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# **Macro-events in Verb–verb Compounds from the Perspective of Baseline and Elaboration: Iconicity in Typology and Grammaticalization**

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## **Abstract**

In Talmy’s typology of event integration, macro-events are classified into five types (motion, temporal contouring, state change, action correlating, and realization) by the framing event. Examining compound verbs representing macro-events cross-linguistically, this paper argues that macro-events can be classified into two types from the viewpoint of “elaboration” (Langacker 2016): augmentation (motion, state change, and realization) and adaptation (temporal contouring and action correlating). Based on iconicity, compound verbs can be said to be the best candidates for encoding conceptually integrated complex events considering their high lexical integrity. This paper shows that the two types of macro-events in compound verbs are distinct in the order of the framing event and the co-event, the representation of the framing event, and their lexical integrity. These results suggest that the differences in baseline/elaboration organization iconically emerge as explicit differences in linguistic forms, indicating the validity of the “iconicity of structured mapping in compounds”.

## **Keywords**

compound verbs – event integration – baseline and elaboration – grammaticalization – iconicity of structured mapping in compounds

## 1 Introduction

In Talmy's typology of event integration, a "macro-event" is a complex event that tends to be conceptually integrated as a single event and represented by a single clause. A macro-event can be conceptualized as being composed of a framing event (a main event), a co-event, and the relation between them. In (1), macro-events are classified into five types in terms of the framing event as in Talmy (2000: 214).

(1) Five types of macro-events (English)

a. Motion

*The ball rolled in.*

b. Temporal contouring

*They talked on.*

c. State change

*The candle blew out.*

d. Action correlating

*She sang along.*

e. Realization

*The police hunted the fugitive down.*

In English, the semantic core of the event complex tends to be expressed by the verb particle, or "satellite"<sup>1</sup> in Talmy's terminology, and the co-event tends to be expressed by the verb.<sup>2</sup> In languages such as Japanese, Chinese, Korean, and many South Asian languages, macro-events can be expressed in the form of verb-verb compound

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<sup>1</sup> The term "satellite" refers to "the grammatical category of any constituent other than a nominal or prepositional-phrase complement that is in a sister relation to the verb root" (Talmy 2000: 222).

<sup>2</sup> Talmy's typology of how particular complex event types are encoded has been modified in previous work, such as Matsumoto (2003), Slobin (2004), Beavers et al. (2010), and Croft et al. (2010). I will not go into the details about this encoding typology because the main concern of this paper is the nature of macro-events, not how they are encoded.

verbs.<sup>3</sup> In a compound verb, the first verb (V1) represents a co-event or a framing event, and the second verb (V2) also represents a co-event or a framing event (co-events and framing events are mutually exclusive in a compound verb). And V1–V2 as a whole represents a macro-event.<sup>4</sup> Examples of Chinese in (2) illustrate this correspondence relationship.

(2) Five types of macro-events (Chinese)

a. Motion

滾進

*gǔn-jìn*

roll-enter

‘roll in’

b. Temporal contouring

聊上

*liáo-shàng*

talk-continue

‘talk on’

c. State change

吹熄

*chuī-xī*

blow- be.extinguished

‘blow out’

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<sup>3</sup> Although a gap in correspondence is observed in each language as to what type of semantic relationship can be expressed by the form of verb–verb (V–V) compound verbs, this paper is intended to study those with a roughly corresponding relationship semantically and morphologically. The following expressions that cannot be regarded as V–V compound verbs are excluded: serial verb constructions in which two verbs can appear in non-adjacent positions, as in “S V1 O V2”; light verb constructions comprising a semantically general verb and a noun that denotes an event or state, as in the English *take a walk* and *make an offer*; noun–verb compounds; noun–adjective compounds; affixed verbs; and Japanese V-*te* V complex predicates. Additionally, V–V compounds that do not represent macro-events, such as coordination compounds, are outside the focus of this paper.

<sup>4</sup> It should be noted that there is no element in a compound verb to express the relation between a co-event and a framing event explicitly. However, we can still understand that *korogari-komu* 転がり込む (roll-enter) means ‘enter somewhere **in the manner of** rolling’ and *huki-kesu* 吹き消す (blow-extinguish) means ‘extinguish a fire **by means of** blowing’ in Japanese. The meaning of the relation (shown in bold) can be ascribed to the meaning of a certain type of construction, such as [V<sub>i-INT</sub>-V<sub>j-INT</sub>]<sub>V</sub> and [V<sub>i-TR</sub>-V<sub>j-TR</sub>]<sub>V</sub> (see Chen and Matsumoto 2018).

## d. Action correlating

合唱

*hé-chàng*

be.together-sing

‘sing along’

## e. Realization

抓到

*zhuā-dào*

hunt-get.to

‘hunt down’

The question of how to represent macro-events is deeply related to the notion of “iconicity”. As explained in Croft (2003: 102), “the intuition behind iconicity is that the structure of language reflects in some way the structure of experience”. According to Haiman (1983), the linguistic distance that exists between expressions corresponds to their conceptual distance (“the iconic expression of conceptual distance”). Haiman (1983: 782) illustrated the scale of iconicity of distance for the grammatical relationship of X to Y as shown in (3) (see also Haspelmath 2008 and Croft 2008; # is word boundary, + is morpheme boundary).

- (3) a. X # A # Y (an additional word is used to express the relationship between X and Y)
- b. X # Y (no additional word is used to express the relationship between X and Y)
- c. X + Y (X and Y are morphologically bound)
- d. Z (a portmanteau expression of the concepts denoted by X and Y)

Since compound verbs are morphologically bound, they belong to the type (3c), in which the conceptual distance between X (V1) and Y (V2) are very close.

Additionally, as Haiman (1983) claims, the linguistic separateness of expressions is related to the conceptual independence of the entities represented (“the iconic expression of individuation”). A separate word denotes a separate entity; a bound morpheme does not.

Based on these iconic relations, we assume that highly conceptually integrated complex events such as macro-events tend to be expressed by linguistic forms with high “lexical integrity” (Selkirk 1982; Di Sciullo and Williams 1987; Spencer 1991, 2005;

Scalise and Guevara 2005; Booij 2008; Kageyama 2016a). Because compound verbs are direct combinations of V1s and V2s, which are also resistant to separation, they are expected to be the best candidates for encoding conceptually integrated complex events.

According to Kageyama et al. (2013), compound verbs are very common in northern Indo-Aryan languages and are less common in other Indo-Aryan languages. They are also found in Dravidian, Turkic, Korean, Japanese, Chinese, some Tibeto-Burman languages, some Northeast Caucasian languages, and in a few South American languages. This paper examines compound verbs based on the representative data from the following languages: Hindi-Urdu (Hook 1974; Butt 1993; Kageyama et al. 2013), Marathi (Pardeshi 2001; Kageyama et al. 2013), Munda (Hook 1991), Malayalam (Abbi and Gopalakrishnan 1991), Turkish (Kuribayashi 2013, 2018), Korean (Suh 2000; Jeon 2013; Asao 2014), Japanese (Tagashira and Hoff 1986; Matsumoto 1996; Kageyama 2016b), Chinese (Li and Thompson 1981; Li 1990; Packard 2000), Newar (Kiryu 2008), Avar (Yamada 2013), Quichua (Hook 2013), and Mapudungun (Augusta 1903; Smeets 2007; Baker and Fasola 2009).

As aforementioned, compound verbs tend to possess high lexical integrity. Although the definition of lexical integrity differs depending on the researcher, the basic meaning is that no syntactic rule can apply to word-internal elements.<sup>5</sup> Although compound verbs in different languages have different diagnostic tests, in most cases, compound verbs possess unique properties distinct from other V–V sequences such as Japanese *V-te V* complex predicates (e.g., *hasit-te kuru* 走ってくる (run-TE come) ‘come running’, see Nakatani 2016; Matsumoto to appear) or serial verb constructions in other languages (see Aikhenvald 2007).

For instance, as (4) demonstrates, unlike *V-te V* complex predicates (4b), V1 and V2 in Japanese compound verbs (4a) cannot be separated by particles.

- (4) a. *aruki-tukareru* 歩き疲れる (walk-get.tired) ‘get tired from walking’  
 vs. *\*aruki wa tukareru* 歩きは疲れる (walk-TOP<sup>6</sup>-get.tired)
- b. *arui-te miru* 歩いてみる (walk-TE see) ‘try walking’  
 vs. *arui-te wa miru* 歩いてはみる (walk-TE TOP see)

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<sup>5</sup> Principle of lexical integrity: The syntax neither manipulates nor has access to the internal structure of words (Anderson 1992: 84).

<sup>6</sup> Abbreviations are as follows: 1 (first person), ACC (accusative), CAUS (causative), CP (conjunctive participle), DECL (declarative), ERG (ergative marker), FUT (future), GEN (genitive), GER (gerund), IMP (imperative), INF (infinitive), INT (intransitive), M (masculine), N (neuter), NOM (nominative), NPST (nonpast), PASS (passive), PRF (perfect), PL (plural), PST (past), SG (singular), TOP (topic), and TR (transitive).

We can also observe the “compound accent”<sup>7</sup> in Japanese compound verbs, indicating that the compounds behave phonologically as a single word.

In Chinese, the passive meaning represented by the passive marker *bèi* does not apply only on V1 but also on V2, which means that the syntactic operation (passive) can access both V1 and V2 because of its wordhood. For instance, in (5), Lisi was pushed and toppled by Zhangsan.

- (5) 李四 被 張三 推倒了。  
 Lǐ-sì bèi Zhāngsān tuī-dǎo-le  
 Lǐ-sì PASS Zhāngsān push-fall-PST  
 ‘Lisi was pushed down by Zhangsan.’

For Korean compound verbs, the negation marker *mos* cannot be placed between V1 and V2; instead, it must be placed before V1. Moreover, the example in (6) shows that *mos* can only be interpreted as the negation of V1–V2 rather than only V1.

- (6) pomul-ul mos chac-a-nay-ss-ciman al-a-nay-ss-ta.  
 treasure-ACC can’t search-CP-put.out-PST-but know-CP-put.out-PST-DECL  
 ‘I couldn’t find the treasure, but I figured out where it is.’ (Jeon 2013: 338)

Similarly, in the case of Marathi compound verbs, negation is placed after the compound verb, and the meaning of negation also applies to V1, indicating that V1–V2 forms a unit.<sup>8</sup>

- (7) chandraa-na DoLe miT-un ghet-l-e naahit.  
 Chandra-ERG eyes.N close-CP take-PRF-N NOT  
 ‘Chandra did not close her eyes.’ (Pardeshi 2001: 106)

These properties clearly show the “one-wordness” of compound verbs across languages.

On the basis of the atomicity of compound verbs, this paper examines compound verbs representing macro-events cross-linguistically and argues that macro-events can be classified into two types based on Langacker’s (2016) theory of baseline and elaboration (see Section 2.1 and 2.2): augmentation (motion, state change, and realization) and adaptation (temporal contouring and action correlating). Concerning the “iconicity of structured mapping in compounds” (Section 2.3), these two types of macro-events show distinct behaviors in the order of the verbs representing the framing event and co-event

<sup>7</sup> It is known that Japanese compound verbs are very likely to be treated as accented verbs, no matter which accent class V1 and V2 belong to (Vance 2008: 191).

<sup>8</sup> Notably, this test is not applicable to all Marathi compound verbs. For instance, some compound verbs in Marathi (those V2s involving, e.g., GO, COME, THROW, SIT) cannot be negated.

(Section 3.1), the grammaticalization of V2s (Section 3.2), and their lexical integrity (Section 3.3). These findings show a parallelism between the relation in the baseline/elaboration (B/E) organization of a compound and the relation in its morphological structure (Section 3.4).

## 2 Baseline and Elaboration

### 2.1 Langacker (2016)

According to Langacker (2016), asymmetry can be observed in various aspects of human language and cognition, and this asymmetry can be understood from the concepts of “baseline” and “elaboration” in various dimensions and levels. The baseline (B) is generally more substantive than elaborating elements because it is already established, in place, or under control. Its elaboration (E) can be characterized abstractly as a function mapping B onto the higher-level structure BE. The structure formed by the formation of the strata<sup>9</sup> (S) by the baseline and elaboration is called the B/E structure (see Fig. 1) and is ubiquitously observed in many linguistic phenomena.

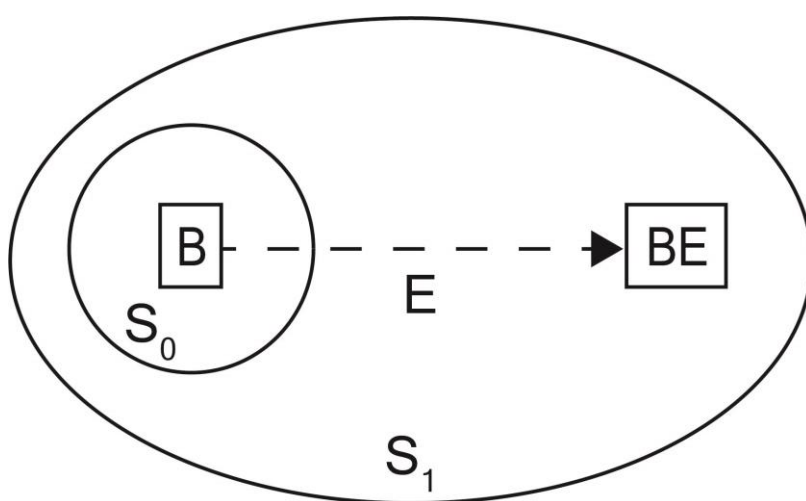


Figure 1 The B/E structure (Langacker 2015)

<sup>9</sup> “A given stratum,  $S_i$ , comprises an array of resources available for structure building; they include both mental capacities and the structures already in place. This substrate allows the formation of more elaborate structures, any one of which can function as a baseline,  $B_{i+1}$ , for higher-level purposes. So in moving from one stratum to the next, we encounter structures of greater complexity and conceptual sophistication” (Langacker 2016: 407).

Langacker (2016) explains the difference between baseline/elaboration theory and compositional theories by providing examples of English plural forms. Langacker points out that the plural forms of English nouns are often analyzed compositionally (Fig. 2). For instance, *cats* can be analyzed as the composition of the noun *cat* and the plural morpheme *s*. However, there are some plural forms, such as that of *goose* (i.e., *geese*), which are not formed by adding another element to the singular form. Therefore, in a compositional approach, the plural form *geese* is considered the combination of *goose* and the process morpheme that changes *oo* into *ee*. In the case of *sheep*, the plural form is morphologically identical with its singular form. Therefore, a compositional approach must pose something that is not pronounced but is regarded as theoretically existing, something like a zero morpheme.<sup>10</sup> Based on the existence of the zero morpheme, the plural *sheep* can be considered as the composition of the singular *sheep* and a zero morpheme.

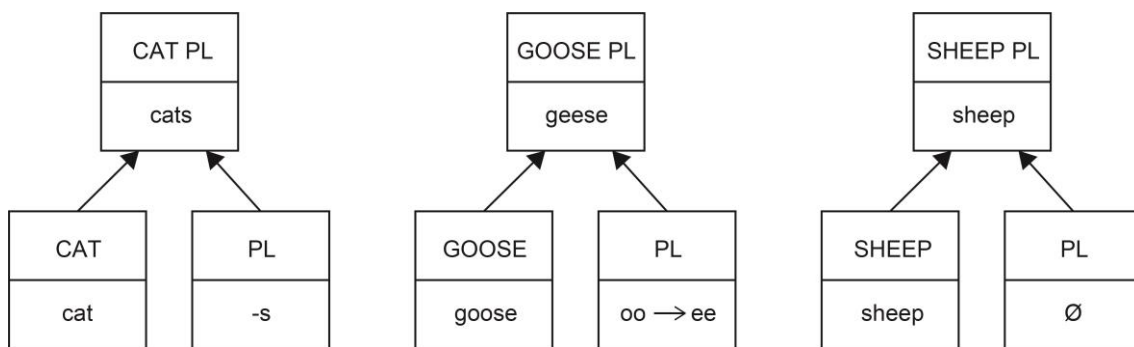


Figure 2 Morphology (plural forms) as composition (adapted from Langacker 2016: 418)

However, as Langacker states, there is nothing to prove the psychological existence of the process morpheme or zero morpheme.<sup>11</sup> If a morpheme is a building block, as assumed in the compositional approaches, how can it consist in nothing at all? Or in a process?

To address this problem, in baseline/elaboration theory, examples of English plural forms are analyzed (Fig. 3). The upper part in the squares divided by the horizontal line represents the semantic pole, and the lower part represents the phonological pole. When

<sup>10</sup> “Zero morphemes or null morphemes are those without any phonological content that add information to the lexeme” (Fábregas and Scalise 2012: 32).

<sup>11</sup> Zero morphemes are also problematic regarding acquisition. For instance, Fábregas and Scalise (2012: 32) states that because zero morphemes are not directly perceived, “it is not obvious how a child realizes that her language has zero morphemes if she never gets to hear them”.



a baseline receives the elaboration of pluralization (PL) in the semantic pole, some cases are morphologically combined with the plural morpheme *s* (e.g., *cats*), and in some cases, such as *goose*, *oo* changes into *ee*. There are also cases such as *sheep*, where semantic elaboration but no phonological elaboration is observed.

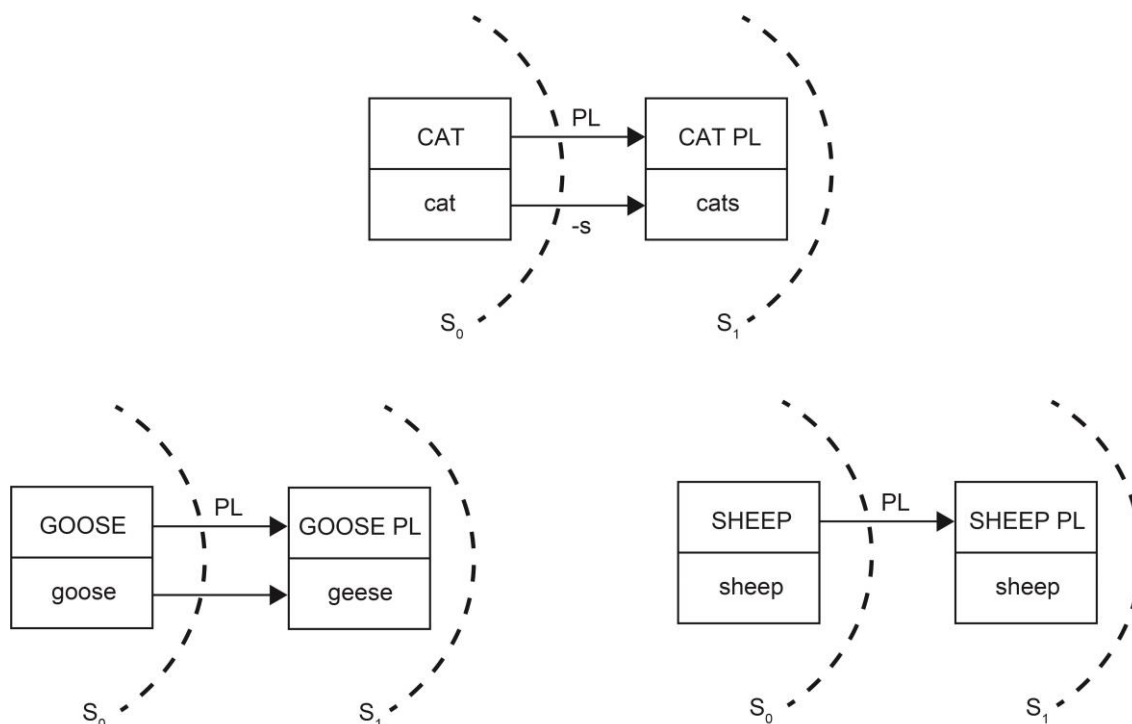


Figure 3 Morphology as B/E organization (adapted from Langacker 2016: 419)

By viewing the plural forms of English as the elaboration only on the semantic pole (e.g., *sheep*) or on both the semantic and phonological poles (e.g., *cats* and *geese*), we avoid the need to suggest a zero morpheme and process morpheme.

This sort of nonconcatenative morphology has been discussed in other studies (Sapir 1921; Hockett 1954; McCarthy 1981; Spencer 1998). However, for a compound, because it is morphologically a concatenation of two constituent elements,<sup>12</sup> it has been semantically considered the composition of constituent elements. Adopting Langacker’s (2016) concept of elaboration, this paper demonstrates that nonconcatenative word formation is also observed in compounds.

<sup>12</sup> As defined in Bauer (2003: 40), a compound is “the formation of a new lexeme by adjoining two or more lexemes”.

## 2.2 Classification of Macro-events Based on Baseline/Elaboration Theory

In this paper, the B/E structure is further developed to study macro-events. Specifically, the type of elaboration (E) is examined in more detail and classified into subtypes. In addition to the concepts of baseline and elaboration, this paper proposes the concept of “additive”. By doing so, macro-events can be classified into two types based on the formation of the B/E structure in the semantic pole: augmentation and adaptation.<sup>13</sup>

### 2.2.1 Augmentation (Motion, State Change, and Realization)

Augmentation (see Fig. 4) is the elaboration of embedding the additive (A = co-event) in the empty slot of the baseline (B = framing event). There are three types of augmentation: motion, state change, and realization.

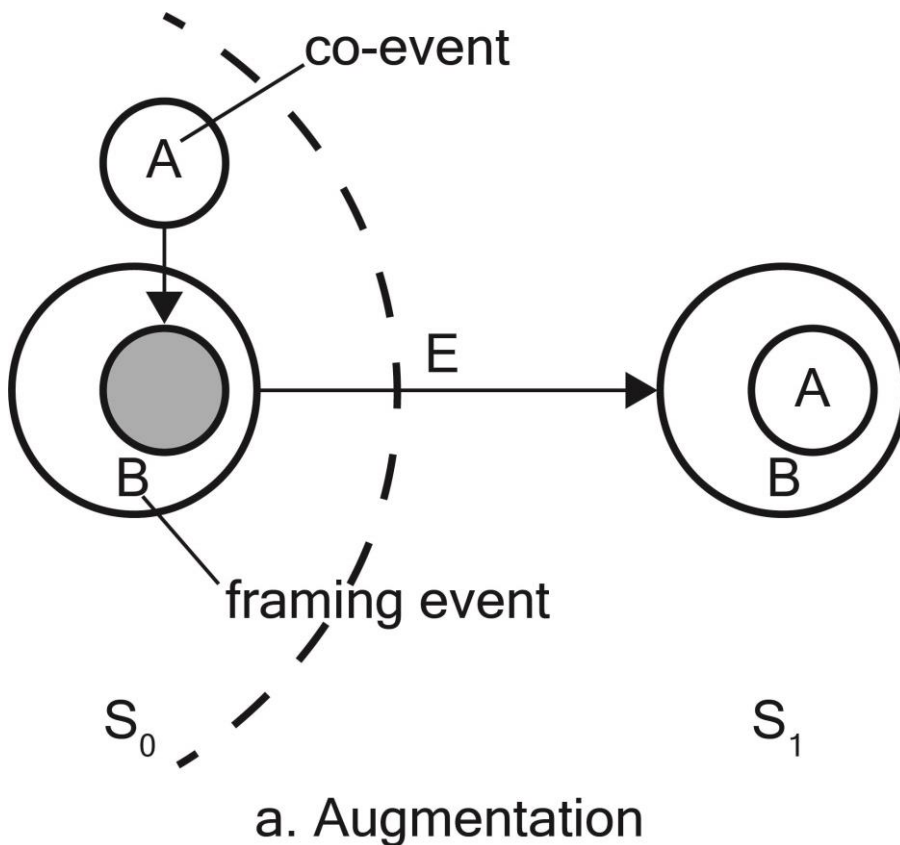


Figure 4 B/E organization of augmentation

<sup>13</sup> There is another type of elaboration, whose components are equally substantive and constitute a dual baseline. For instance, the Japanese compound verb *naki-sakebu* (cry-scream) ‘cry out’, which constitutes a dual baseline, is called a “coordination compound” in Lieber (2009: 102). However, because coordination compound verbs do not present macro-events, we do not discuss this type of compound.

(8) Examples of augmentation compound verbs

**Motion:**

*ttwi-e-tulta* (jump.<sub>A</sub>-CP-enter.<sub>B</sub>) ‘jump in’ [Korean, Jeon 2013: 333]

(<sub>A</sub> stands for additive; <sub>B</sub> stands for baseline)

*ghasar-un pad-ne* (slide/slip.<sub>A</sub>-INF fall.<sub>B</sub>) ‘slip off/down’ [Marathi, Kageyama et al. 2013: 7]

**State change:**

*tataki-kowasu* 叩き壊す (hit.<sub>A</sub>-to.break.<sub>B</sub>) ‘break something by hitting’ [Japanese]

*khoj nikāl-nā* (search.<sub>A</sub> take.out.<sub>B</sub>-INF) ‘find, discover (after effort)’ [Hindi, Kageyama et al. 2013: 7]

**Realization:**

*tī-zháo* 踢着 (kick.<sub>A</sub>-into.contact.<sub>B</sub>) ‘kick’ [Chinese]

*keri-tukeru* 蹴りつける (kick.<sub>A</sub>-attach.<sub>B</sub>) ‘kick’ [Japanese]

In a motion macro-event, the framing event is the motion event. Because many possible manners can be used to carry out a motion, a motion event has empty slots such as manner and cause. A manner/cause event fills this slot to form a complex event. In the case of a state change in a macro-event, the event of the state change is the framing event, and it has empty slots such as cause and means. Regarding the type of realization, the framing event is the event of realization, and the co-event is a particular action that the agent performs.<sup>14</sup>

When combining two elements in the case of augmentation compounds, the two concepts coexist at the same stratum  $S_0$  as the material at hand to create a new concept, such as when combining two blocks or two pieces of jigsaw puzzle. The elaboration of augmentation is the operation to embed an additive into a baseline. Langacker (2016) gives an example of *cat food* and analyzes it as a dual baseline. However, considering the existence of the “head” in a compound (see, among others, Williams 1981; Scalise, Fábregas, and Forza 2009), it is better to analyze *cat food* as the augmentation of a

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<sup>14</sup> By virtue of the encyclopedic knowledge via the notion of “(lexical) semantic frame” of verbs (see Chen 2016 and Chen and Matsumoto 2018 for detailed argumentation), each verb carries background information of the empty slots. A verb carries the information concerning the likely causes and results of the process or the manner/means by which the process may be executed, depending on its event type. Consequently, the combinations of V1 and V2 can be restricted and predicted based on the information extractable from the semantic frame. In the case of augmentation compounds, whether the additive can fit in the open baseline slot or not is strongly dependent on this sort of “conceptual congeniality”.

baseline (*food*) with an additive (*cat*). *Cat food* is a kind of food but not a kind of cat. It is coordination compounds whose components are equally substantive and constitute a dual baseline (e.g., *singer-songwriter*).

### 2.2.2 Adaptation (Temporal Contouring and Action Correlating)

In the elaboration of adaptation, E (framing event) is an adaptation (e.g., inception, continuation, completion, action correlating) relating B (co-event) to a higher-level structure B' (Fig. 5). Temporal contouring is the linguistic aspect, and action correlating is the coactivity that “an intentional Agent effects or maintains a particular correlation between an action performed by herself and an action performed by another Agency” (Talmy 2000: 254). Both cannot be used alone and are always used in conjunction with other specific events. Thus, we can assume that temporal contouring and action correlating types belong to this adaptation type.

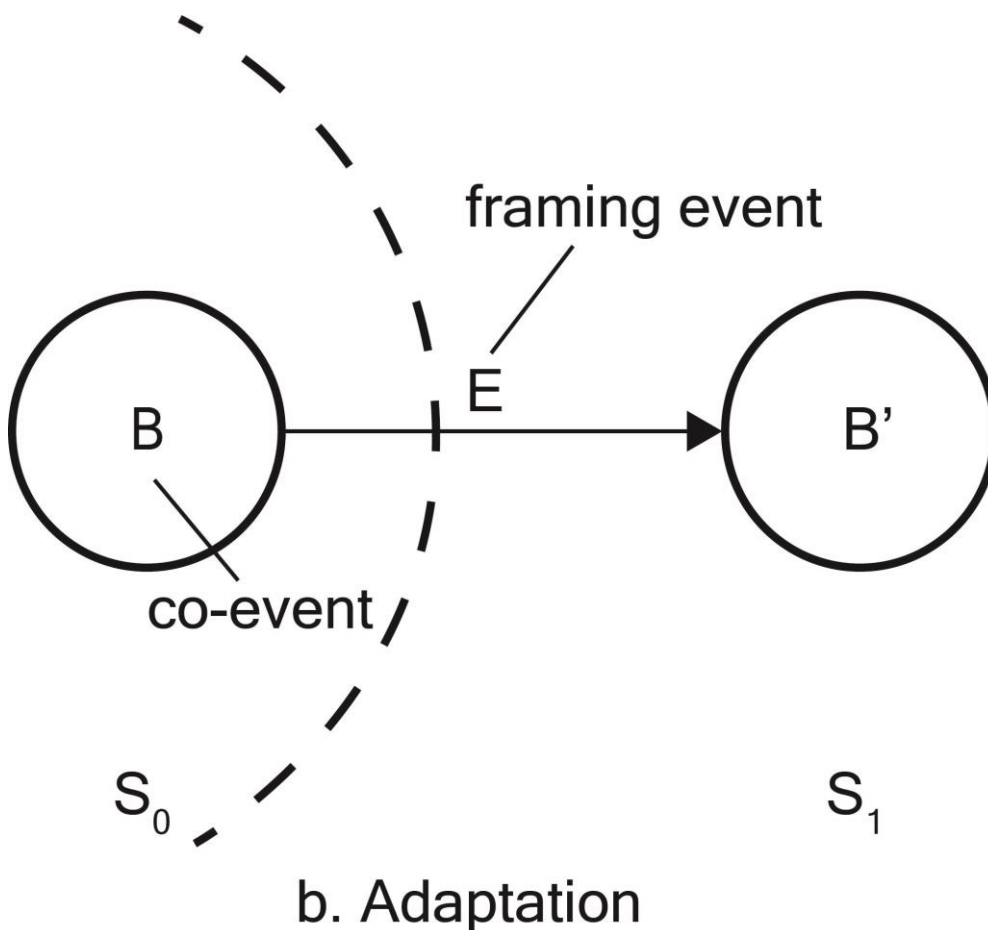


Figure 5 B/E organization of adaptation

(9) Examples of adaptation compound verbs

**Temporal contouring:**

*jaan li-yaa* (know<sub>B</sub> take<sub>E-PRF.M.SG</sub>) ‘know completely’ [Urdu, Butt 1993: 116]

(<sub>E</sub> stands for elaboration)

*af-naq-* (stop (INT)<sub>E</sub>-go.down<sub>B</sub>-) [Mapudungun, Smeets 2007: 315]

**Action correlating:**

*naguri-au* 殴り合う (beat<sub>B</sub>-match<sub>E</sub>) ‘fight each other’ [Japanese]

*hé-biān* 合編 (be.together<sub>E</sub>-edit<sub>B</sub>) ‘co-edit’ [Chinese]

Basically, in the adaptation type of macro-events, the baseline is an independent event, and the elaboration is the event that operates on the baseline. In a temporal contouring macro-event, the framing event is the elaboration of temporal operations on the baseline, and the co-event is an independent event. Regarding the type of action correlating, the framing event comprises the establishment of correlations such as “concert”, “accompaniment”, “imitation”, “surpassment”, and “demonstration”, and the co-event comprises the specific action performed by the agent (Talmy 2000: 254). In many cases, the framing events of adaptation type are expressed by grammaticalized verbs that originally represent concrete meanings, and the extended abstract meanings such as temporal contouring and action correlating are “bound meanings”. That is, words embedded in compounds may have specific meanings that they do not have when used as words by themselves (see Booij 2018).

In South Asian languages (Masica 1976), there are many cases where the semantic adaptation on a certain baseline is expressed by compound verbs, which are studied under the term “explicator compound verb”<sup>15</sup> (Hook 1974, 1999; Masica 1976; Abbi and Gopalakrishnan 1991; Pardeshi 2001). In the Japanese literature, this type of compound verb also has been studied under the term “syntactic compound verb”<sup>16</sup> (Kageyama 2016b). Compound verbs of this type can be explained in a unified manner by considering them to be a semantic adaptation.

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<sup>15</sup> As Abbi and Gopalakrishnan (1991: 162) states, an explicator compound verb is “a sequence of at least two verbs V1 and V2 where the first member is the main or predicating verb and the second member, although homophonous with an independent verb in the language, does not appear with its primary lexical meaning; V2 only occurs in the sequence to mark the main verb V1 for certain ‘grammatical’ features”.

<sup>16</sup> Syntactic compound verbs are V–V compounds which include aspectual compound verbs (e.g., V–*hajimeru* 始める ‘begin something’ and V–*oeru* 終わる ‘finish something’) or non-aspectual syntactic compound verbs (e.g., V–*sugiru* 過ぎる ‘exceed (in ...)’ and V–*sokoneru* 損ねる ‘fail (to ...)’ (Matsumoto 1996: 170).

### 2.3 *Predictions Based on the Iconicity of Structured Mapping in Compounds*

In Section 1, I have introduced the iconic expression of conceptual distance and the iconic expression of individuation in Haiman (1983). More recently, Emmorey (2014) has applied structure-mapping theory (Gentner 1983) as a framework for understanding effects of iconicity on sign language grammar and processing. She argues that “iconicity is better understood as a structured mapping between two mental representations than as a link between linguistic form and human experience”. Based on this idea, I propose a new hypothesis regarding the iconic effects on the word formation of compounds.

(10) **Iconicity of structured mapping in compounds**

The relation of concepts represented by *X* and *Y* in the conceptual structure of a compound *X–Y* is reflected in the morphological relation in the morphological structure of *X–Y* iconically.

That is, the constraints or characteristics of a linguistic expression arise explicitly from structure-preserving mappings between the meaning of a sign and its form. Thus, the structure of a linguistic form is motivated by its conceptual organization.

On top of that, this paper suggests that B/E organization can serve as essential criteria to determine the formal structure of a linguistic unit. Thus, we can assume augmentation compound verbs and adaptation compound verbs are morphologically different and make the following predictions about the morphological behavior of a compound verb based on its B/E organization.

a. **The order of verbs:**

The baseline is something prior in the adaptation type. Thus, based on the iconicity of structured mapping in compounds, we can predict that the order of verbs in adaptation compound verbs tends to be “V1: co-event, V2: framing event”, which matches the temporal sequencing of B/E organization (baseline → elaboration). As to the case of augmentation compound verbs, because the additive (co-event) and the baseline (framing event) exist in the same stratum  $S_0$ , there should be no effect of the iconicity of structured mapping in compounds regarding the order of the framing event and co-event.

b. **The representation of the elaboration in adaptation compound verbs:**

Because elaborations are a certain kind of operation performed on baselines, verbs representing elaborations are likely to be relatively limited.

c. **The lexical integrity:**

In the adaptation type, like kneading clay to change its initial form and create something new, an elaboration is an independent operation performed on a

baseline. Thus, the elaboration and the baseline should be morphologically separable. On the other hand, an additive is something to fill a baseline's empty slot in the augmentation type like assembling a jigsaw puzzle. The additive and the baseline are mutually restricted and form a unity, which is likely to cause augmentation compounds to show a higher degree of lexical integrity.

These predictions about the morphological behavior of a compound based on its conceptual structure are in consonance with the area of “onomasiology”, which basically is the study of the means of expressing a given concept (see Baldinger 1980). I will examine these predictions in Section 3.

### 3 Analysis

In this section, I attempt to represent the effectivity of the classification of macro-events developed in Section 2.2 through three case studies: the order of the framing event and co-event, the grammaticalization of V2s and the representation of the framing event, and the different degree of lexical integrity in types of compound verbs.

#### 3.1 *Order of Verbs*

First, I examine the order of the events represented by V1s and V2s in different types of languages. Typologically, regardless of language type, the order of verbs in augmentation compound verbs tends to be “V1: co-event, V2: framing event” as shown in (11) and (12).<sup>17</sup>

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<sup>17</sup> Some compound verbs show reverse order in different languages, such as *kaki-naosu* 書き直す (write-correct) ‘rewrite’ [Japanese] vs. *kochye-ssuta* (correct-write) ‘rewrite’ [Korean] and *ki-gaeru* 着替える (wear-to.change) ‘change one’s clothes’ [Japanese] vs. *pakkwue-ipta* (to.change-wear) ‘change one’s clothes’ [Korean] (see Tsukamoto 2013: 310-311). However, this contradiction seems to be restricted to certain types of compound verbs in which one of the constituents may be considered as either expressing the state change (e.g., V2 in *ki-gaeru*, meaning something changes as the result of V1) or the adverbial meaning (e.g., V1 in *pakkwue-ipta*, meaning change the manner of V2). This sort of dual interpretation may be the cause of the inconsistency in the order of the framing event and co-event.

## (11) Augmentation compound verbs in verb-object (VO) languages

**Motion:**

*weyel-kon-n* (swim.CO-go.in.FR-INF) ‘enter by swimming’ [Mapudungun, Augusta 1903: 269] (CO stands for co-event; FR stands for framing event)

*pǎo-jìn* 跑進 (run.CO-enter.FR) ‘rush in’ [Chinese]

**State change:**

*witra-nentu* (pull.CO-take.out.FR) ‘pull out’ [Mapudungun, Smeets 2007: 416]

*tūi-dǎo* 推倒 (push.CO-fall.FR) ‘push down’ [Chinese]

**Realization:**

*tī-zhào* 踢着 (kick.CO-into.contact.FR) ‘kick’ [Chinese]

## (12) Augmentation compound verbs in object-verb (OV) languages

**Motion:**

*tadayoi-deru* 漂い出る (float.CO-exit.FR) ‘float out’ [Japanese]

*tṭwi-e-tulta* (run.CO-CP-enter.FR) ‘rush in’ [Korean, Jeon 2013: 333]

*fisal paṛ-nā* (slip.CO INF-fall.FR) ‘slip down’ [Hindi, Kageyama et al. 2013: 7]

**State change:**

*tataki-kowasu* 叩き壊す (hit.CO-break.FR) ‘break something by hitting’ [Japanese]

*ccill-e-cwukita* (stab.CO-CP-kill.FR) ‘stab to death’ [Korean, Jeon 2013: 333]

*ṣodh-un kāḍh-Ne* (search.CO-CP take.out.FR-INF) ‘search out’ [Marathi, Kageyama et al. 2013: 7]

**Realization:**

*nage-tukeru* 投げつける (throw.CO-attach.FR) ‘throw at’ [Japanese]

On the other hand, the order of verbs in adaptation compound verbs tends to match the temporal sequencing of B/E organization (baseline → elaboration, see Fig. 5) and show a unified order “V1: co-event, V2: framing event” only in OV languages.



(13) Adaptation compound verbs in OV languages

**Temporal contouring:**

*bak-a-kal-di* (watch.CO-GER-remain.FR-PST) ‘keep looking’ [Turkish, Kuribayashi 2013: 291]

*jaan li-yaa* (know.CO take.FR-PRF.M.SG) ‘know completely’ [Urdu, Butt 1993: 116]

*hasiri-hazimeru* 走り始める (run.CO-start.FR) ‘start running’ [Japanese]

*yomi-kakeru* 読みかける (read.CO-put.on.FR) ‘be about to read’ [Japanese]

**Action correlating:**

*naguri-au* 殴り合う (beat.CO-match.FR) ‘fight each other’ [Japanese]

(14) Adaptation compound verbs in VO languages

**Temporal contouring:**

*tíng-bàn* 停辦 (stop.FR-manage.CO) ‘stop managing’ [Chinese]

*bàn-wán* 辦完 (manage.CO-finish.FR) ‘finish managing’ [Chinese]

*af-nak-üm* (stop.FR-go.down.CO-CAUS) ‘stop going down’ [Mapudungun, Smeets 2007: 416]

*gana-ntuku-* (earn.CO-put.at.FR-) ‘to continue to earn’ [Mapudungun, Smeets 2007: 317]

**Action correlating:**

*hé-chàng* 合唱 (be.together.FR-sing.CO) ‘sing together’ [Chinese]

*zuò-gěi* 做給 (do.CO-give.FR) ‘demonstrate (something) to (someone)’ [Chinese]

All OV languages show a unified order of adaptation compounds in (13), which is as predicted in Section 2.3. However, as (14) demonstrates, VO languages do not conform to a unified order. The order is inconsistent even in a single language. This difference suggests that there is competition between regular word order and order based on iconic relations. The order of an object and a transitive verb in a language will affect the order of verbs in adaptation compounds because they both represent an operation on something. It is very likely for a language to adopt the same strategy to encode events of operation. If an iconic relation exists between the word order and the temporal sequencing of B/E organization as in adaptation compound verbs of OV languages (see Fig. 6), the order of verbs tends to be “V1: co-event, V2: framing event”. Otherwise, the order of verbs will be “V1: co-event, V2: framing event” based on the iconicity (e.g., *bàn-wán* 辦完 (manage.CO-finish.FR)) or the reverse, “V1: framing event, V2: co-event”, based on the word order VO (e.g., *tíng-bàn* 停辦 (stop.FR-manage.CO)).

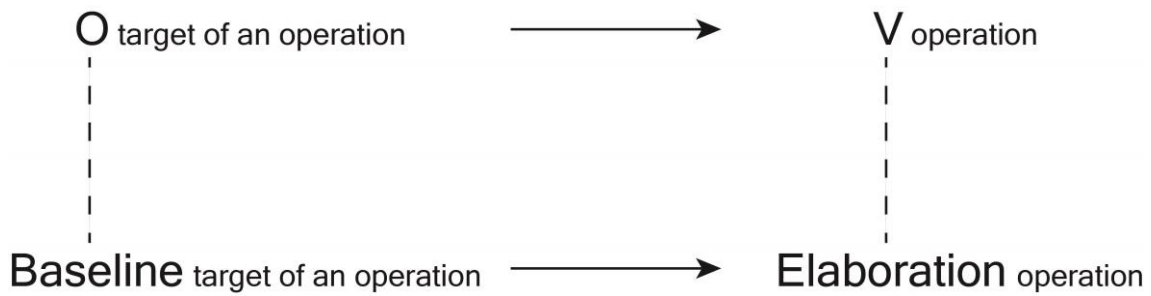


Figure 6 Iconic relation of adaptation compound verbs (dashed lines represent the iconic correspondence)

In Quichua-influenced Spanish (see Lipski 2014), word order also affects the order of compound verbs. Quichua, the predominant indigenous language spoken in the Andean highlands of South America, has been reported to frequently produce phonological and morphosyntactic effects on regional varieties of Spanish. Influenced by Quichua, in which the linguistic form of a compound verb is productive, speakers living in the Andean highlands have produced innovated compound verbs in Spanish. As (15) demonstrates, originally, the OV language Quichua had the compound verb *huañu.či-špa šita-šun* (kill-GER throw-1.PL.FUT). However, in the corresponding Spanish compound verb, the order of the contents represented by V1 and V2 was reversed because of the influence of the word order of Spanish (subject-verb-object, SVO). Here the verb that represents ‘kill’ is the baseline (= the co-event) and the verb representing ‘throw’ is the elaboration (= framing event).

- (15) a. *huañu.či-špa*      *šita-šun*  
 kill-GER                  throw-1.PL.FUT  
 ‘We will kill you.’ (Quichua, Hook 2013)
- b. *bota-remos*              *mat-ándo-te*  
 throw-1.PL.FUT      kill-GER-you  
 ‘We will kill you.’ (Quichua-influenced Spanish, Hook 2013)

In the case of augmentation compounds, because the relation of an additive and a baseline is not an operation, the regular word order and the temporal sequencing of B/E organization will not affect the order of verbs. Other iconic factors, such as the principle of temporal sequence (Tai 1985), and linguistic factors, such as headedness, may be what causes the order of verbs in augmentation compounds to tend to be “V1: co-event, V2: framing event” cross-linguistically.

Notably, finding other SVO languages that have the form of compound verbs other than Chinese and Mapudungun (and maybe Quichua-influenced Spanish) is difficult. This

phenomenon suggests that the iconic relation between the word order and order of temporal sequencing in adaptation compound verbs may be the key to having productive compound verbs or not. Nonetheless, what matters here is that many OV languages show a unified tendency, and only two VO languages show an inconsistent tendency.

### 3.2 Grammaticalization of V2s

The differences between augmentation and adaptation compound verbs can also be observed in processes of “grammaticalization”. In general, grammaticalization, the coming into being of grammatical markers such as case, tense, aspect, and modality, is the creation of grammatical categories (Lehmann 2004: 183). In adaptation compound verbs, only V2s of adaptation compound verbs representing elaboration form a closed class mostly with grammaticalized verbs that initially express concrete actions.

#### (16) Grammaticalized V2 in adaptation compound verbs

- a. *khā-un ghe-ṇe* [Marathi (OV), Kageyama et al. 2013: 7]  
eat-CP **take**-INF  
‘eat up’
- b. *khā baiṭh-nā* [Hindi (OV), Kageyama et al. 2013: 7]  
eat **sit**-INF  
‘eat [by mistake]’
- c. *lel jom-me* [Munda (OV), Hook 1991: 190]  
see **eat**-IMP  
‘see [for one’s benefit or comfort]’
- d. *kuppi potṭI pooyi* [Malayalam (OV), Abbi and Gopalakrishnan 1991: 163]  
bottle break-CP **go**-PST  
‘(the) bottle broke (undesirably)’
- e. *uyu-y-u ver-* [Turkish (OV), Kuribayashi 2013: 289]  
sleep-GER **give**  
‘sleep immediately’
- f. *č’wa-n rex-ana* [Avar (OV), Yamada 2013: 10]  
kill-PRF **throw**-PST  
‘killed (emphasize the completeness)’

- g. *iwa:māk-ā-chwaye* [Newar (OV), Kiryu 2008]  
 forget-CP-**send**  
 ‘completely forget’
- h. *ilk-e noh-ass-ta* [Korean (OV), Suh 2000: 78]  
 read-CP **put**-PST-DECL  
 ‘read (in anticipation of ...)’
- i. *yari-nuku* やり抜く [Japanese (OV)]  
 do-**pull**  
 ‘do thoroughly’

Unlike V2s in augmentation compounds, V2s in adaptation compounds are relatively limited as predicted in Section 2.3. Moreover, among the V2s of adaptation compound verbs, as shown in (17), transitive verbs are used for expressions without an object. In these cases, although the meanings of V2s are bleached, their causative meanings are in an iconic relation with operating on a baseline.

- (17) a. 太郎は おびえ切っている。 [Japanese]  
 Taro-wa obie-**kit**-te-iru  
 Taro-TOP be.frightened-**cut**-NPST  
 ‘Taro is extremely frightened.’
- b. 次郎は がんばり抜いた。 [Japanese]  
 Jiro-wa ganbari-**nui**-ta.  
 Jiro-TOP work.hard-**pull**-PST  
 ‘Jiro worked hard thoroughly.’

One could argue that, because the form of deverbal nouns in Japanese is identical to the infinitive form of V1s as (18) demonstrates, the argument of V2 is the deverbal noun of V1.

- (18) a. 太郎の 声には おびえが あった。  
 Taro-no koe-ni-wa obie-ga at-ta.  
 Taro-GEN voice-TOP fear-NOM be-PST  
 ‘There was fear in Taro’s voice.’
- b. 次郎の がんばりが 上司に 認められた。  
 Jiro-no ganbari-ga joosi-ni mitome-rare-ta.  
 Jiro-GEN effort-NOM boss-to recognize-PASS-PST  
 ‘Jiro’s effort was recognized by his boss.’

However, there is evidence against the idea that *obie* in *obie-kiru* or *ganbari* in *ganbari-nuku* are deverbal nouns. For instance, V2s such as *-kiru* or *-nuku* can be combined not only with verbs of the Japanese native stratum (i.e., *wago*) but also with *kango*, the Sino-Japanese stratum. In this case, if the V2s can be combined with nouns, they must be able to combine with *kango* nouns directly. However, as (19) demonstrates, when combined with V2 *-kiru* or *-nuku*, *kango* nouns must be used in the form of [*kango* nouns + *si* (the infinitive form of *suru* する ‘do’)], suggesting that *obie* and *ganbari* in (17) are indeed the infinitive forms of verbs *obieru* and *ganbaru*.

- (19) a. sinrai-si-kiru 信頼し切る vs. \* sinrai-kiru 信頼切る  
 trust-do-cut trust-cut  
 ‘totally trust’
- b. kansatu-si-nuku 観察し抜く vs. \* kansatu-nuku 観察抜く  
 observation-do-pull observation-pull  
 ‘observe thoroughly’

### 3.3 Lexical Integrity

Finally, the two types of macro-events also show distinct behavior regarding their lexical integrity. If a language has two types of V–V compound verbs, one with relatively high lexical integrity and one with relatively low lexical integrity, to express macro-events, the lexical integrity of augmentation compound verbs is higher than that of adaptation compound verbs.

For example, in Japanese adaptation compound verbs, we can replace V1s with the verbal anaphora *soo su-* ‘do so’, as (20) demonstrates. However, we cannot replace V1s with *soo su-* ‘do so’ in augmentation compounds, as (21) demonstrates.

- (20) aruki-hazimeru 歩き始める vs. [soo si]-hazimeru そうし始める  
 walk-start [so do]-start  
 ‘start walking’ ‘start doing so’
- (21) aruki-mawaru 歩き回る vs. \*[soo si]-mawaru そうし回る  
 walk-go.around [so do]-go.around  
 ‘walk around’ lit. ‘go around by doing so’

This restriction also can be observed in Korean. According to Asao (2014), Korean *-e* verb forms also have a variety of grammatical properties. Unlike the adaptation compound verb in (22), the augmentation compound verb in (23) cannot replace its V1 by the verbal anaphora *kulehkey ha-* ‘do so’.

- (22) kwuw-e po-ta vs. [kulehkey hay] po-ta  
 roast-CP see-PST [do so] see-PST  
 ‘try to roast’ ‘try to do so’
- (23) kwuw-e salm-ta vs. \*[kulehkey hay] salm-ta  
 roast-CP boil-PST [do so] boil-PST  
 ‘coax someone’ lit. ‘coax someone by doing so’

Thus, we assume that the structural relationship between the two concepts is reflected in the word structure. As Fig. 4 demonstrates, the concept of additive is embedded in the baseline in the augmentation type; thus, whether the additive can fit in the open slot of baseline or not is strongly dependent on their conceptual congeniality. In the adaptation type, an elaboration is independent of its baseline; thus, there is a high degree of flexibility as to what elaboration is applied to what baseline. Based on these characteristics in the conceptual structure, we can assume the conceptual relationship between framing events and co-events is tighter in the augmentation type than in the adaptation type, which supports the iconicity of structured mapping in compounds proposed in this study.

### 3.4 Summary

The findings in this section (summarized in Table 1) suggest that (i) the order of verbs, (ii) grammaticalization patterns, and (iii) lexical integrity are all related to the relationship in B/E organization.

Table 1 The iconic parallelism between the B/E organization and its morphological structure

	<b>B/E organization</b>	<b>Morphological structure</b>
The order of verbs	The temporal order in the B/E organization of adaptation is “baseline: co-event, elaboration: framing event”.	The order of verbs in adaptation compound verbs of OV languages tends to be “V1: co-event, V2: framing event”.
Grammaticalization patterns	Elaborations are a certain kind of operation performed on baselines.	V2s of adaptation compounds, which represent the elaboration, form a closed class.  In some cases, transitive verbs are used for expressions without an object.
Lexical integrity	An additive is something embedded in an empty slot of a baseline in the augmentation type. The additive and the baseline are mutually restricted and form a unity.  In adaptation compounds, an elaboration is an independent operation performed on its baseline.	V1s and V2s of augmentation compounds are resistant to separation.  In some languages, V1s and V2s of adaptation compounds can be separated.

#### 4 Conclusion

In conclusion, by introducing baseline/elaboration theory into the Talmyan typology of macro-events, this paper has demonstrated a clear distinction between augmentation type and adaptation type macro-events. Specifically, the iconicity of structured mapping in compounds proposed in this paper is supported by the order of framing events and co-events, the grammaticalization of V2s, and the lexical integrity of each type. These results show that the differences in B/E organization iconically emerge as explicit differences in

linguistic forms, indicating the validity of the onomasiological approach based on B/E organization.

The cognitive linguistics enterprise has been successfully demonstrating the non-arbitrariness of the form–meaning (signifier–signified) relationship across various areas such as sound symbolism, gestures, sign languages, and iconic principles based on real-world experiences (e.g., the principle of temporal sequence). The results of this paper support the idea that the structure of a linguistic form is motivated by its conceptual organization and suggest that B/E organization can serve as essential criteria to determine the formal structure of a linguistic unit.

The focus of this paper was on the differences between types of macro-events in the same form (V–V compounds). One direction for further research would be the exploration of the differences between different forms expressing the same macro-event (e.g., *V-te V* complexes vs. V–V compounds in Japanese). It would also be interesting to look at other types of compounds such as noun–noun compounds based on the iconicity of structured mapping in compounds in the future.

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