thornburg 1999; 2000; 2003c; Brdar-Szabró and Brdar 2003; Ruiz de Mendoza Ibáñez and Pérez Hernández 2003) has been almost exclusively on tasks A and B, namely identification and classification, because these are basic tasks to establish new research fields of metonymic investigation. For example, Panther and Thornburg (1999) has contributed to research on metonymy by demonstrating that the metonymy POTENTIALITY FOR ACTUALITY are identified in predicates and speech acts in English and Hungarian[1]. However, task C gains in importance when one sees metonymy as an effective communicative device that enables us "to mention one entity that is salient and easily coded, and thereby evoke (...) a target that is either of lesser interest or harder to name" (Langacker 1993: 30).

Linguistic selection of the vehicle and target in metonymy is not arbitrary but motivated. Radden and Kövecses (1999: 44-52) proposed a number of cognitive and communicative principles governing the default selection of the preferred metonymic vehicle in the form of X OVER Y. For example, the principle HUMAN OVER NON-HUMAN accounts for the default cases of PRODUCER FOR PRODUCT (e.g., *I've got a* ***Ford***), CONTROLLER FOR CONTROLLED (e.g., ***Schwartzkopf*** *defeated Iraq*), and POSSESSOR FOR POSSESSED (e.g., ***I*** *have a flat tire*) metonymies (*ibid.*, 45). The principles are meant to explain the 'natural path' of metonymic process in the three realms of cognitive organization and the two realms of communicative functions. The cognitive principles pertain to the areas of human experience (e.g. HUMAN OVER NON-HUMAN), perceptual selectivity (e.g. GOOD GESTALT OVER POOR GESTALT), and cultural

[1] Panther and Thornburg (1999: 354-355) briefly mentioned the issue of cognitive principles of "the choice of metonymic vehicle", however, their focus was "to see how conceptual metonymies are realized in two very different languages" (*ibid.*, 355)

preference (e.g. TYPICAL OVER NON-TYPICAL). The communicative principles include those of clarity (e.g. CLEAR OVER OBSCURE) and relevance (e.g. RELEVANT OVER IRRELEVANT). It has been suggested that the more principles applied, the greater the motivation of metonymic preference.

Because these principles proposed by Radden and Kövecses (1999) are founded on cognitive and communicative grounds, they seem to work regardless of the linguistic level. However, the linguistic evidence to formulate these principles is largely based on an analysis of examples of metonymy at the level of nominal reference. Therefore, the applicability for metonymy at the level of predicates is still to be tested.

This paper addresses task C at the level of predicates. The research described here is an attempt to investigate cognitive principles that underlie the preferred choice of the metonymic vehicle at the level of predicates. To achieve this goal, we adopt the theoretical framework by Croft (2012) and describe linguistic preference in terms of aspect of predicates based on examples taken from a large Japanese web corpus. The aspectual analysis of metonymic predicates will reveal that a durative event that is bounded temporally and qualitatively is preferred as the metonymic vehicle. We argue that the results indicate that the principles of BOUNDED OVER UNBOUNDED and DURATIVE OVER PUNCTUAL, which is entailed by the Gestalt-perceptual principle (Radden and Kövecses 1999: 48), work in metonymy at the level of predicates.

We begin by outlining the basic features of metonymy of predicates and describing the methodology of the case study in Section 2. Section 3 shows the descriptive results of aspectual analysis of a predicational metonymy in Japanese. Section 4 discusses cognitive motivations underlying metonymy of predicates. Section 5 concludes the paper and suggests directions for future research.

2. Methodology

The purpose of this paper is to investigate cognitive principles underlying metonymy of predicates by describing linguistic preference of a Japanese metonymic construction in terms of aspect of predicates. After an introduction to the phenomenon we deal with in the case study, this section introduces the criteria for extracting data and the theoretical framework of aspectual analysis.

2.1 Phenomenon

From the viewpoint of the pragmatic functions, Panther and Thornburg (1999: 335-336; 2003b: 4-6; 2007: 246-247) provided an outline of a classification of metonymy, which consists of (i) *referential* metonymy, (ii) *predicational* metonymy, and (iii) *illocutionary* metonymy.

(1) a. *The saxophone* plays an amazing solo.

b. The saxophone player *had to leave* early.

c. *Can you ask* the saxophone player to join us again*?*

Traditionally, metonymy has been regarded as a 'stand for' relation in which the name of one thing (the *vehicle*) is used to refer to another thing (the *target*) with which it is contiguous (see Panther and Thornburg 2007: 237). Referential metonymy, such as *the saxophone* referring to the saxophone player in (1a), is consistent with this characterization[2]. Predicational metonymy is a metonymy in which a proposition, or an event, stands for another proposition. For example, necessity encoded by the predicate *had to leave* in (1b), in many contexts, metonymically induces the interpretation that the saxophone player actually left early. Indirect speech acts such as (1c) can be analyzed in terms of illocutionary metonymy in which an attribute of a speech act (e.g. the hearer's ability to perform the requested action) stands for the speech act itself (e.g., the request).

(2) *Taro wa biyousitsu de kami o kit-ta.*
Taro TOP hair salon LOC hair ACC cut-PST
"[Lit] Taro cut (his) hair at the hair salon."
"Taro had his hair cut at the hair salon."

Our concern here is predicational metonymy illustrated in (2), which has been called the *intermediary causative construction* (hereinafter referred to as ICC) in Japanese linguistics. The transitive construction of (2), which encodes a force-dynamic relationship between *Taro* and *kami* "hair", evokes a causative meaning without any grammatical markers of causation: the subject *Taro* does not correspond to the agent but to the causer of the event of cutting his hair, and the resulting state of the haircut is considered to be produced by an intermediary agent (i.e., the staff at the hair salon). In the sense that a force-dynamic event stands for a causative event, the conceptual shift in (2) is an example of predicational metonymy that can be labeled ACTION FOR CAUSATION metonymy.

(3) I'm going to *clean* my suit at the dry-cleaning store on the corner. (Talmy 2000: 274)

(4) a. The invalid owner *ran* his favorite horse (in the race). (Goldberg 1995: 169)

b. Chris *cut* her hair at the salon on University Avenue. (*ibid.*)

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[2] However, we do not take the 'substitution view' of metonymy because the vehicle of metonymy is not simply replaced by the target without changing the pragmatic implication (See Panther and Thornburg 2003b: 1-7), though we keep the notation of A FOR B for the sake of convenience.

c. She *painted* her house. (*ibid.*)

d. Farmer Joe *grew* those grape vines. (*ibid.*)

The English version of ICC illustrated in (3) and (4) has been paid attention to by several cognitive linguists such as Goldberg (1995: 168-169) and Talmy (2000: 274-276) because of the mismatch between the non-causative form and the causative meaning. Moreover, Ziegeler and Lee (2009) analyzed this construction in Singaporean and Malaysian English and identified it with a type of metonymic shift. Even though Ziegeler and Lee (2009: 312-315) described it as CAUSED ACTION FOR CAUSED ACTION-RESULT metonymy, we call it ACTION FOR CAUSATION in this paper to keep the notation simple.

ICC is a productive and well-established constructional pattern in Japanese. It has been described from the viewpoint of Japanese linguistics (Sato 1994; Hasegawa 2015) and cognitive linguistics (Sawada 2008; 2009). In addition to (2), other expressions that can be used in ICC are *i o shujutsu suru* "do surgery", *ie o tateru* "build a house", *ki o ueru* "plant a tree", *kuruma o naosu* "repair a car", *me o kensa suru* "examine eyes", *megane o tsukuru* "make eye glasses", *oiru o irekaeru* "change oil", *tatami o kaeru* "change a tatami mat", and *yane o harikaeru* "recover the roof" (Hasegawa 2015: 151). However, this is not an exhaustive list. The force-dynamic events encoded by these predicates tend to be technically difficult in a common situation in Japan. Such a predicate often metonymically implies that a person denoted by the subject is not the agent of the action denoted by the predicate, and that an intermediary agent actually completes the force-dynamic event.

2.2 Identification

ICC is defined as a transitive construction that involves ACTION FOR CAUSATION metonymy. How can we know if ACTION FOR CAUSATION metonymy is involved in a transitive construction? How to identify metonymy is a practical issue in empirical studies of metonymy. According to Panther and Thornburg (2007: 242), conceptual metonymy is delineated by at least the following four aspects: (i) conceptual metonymy is a cognitive process where a source[=vehicle] content provides access to a target content within a cognitive domain; (ii) the relation between source content and target content is contingent (conceptually non-necessary), that is, in principle defeasible; (iii) the target content is foregrounded, and the source content is backgrounded; and (iv) the strength of the metonymic link between source and target content may vary depending (...) on the conceptual distance (...). Because (iv) does not delimit the range of examples, we adopted (i), (ii), and (iii) as the criteria to identify ACTION FOR CAUSATION metonymy.

(5) I cleaned my suit.

(6) I cleaned my suit--I mean, I had my suit cleaned at the dry-cleaning store.

(7) I cleaned my suit by myself--it's washable.

(8) a. I cleaned my suit at the dry-cleaning store and paid for it.

b.?? The staff of the dry-cleaning store cleaned my suit and paid for it.

Let us illustrate how to identify a metonymic shift of ACTION FOR CAUSATION in an example of ICC by these criteria. First, (5) can be an example of metonymy because it can be paraphrased as a causative sentence as shown in (6). The paraphrase demonstrates that the intended target of the predicate *cleaned my suit* in the first clause of (6) is CAUSATION, while it literally means ACTION. ACTION and CAUSATION are parts of the domain presupposed by the predicate of the clause, such as the domain of dry-cleaning in (6)[3]. Second, the apparent causative meaning of (5) can be linguistically canceled as in (7), so the relation between ACTION and CAUSATION is contingent. Third, (8a) indicates that CAUSATION (*i.e.*, the causative relation between the speaker and the staff of the dry-cleaning store) is more foregrounded than ACTION (*i.e.*, the force-dynamic relation between the staff and the speaker's suit). In (8a), the first clause focuses on the fact that the speaker requested the staff of the dry-cleaning store to clean the suit. The speaker's request, a type of CAUSATION, is foregrounded in (8a) because it is in return for the request that a fee should be paid. In contrast, the subject *the staff* in the first clause in (8b) strongly implies that it is a literal expression. Unlike (8a), the fact that the context of payment is unnatural in (8b) also indicates that there is no causative relationship and CAUSATION is not foregrounded.

A predicate that is a potential example of ACTION FOR CAUSATION metonymy might turn out to be a literal expression depending on context, as shown in (7). Strictly speaking, (5) is just a candidate for ACTION FOR CAUSATION metonymy, and (8a) is a more reliable example of ACTION FOR CAUSATION in that ACTION implicitly but

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[3] Some might associate the relation between (5) and (6) with the relation between (i) and (ii).

(i) I killed John.

(ii) I caused John to die.

(iii) I caused my suit to be clean.

(i) logically entails (ii) so that verbs such as *kill* have been said to be 'causative verbs' in a certain approach to causative sentences (see Shibatani 1976). It is also true that (5) logically entails (iii) because it is a part of the lexical meaning of *clean* as a transitive verb, but the point here is different: knowledge of the *conventionalized* scenario (Goldberg 1995: 168-169) of cleaning in a modern society is necessary for the interpretation of the intermediary causation, which is not logically entailed and hence defeasible. Therefore, the 'logical' equality between (i) and (ii) is irrelevant to the paraphrase of (6).

surely stands for CAUSATION. A sure method to collect reliable metonymic examples is to check if an expression includes contextual markers that foreground CAUSATION. In our case study, three types of contextual markers were used to locate an example of ACTION FOR CAUSATION metonymy. First, a phrase that indicates a conceptual frame involving another person's action induces metonymic interpretation. For example, *biyousitsu* "hair salon" in (2) evokes the hair salon frame that involves a professional stylist. Therefore, it is normally expected that the haircut has been done by the stylist, so (2) is a reliable example of ACTION FOR CAUSATION. Second, a phrase that implies that the subject does not do the action denoted by the predicate of a clause signals ACTION FOR CAUSATION metonymy. It is pretty sure that the sentence *Tenno ga su-sen-bon no sakura o ue-ta* "The emperor planted thousands of cherry trees" is an example of ACTION FOR CAUSATION metonymy because the meaning of the word *tenno* "emperor" does not allow us to imagine that the emperor planted them by himself. Third, a phrase that indicates a fee in return for one's service functions as a contextual marker of ACTION FOR CAUSATION metonymy. As discussed above, the context of payment in (8a) is an example of this type. A similar example is the expression *ni-ju-nen roon* "a twenty-year loan" in *Ni-ju-nen roon de ie o tateru* "I build my house on a twenty-year loan", in which constant payments on the speaker's house is explicitly mentioned.

One of these contextual markers may not be enough to decide if an expression is ACTION FOR CAUSATION metonymy. For example, even though the predicate *biyoushitsu de kami o kit-ta* "cut hair at the hair salon" includes the word *biyoushitsu* "hair salon", it is not metonymic in the sentence *Sutairisuto wa biyoushitsu de kami o kit-ta* "The stylist cut hair at the hair salon". However, the more contextual markers, the more reliable metonymic interpretation. In our case study, we carefully selected examples in which we can linguistically confirm that they satisfy the criteria discussed here.

2.3 Data

The data targeted in this study are examples of the predicational metonymy labeled ACTION FOR CAUSATION, sampled from an 8-billion-word Japanese corpus of texts from the Japanese web, called *jaTenTen11*. The corpus is bundled with the corpus analysis tool *Sketch Engine*. The procedure of collecting data is as follows: (i) selecting basic transitive verbs, (ii) listing frequent verb-noun collocations, (iii) extracting examples of metonymy from the listed verb-noun collocations in the corpus.

First, we selected 169 basic transitive verbs in Japanese from the *Linguistic Questionnaire for Asia and Africa* by Tokyo University of Foreign Studies. This questionnaire contains 2,000 Japanese basic words for descriptions of daily language use in linguistic field work in Asia and Africa. The verbs annotated as transitive are selected from the former 1,000 words, which are more basic than the latter half.

Second, to investigate frequent expressions, we listed the top 30 frequent object nouns for every verb. The

Word Sketch function of *Sketch Engine* saved a lot of time when performing this step. *Sketch Engine* instantly calculates the frequency of object nouns for a given verb and shows the frequency ranking of verb-noun collocations.

Third, we screened the collocations for metonymic examples based on the criteria described in 2.2. A specific combination of a transitive verb with an object noun restricts the interpretations of a sentence. For example, the collocation *ie o kowasu* "break a house" itself functions as a contextual marker that indicates a conceptual frame that involves another person's action (i.e., work by a contractor). However, we cannot determine if it is metonymy without more contextual information. Therefore, after the first screening by verb-noun collocations, we conducted the second screening for each collocation by finding contextual markers of metonymy in the concordance lines in the corpus and selected reliable metonymic examples that satisfy the criteria shown in 2.2.

2.4 Framework of analysis

Predicational metonymy is a metonymic shift in event structure. Given the focus on event structure, aspectual structure and causal structure are two dimensions that are grammatically relevant to event structure (Croft 2012: 4). From the result of a preliminary study we conducted for this paper, aspectual properties of predicates were expected to be distinctive features of metonymic preference of predicational metonymy.

In this paper, we systematically analyzed aspectual types of predicates based on the theoretical framework proposed by Croft (2012), which integrates fine-grained aspectual analysis with causal analysis in terms of semantic frames (Fillmore 1982; 1985) and construal (Croft and Cruse 2004; Langacker 2008). Reorganizing and elaborating the famous classification by Vendler (1967), Croft (2012: Ch.2) proposed a classification of aspectual types in which simple predicates are construed. Vendler distinguished four categories of lexical aspect: States (e.g., *be polite*), Activities (e.g., *sing*), Achievements (e.g., *shatter*), and Accomplishments (e.g., *read [the book]*). Within Vendler's classification, the verb *see* is classified into States. However, Croft recognizes two different types of aspectual construal of the verb *see* and captures the semantic difference in (9a) and (9b) by the differences in the *profiled* phase, as indicated by the solid line in Figure 1a and 1b respectively. Croft's framework is more flexible than Vendler's in that the former incorporates contextual variants of lexical aspect.

(9) a. I *see* Mount Tamalpais.

b. I reached the crest of the hill and *saw* Mount Tamalpais. (*ibid.*, 54)

In the two-dimensional phasal analysis by Croft (2012), events are represented in two dimensions, time (*t*) and qualitative states (*q*). Lexical aspect describes how events are construed as unfolding over time (*ibid.*, 53). Seeing presupposes at least three conceptual phases: not seeing something; the transition from not seeing something to

seeing it; and seeing that thing. The sequence of phases just described represents the *aspectual contour* of the event (Croft 2012: 54) as shown in Figure 1[4]. While Figure 1a represents the aspectual meaning of (9a), which profiles the resulting state phase and is thus construed as State, Figure 1b represents the Achievement construal denoted by sentence (9b), which profiles the state transition phase.

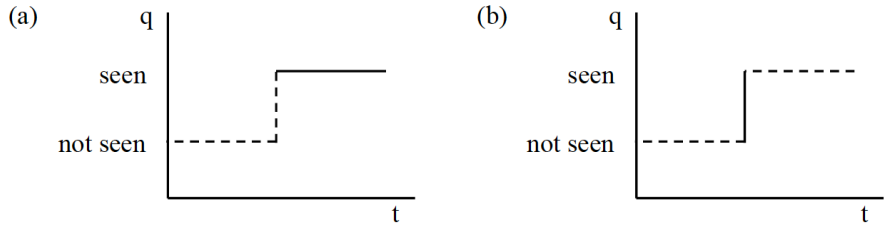

Figure 1: Alternative profiling of English *see* (Croft 2012: 55)

An *aspectual type* consists of a particular profiled phase (or phases) of a particular aspectual contour (*ibid.*, 56). The *t/q* phasal representation provides a framework for systematically capturing the range of aspectual types that have been documented in the aspectual literature. The framework distinguishes 11 aspectual types illustrated in (10), which are in turn represented by t/q representations in Figure 2.

(10) a. The door is open. [Transitory States]
b. The window is shattered. [(Acquired) Permanent States]
c. She is French. [(Inherent) Permanent States]
d. The sun is at its zenith. [Point States]
e. The door opened. [Reversible Directed Achievements]
f. The window shattered. [Irreversible Directed Achievements]
g. The mouse squeaked. [Undirected (Cyclic) Achievements]
h. The soup cooled. [Directed Activities]
i. The girls chanted. [Undirected (Cyclic) Activities]

[4] Each participant in an event is supposed to have its own aspectual contour that represents the qualitative states. The aspectual contours in Figure 1 represent the qualitative states relevant to the object noun *Mount Tamalpais*, such as "seen" and "not seen" by the experiencer. In a similar way, we focus on aspectual structure about the object noun in a transitive construction in this paper unless otherwise noted.

j. I ate an apple pancake. [(Incremental) Accomplishments]

k. Harry repaired the computer. [Nonincremental Accomplishments]

States are differentiated by differences in the duration of the profiled state on *t*. Transitory States (e.g., *The door is open*; Figure 2a) cover a limited time scale, while Permanent States cover the entire scale (indicated by the arrow in Figure 2b, 2c). Inherent Permanent States (e.g., *She is French*; Figure 2c) differs from Acquired Permanent States (e.g., *The window is shattered*; Figure 2b) in that they lack a prior state. Point States such as the predicate in *The sun is at its zenith* profile a state that lasts only a point in time (Figure 2d).

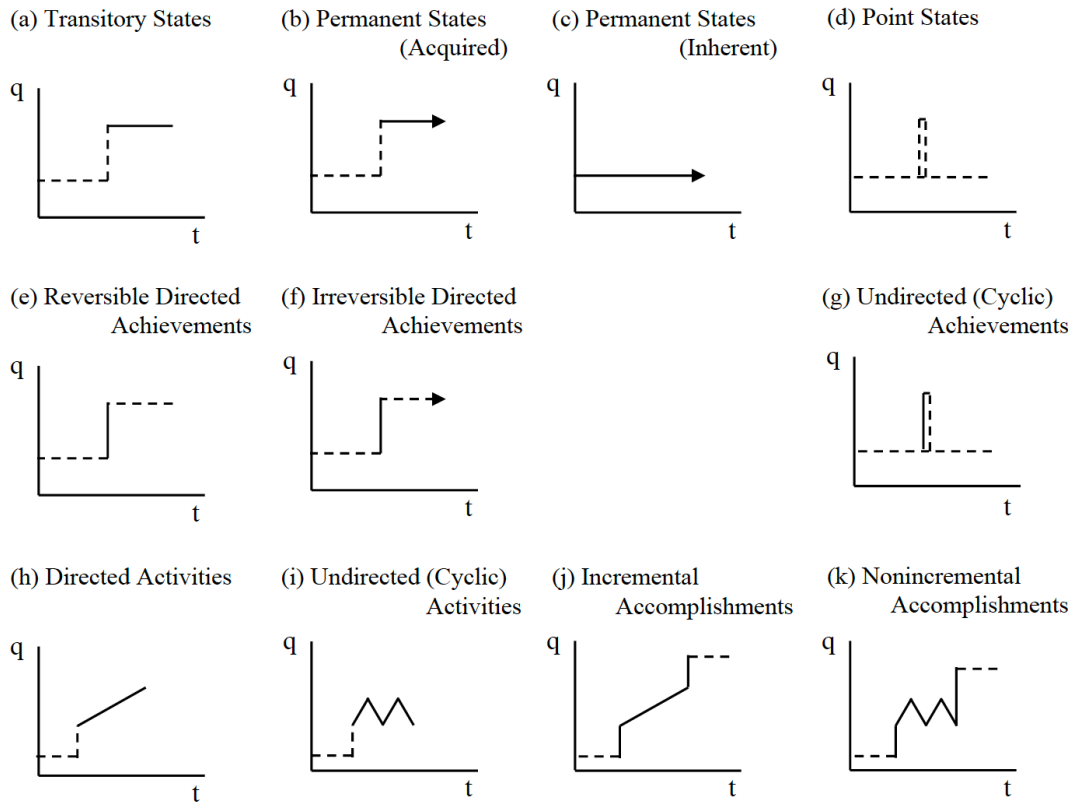

Figure 2: A general framework for aspectual types (Croft 2012: 57-69)

Achievements represent punctual transitions. As visually comprehended in the systematic similarities between Figures 2a, 2b, and 2d and Figures 2e, 2f, and 2g, based on profile shifting from the state to the transition, three subtypes of Sates correspond to three subtypes of Achievements: Reversible Directed Achievements, Irreversible Directed Achievements, and Undirected Achievements (also called 'semelfactives'). The state-transition distinction is straightforward between (15a) *The door is open* (Transitory State) and (15e) *The door opened* (Reversible Directed

Achievement) or between (15b) *The window is shattered* (Permanent State) and (15f) *The window shattered* (Irreversible Directed Achievement). Point States are similar to Undirected Achievements in that the targeted state or action, such as being at the zenith in (15d) and emitting a squeak in (15g), lasts only momentarily.

Activities are unbounded durative processes. Directed and Undirected Activities are differentiated depending on whether or not the qualitative change is directed to a result state. Directed Activities such as *The soup cooled* in (15h) profile an incremental change directed to a result state (e.g., continuous decline of the temperature toward room temperature; represented by the solid line in Figure 2h), whereas Undirected Activities such as *The girls chanted* in (15i) do not involve a continuous directed change along qualitative states in *q*, as indicated by the zigzag line in Figure 2i.

Accomplishments differ from all of the other aspectual types in that three phases are profiled: the inception, process, and completion phases (Figure 2j, 2k). The inception and completion phases bound the event. Incremental Accomplishments and Nonincremental Accomplishments (also referred to as 'runup achievements') represent temporally bounded versions of Directed Activities and Undirected Activities respectively. Incremental Accomplishments involves an incremental process such as the continuous decrease of the volume of an apple pancake in (15j). In contrast, Nonincremental Accomplishments consist of complex processes toward a result state such as repairing a computer in (15k).

To investigate metonymic preference of ICC in Japanese, we analyzed aspectual types of predicates based on the classification represented by Figure 2. The first attempt to apply Croft's framework to Japanese was made by Taoka (2000). Based on the 2000 manuscript version by Croft (2012), Taoka (2000: Chap. 3) examined in detail forty-eight situation types of predicates in three tense-aspect constructions in Japanese: the *-ru*, *-te iru*, and *-ta* constructions. Taoka demonstrated that a verb shows a variety of aspectual types depending on the constructional form. In this respect, we needed to carefully analyze semantic interpretation of the whole sentence.

As a first step toward aspectual analysis, predicates of the selected examples were grouped into States, Achievements, Activities, and Accomplishments based on grammatical properties. Predicates of States were hardly ever observed in the data because ICCs are transitive constructions that describes a force-dynamic event. An exception is a predicate in the *-te iru* construction. The verbal suffix *-te iru* is an aspectual marker, and predicates of Achievements in the *-te iru* construction profiles the resulting state (cf. Kindaichi 1976). For example, *sashi-te iru*, which is the verb *sasu* "stab" in the *-te iru* construction, means "be stabbed". To classify predicates into Achievements, Activities, and Accomplishments, we used syntactic tests of temporal adverbials. If a predicate naturally cooccurs with the temporal adverbials *X ni* "at X" (*X* is a temporal expression), then the predicate tends be Achievements, if with *X-kan* "for X", then Activities, and if with *X de* "in X", then Accomplishments. For example, the predicate *kami o kit-ta* "cut hair" naturally occurs with *X de* "in X", as in the sentence *Sutairisuto wa ichi-ji-kan*

de kami o kit-ta “The stylist cut my hair in an hour”, but it does not naturally occur with *X ni* “at X” as in ??*Sutairisuto wa ichi-ji ni kami o kit-ta* “The stylist cut my hair at one o'clock”. Therefore, the predicate is classified into Accomplishments.

After the preliminary classification, we investigated whether a predicate is Reversible or Irreversible, Directed or Undirected, and Incremental or Nonincremental based on semantic analysis of the whole sentence. For example, Accomplishments are divided into two types: Incremental and Nonincremental. The aspectual type of the predicate of *Sutairisuto wa ichi-ji-kan de kami o kit-ta.* “The stylist cut my hair in an hour” is classified into Incremental Accomplishments because we can naturally assume that the stylist had to cut hair little by little (*i.e.*, incrementally) to complete the hairstyle.

3. Results

Examples of ACTION FOR CAUSATION metonymy were extracted based on the procedure as described in 2.3. We focused on 169 basic transitive verbs and their frequent verb-noun collocations. As a result, 20 out of 169 verbs were estimated to have collocations that permit metonymic interpretation, and accordingly, 31 verb-noun collocations were listed in total. We sampled 10 metonymic examples from the concordance lines in the corpus for each verb-noun collocation. Consequently, 310 examples of ACTION FOR CAUSATION metonymy were collected.

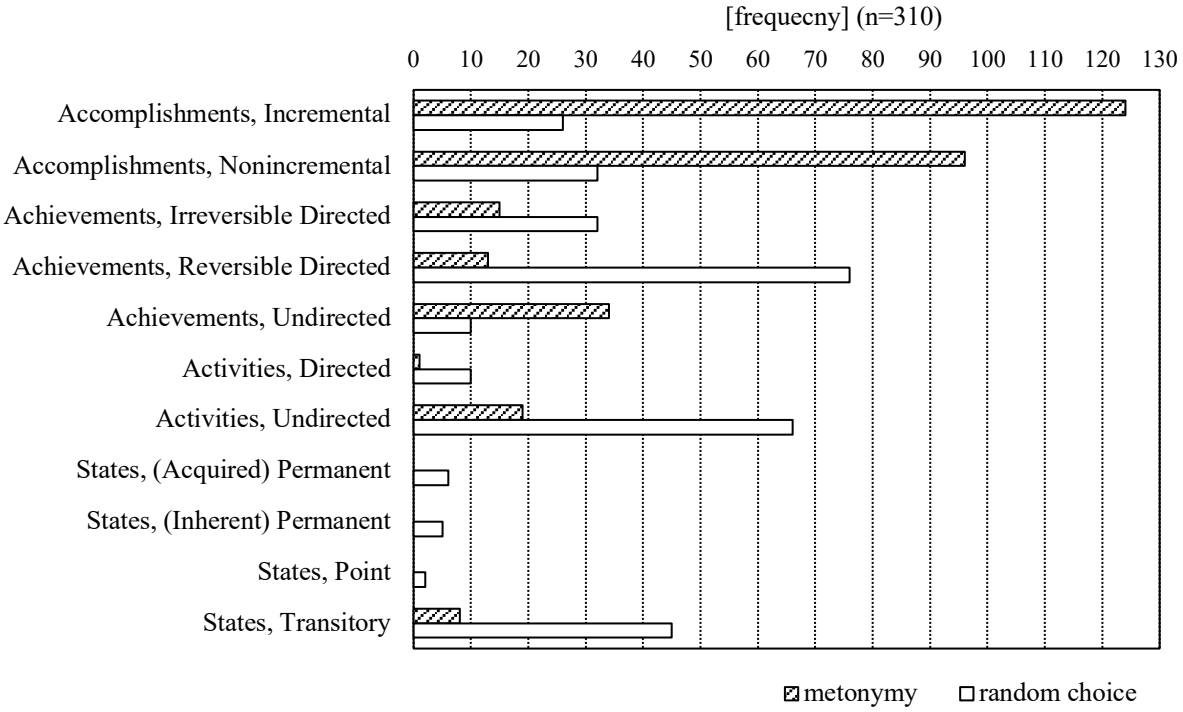

Figure 3: The aspectual preference of ACTION FOR CAUSATION metonymy in Japanese

Figure 3 is the statistical overview of the result of aspectual analysis. To contrast the metonymic construction with average transitive constructions, we analyzed the equivalent volume of transitive constructions randomly sampled from the corpus. It was a prominent tendency that the number of Incremental and Nonincremental Accomplishments in metonymic cases is much larger than in the randomly sampled cases. Note that the top three frequent aspectual types of metonymy (Incremental Accomplishments, Nonincremental Accomplishments, and Undirected Achievements) do not overlap the types of average transitive constructions (Reversible Directed Achievements, Undirected Activities, and Transitory States). Figure 3 demonstrates that in Japanese ACTION FOR CAUSATION metonymy, some aspectual types are preferred as the metonymic vehicle than others.

Table 2 summarizes the top three frequent aspectual types and their noun-verb collocations in Japanese ACTION FOR CAUSATION metonymy. The bracketed numbers indicate frequency. Other minor aspectual types were mainly observed in several idiosyncratic patterns, such as Undirected Activities in *uma o kau* "keep a horse" [10] and Irreversible Directed Achievements in *genbaku o otosu* "drop an atomic bomb" [9].

Table 1: Frequent noun-verb patterns in Japanese ACTION FOR CAUSATION metonymy

Aspectual type	Frequent noun-verb patterns
Incremental Accomplishments [124]	*tatemono o kowasu* "break a building" [10], *kami o kiru* "cut one's hair" [10], *ie o tateru* "build one's house" [10], *hoomupeeji o tsukuru* "make a website" [10], *ido o horu* "dig a well" [10], *kabe o nuru* "paint a wall" [7]
Nonincremental Accomplishments [96]	*megane o naosu* "repair glasses" [10], *kagi o torikaeru* "replace a key" [10], *mushiba o naosu* "treat tooth decay" [8], *sakura o ueru* "plant a cherry tree" [8], *onsen o horu* "dig a hot spring" [10], *nimotsu o hakobu* "carry baggage" [10], *kimono o kiru* "wear kimono" [10], *kusuri o dasu* "prescribe medicine" [8]
Undirected Achievements [34]	*shashin o toru* "take a photo" [9], *hito o korosu* "kill someone" [9], *doubutsu o korosu* "kill an animal" [10], *hari o sasu* "stick a needle" [3]

Boundedness, or telicity, is one of the distinctive features of the Vendler's classification. Accomplishments and Achievements are bounded (telic) in that an event has a clear beginning and an end. In contrast, Activities and States are unbounded (atelic) because they have no clear endpoint. Figure 4 shows the contrast between metonymic and random samples in terms of boundedness. Bounded aspect types, that is, Accomplishments and Achievements, account for more than 90% of metonymic examples. From a comparison with the tendency of random samples, it is clear that a bounded event, that is, an event that indicates a clear endpoint is preferred as the metonymic vehicle of

Japanese ACTION FOR CAUSATION metonymy.

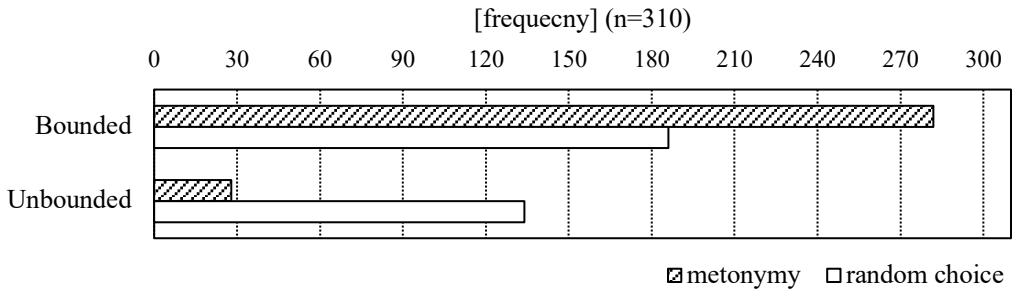

Figure 4: The preference for boundedness in ACTION FOR CAUSATION metonymy

Among bounded types, Accomplishments differ from Achievements in duration in the time dimension. In Figure 5, we can observe that durative events (*i.e.*, Accomplishments) are more preferred than punctual events (*i.e.*, Achievements). This tendency indicates that duration containing multiple phases of the inception, process, and completion can be an influential factor in choosing the vehicle in ACTION FOR CAUSATION metonymy.

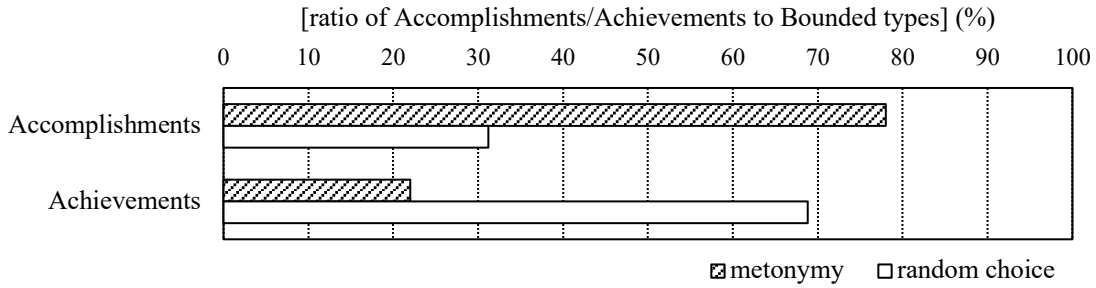

Figure 5: The preference for duration in ACTION FOR CAUSATION metonymy

We conducted a quantitative investigation focusing on a specific type of metonymy in Japanese. The results demonstrated that boundedness and duration are two significant factors that influence linguistic choice in ACTION FOR CAUSATION metonymy. We will discuss these two factors from the cognitive linguistic viewpoint in Section 4.

4. Discussion

As mentioned in Section 1, Radden and Kövecses (1999: 44-52) formulated a number of principles governing the default selection of the preferred metonymic vehicle in the form of X OVER Y, mainly focusing on metonymy at the level of nominal reference. What principles govern metonymic preference at the level of predicates? In Section 3,

we observed that an event that is bounded and durative is preferred as the vehicle of ACTION FOR CAUSATION metonymy. Discussing the two factors of boundedness and duration, this section investigates the cognitive foundations of predicational metonymy in terms of aspectual construal.

4.1 The principle of boundedness

The first factor, boundedness, can be further analyzed in two dimensions: qualitative and temporal boundedness (Croft 2012: 70-83). An event that is bounded on the qualitative states dimension, or *Q-bounded* (*ibid*., 79), is an event that has a defined result state. For example, the sentence *I was writing a letter* describes a Q-bounded event because it entails a natural endpoint (finishing the letter). However, the sentence is not bounded on the time dimension, or *T-bounded* (*ibid*.) because it is a Progressive sentence and describes activity represented by Figure 2h which includes no transition phases. Different grammatical constructions impose different aspectual construal on the time dimension. The sentence *I wrote a letter* describes an event that is not only Q-bounded but also T-bounded in that it profiles the transition phase from the activity to result state (see Figure 2j).

Figure 4 is straightforwardly interpreted as indicating that the cognitive principle T-BOUNDED OVER T-UNBOUNDED motivates the preference of ACTION FOR CAUSATION metonymy because 'boundedness' in Figure 4 means T-boundedness to be exact, that is, boundedness of an event in the time dimension.

The principle of Q-BOUNDED OVER Q-UNBOUNDED accounts for all T-bounded examples because temporally bounded events entail natural endpoints of the events and are thus also qualitatively bounded. It is visually comprehended in Figure 2 that the profiled phases indicated by the solid lines in figures of Achievements and Accomplishments are projected onto a bounded segment (or a point) in the dimension of qualitative states. In addition, the principle of Q-BOUNDED OVER Q-UNBOUNDED explains the examples of Transitory States, which do not follow the principle of T-BOUNDED OVER T-UNBOUNDED. As described in 2.4, predicates of Achievements in the *-te iru* construction describes the resultative state of the event denoted by the verb, and 7 out of 8 examples of Transitory States were derived from Achievements in the *-te iru* construction such as (11). In (11), the noun-verb collocation *hari o sasu* "stick a needle" profiles Achievement hence Q-bounded while the predicate *hari o sashi-te i-ta* (*-te i-ta* is the past tense form of *-te iru*) implies the resulting state of the punctual action of sticking and is thus considered to be T-unbounded event. One exceptional example of Transitory States is the case in which a predicate in the *-ou* construction describes a mental state of willingness: *Truman ga genbaku o otos-ou to shi-te i-ta* "Truman was willing to drop an atomic bomb". The principle of Q-BOUNDED OVER Q-UNBOUNDED also explains this example because *genbaku o otosu* "drop an atomic bomb" profiles Achievement hence Q-bounded.

(11) *senaka ni tenteki o utsu tameni, hari o sashite-i-ta*

back LOC drip ACC put for needle ACC stick-PRF-PST

"[Lit] To put a drip on the back, I had stuck a needle."

"A needle was sticking on the back for getting a drip."

The only one example of Directed Activity, *4,600 oku-en mo kake-te tonneru o hot-te iru* "They are spending 460 billion yen and digging a tunnel" is also considered to be Q-bounded. The predicate is the verb *horu* "dig" in the *-te iru* construction. Predicates of Accomplishments in the *-te iru* construction describe events in progress and profile Directed Activities. Therefore, the example of Directed Activity we observed was derived from Accomplishment that is bounded in the dimension of qualitative states.

From the discussion above, it stands to reason that the cognitive principle BOUNDED OVER UNBOUNDED, especially in the dimension of qualitative states, underlies the preference of ACTION FOR CAUSATION metonymy. The following observation on (12) in Sawada (2008: 67-68) also reflects this principle. Despite the synonymous meaning of (12a) and (12b), only (12a) that describes Accomplishment can be interpreted as metonymy. The predicate of (12b) describes Activity (*i.e.*, a Q-unbounded event), and cannot be interpreted as metonymy. This fact indicates that aspectual construal of boundedness is an important factor for qualification of ACTION FOR CAUSATION metonymy because *hogosu* "massage" in (12a) and *momu* "knead" in (12b) are different only in construal of Q-boundedness.

(12) a. *Kata o hogushi-ta.*
shoulder ACC massage-PAST
"[Lit] I massaged the shoulders (at the spa)."
"I had the shoulders massaged (at the spa)."

b. *Kata o mon-da.*
shoulder ACC knead-PAST
"[Lit] I kneaded the shoulders (at the spa)."
Cannot mean "I had the shoulders kneaded (at the spa)"

Can the principle of boundedness be extended to other predicational metonymies? In the literature on predicational metonymy, it seems that cited examples largely support this cognitive principle in the dimension of qualitative states. For example, the predicates with modal auxiliaries in (13), which literally describe the ability to do something, metonymically induce the interpretation that something is actually done (Panther and Thornburg 1999). The metonymic relationships observed in (13a), (13b), and (13c) can be labeled ABILITY FOR PERCEPTION, ABILITY FOR MENTAL PROCESS, and ABILITY FOR ACTION respectively. In the time dimension, these examples profile

unbounded events because they do not specify the beginning and end of the events. However, these events are qualitatively bounded and support the principle of Q-BOUNDED OVER Q-UNBOUNDED. As for (13a), seeing consists of a bounded qualitative transition from not seeing something to seeing it as described in Figure 1.

(13) a. The whole town *can be seen* from the window. (Panther and Thornburg 1999: 340)
b. I *can remember* when we got our first TV. (*ibid*., p. 342)
c. John *was able to finish* his paper before the deadline. (*ibid*., p. 348)

The examples in (14) are imperative constructions that contain stative verbs, contrary to the requirement for prototypical imperatives to have action predicates (Panther and Thornburg 2000). The metonymy RESULT FOR ACTION mediates between the constructional form and the implied meaning. Again, while they profile T-unbounded events, that is, Transitory States, the profiled events are Q-bounded (see Figure 2a).

(14) a. *Stand* behind the yellow line. (Panther and Thornburg 2000: 215)
b. *Have* the documents ready. (*ibid*.)

An obvious limitation is that the principle of boundedness does not explain 19 examples of Undirected Activities that describe Q-unbounded events. However, they seem to be an idiosyncratic phrase related to a specific topic because all examples of Undirected Activities describe events of keeping animals, such as *Antowanetto ga ushi o kai* "Antoinette keeps cows" and *uma o kat-te iru okanemochi* "a rich person who keeps horses".

4.2 The principle of duration

Figure 5 shows that the number of examples of Accomplishments is more than the one of Achievements and indicates that duration is the second factor that influences on the metonymic preference. Based on the results, it is reasonable to assume that the principle of DURATIVE OVER PUNCTUAL works in ACTION FOR CAUSATION metonymy. Note that we observed over 60 examples of Achievements, which do not follow the principle of DURATIVE OVER PUNCTUAL. In this respect, the principle of duration should be estimated to be weaker than the principle of boundedness.

However, interestingly, it was observed that predicates that may describe Achievements tend to profile Accomplishments in metonymic cases. For example, the verb *kiru* "cut" is used in predicates of Achievements such as *ito o kiru* "cut a thread" and also used in predicates in Accomplishments such as *kami o kiru* "cut hair", but metonymic interpretation is possible only in the cases of Accomplishments.

(15) a. President Truman dropped an atomic bomb.

b.?? President Truman dropped an atomic bomb at 8:15 a.m. on 6 August.

c. The pilot of Enola Gay dropped an atomic bomb at 8:15 a.m. on 6 August.

(15a) is another example that supports the principle of duration. Dropping an atomic bomb is a punctual event, so that the time of dropping can be specified as in (15c). If the subject is *President Truman*, the predicate *dropped an atomic bomb* is naturally interpreted as ACTION FOR CAUSATION metonymy because Truman was the one who ordered his subordinates to drop the bomb. (15b) seems unnatural because it is expected that there should have been a time lag between the order and the drop. On this point, the predicate in the metonymic expression of (15a) is reinterpreted as a durative process, while the same predicate in a literal expression of (15c) describes a punctual process.

(16) I do not have any real problem with that until we *start to realize* that the Minister of Finance is about to set up office on Bay Street. (Hansard corpus; Panther and Thornburg 2003c: 89)

Panther and Thornburg (2003c: 89-91) made an interesting observation that seems to partly support the view that the principle of duration can be extended to other predicational metonymies. Realizing something is considered to be a punctual event, but in (16), realization is reinterpreted as a durative and gradual process, and "a time point, the point at which the achievement occurs, is 'stretched' into a bounded time interval with an onset and a completion point" (*ibid*., 90). The authors argued that (16) is an example of the ONSET FOR WHOLE EVENT metonymy, and the metonymy licenses reinterpreting the event of realizing something as Accomplishment. Their argument does not directly support the principle of DURATIVE OVER PUNCTUAL because the onset of a process, which is the metonymic vehicle of ONSET FOR WHOLE EVENT metonymy, is not durative. However, it seems true that the metonymic interpretation of (16) is possible because the verb *realize* describes a durative event, and that if it is interpreted as a punctual event, the metonymic interpretation does not hold.

4.3 The Gestalt principle

The two principles proposed in this paper, BOUNDED OVER UNBOUNDED and DURATIVE OVER PUNCTUAL, explain the predominant examples of ACTION FOR CAUSATION metonymy. In this respect, a bounded and durative event is a typical metonymic vehicle in ACTION FOR CAUSATION metonymy. In addition to this, we argued that these principles seem compatible with observations in previous studies on predicational metonymy such as Panther and

Thornburg (1999, 2000, 2003c).

Moreover, our standpoint is partly overlapped with a psychological approach to event perception (Zacks and Tversky 2001; Kurby and Zacks 2007; Zacks 2008). In research on event perception, an event is defined as "a segment of time at a given location that is conceived by an observer to have a beginning and an end." (Zacks and Tversky 2001: 3) We have the ability to perceive chaotic experiences as consisting of discrete events that have some orderly relations. Event segmentation is "a form of categorical perception in which intervals of time are picked out as units and distinguished from other intervals" (Zacks 2008: 2). As such, it is "a mechanism of Gestalt grouping: The ongoing stream of activity is parsed into meaningful wholes." (*ibid.*) These findings of psychological research on event perception lead us to generalize the principle of GOOD GESTALT OVER POOR GESTALT from the two principles of boundedness and duration.

The two cognitive principles outline the notion of a good Gestalt in predicational metonymy. First, if an event is temporally or qualitatively unbounded, it cannot be comprehended as a segment of time because the beginning, the end, or both of them are not specified. According to the definition in psychology, it is not an event, or at least, it is not perceived as an event. In this respect, unbounded events are somewhat peripheral in comprehension of event structure. Second, because a punctual event begins and ends in an instance, the temporal structure of the event is simpler than a durative event. Predicational metonymy is a conceptual shift in event structure, so conceptual complexity matters: If an event has no temporal structure, it has no room to accommodate a shift in the dimension of time. It can be naturally assumed that a good Gestalt of event is formed by a bounded and durative event in that it is segmented by external boundaries in the dimension of time and organized by internal event structure. Therefore, if we assume the principle of GOOD GESTALT OVER POOR GESTALT, the two principles of boundedness and duration can be subsumed under this general principle.

The Gestalt principle was already one of the cognitive principles governing preference of metonymy, as reviewed in Section 1. If we intend the Gestalt principle in predicational metonymy as the same cognitive principle in referential metonymy, how should we relate these two? Referential metonymy is a conceptual shift in objects, and predicational metonymy is a conceptual shift in events, so the most likely explanation is that the Gestalt principle of referential metonymy is metaphorically applied to predicational metonymy via EVENT IS OBJECT metaphor. As Lakoff and Johnson (1980: 30-31) pointed out, object metaphors are ubiquitous for events. According to Zacks and Tversky (2001: 7), it is also true that knowledge of objects can form an experiential basis for thinking metaphorically about events. Moreover, about aspect in particular, Janda (2004) proposed that human experience of matter, or objects, provides the source domain for the metaphor that motivates the grammatical category of aspect of predicates in Russian. Considering these claims, it is justified to postulate that EVENT IS OBJECT metaphor extends the Gestalt principles of referential metonymy to predicational metonymy.

5. Conclusion

Metonymy productively works at the level of predicates as well as at the level of nominal reference. This paper is probably the first attempt to empirically investigate linguistic preference of predicational metonymy. From a quantitative analysis of ACTION FOR CAUSATION metonymy in Japanese in terms of aspectual construal, we found that Incremental and Nonincremental Accomplishments are highly preferred as the metonymic vehicle to other aspectual types. The two cognitive principles of BOUNDED OVER UNBOUNDED and DURATIVE OVER PUNCTUAL, which can be subsumed under the general principle of GOOD GESTALT OVER POOR GESTALT, were proposed to capture the metonymic preference.

To further verify that the cognitive principles we proposed in this paper underlie the general mechanisms of metonymic preference, future research should involve a series of descriptive studies on metonymic preference. If a principle is really a cognitive foundation of metonymy, it necessarily follows that the principle applies to different conceptual types, linguistic levels, and language communities. Panther and Thornburg (2003c) demonstrated that conceptual metonymies are significant in the coding of aspect in both English and French. However, much more descriptive work needs to be done to reveal how universal, or diverse, cognitive mechanisms of metonymies are.

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