

# Non-monotonic Event Structure Building and Context-dependent Argument Realization

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It is shown through a close examination of lexical conceptual structures or event structures that building verb meanings can cause semantic bleaching: a grammatically-relevant verb meaning is removed, which means that there are some cases in which verb meaning is not built up in a monotonic fashion. The conditions involved in the association between event structures and syntactic structures are not so strict as to preclude any violation: the applicability of them depends on the context.

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## 1. Introduction

Rappaport Hovav and Levin (henceforth, RH & L) (1998: 97–98) state that a verb like *sweep* exhibits a range of argument expressions which appear to vary in almost unlimited ways as shown in (1) below.

- (1) a. Terry swept.  
b. Terry swept the floor.  
c. Terry swept the crumbs into the corner.  
d. Terry swept the leaves off the sidewalk.  
e. Terry swept the floor clean.  
f. Terry swept the leaves into a pile.

In Sentence (1a) the verb *sweep* occurs without an object, but it is not a genuine intransitive use like the verb *swim* as in “Terry swam in the river,” because a direct object nominal like *the floor* in (1b) is understood. In (1b) and (1e) the surface of the floor is involved in the action of *sweep*, while in (1c), (1d), and (1f) not the surface itself but what are on it (i.e., *the crumbs* or *the leaves*) are directly involved. Furthermore, from a semantic point of view, (1c) and (1d) indicate a change of location, and (1e) a change of state. Sentence (1f) describes the creation of an artifact. In spite of these variations, RH & L argue that they are predicted and accounted for by Template Augmentation, which creates more complex event structure templates from simpler ones, and other mechanisms they have proposed.

Otsuka (2007), on the other hand, argues, showing the sentences RH & L cannot account for, that the shift of meaning can invoke the reorganization of the lexical conceptual structure of the verb *sweep*. The purpose of the present paper is to further argue for, and elaborate on this position, though partially modified, based on the data obtained mainly from the British National Corpus (henceforth, BNC) and the Collins Wordbanks (henceforth, WB).<sup>1</sup>

## 2. Previous Analyses and New Data: A Case of Metaphorical Extension

RH & L (1998: 121, footnote 16) compare *clear* with *sweep* in the following type of sentence:

- (2) a. Kim cleared the table of dishes.  
b. \*Phil swept the floor of crumbs.

The lexical conceptual structures, which are called the event structures in RH & L, associated with (2a and 2b) could be shown as in (3a and 3b), respectively, according to their descriptions.

- (3) a. [[x ACT] CAUSE [BECOME  
[y <CLEAR>]]]  
b. [x ACT <SWEEP> y]

They state that “in the acceptable sentence *dishes* is a participant associated with the state constant <CLEAR>, ...However, in the unacceptable sentence, *sweep*, being a manner verb, does not have a state constant in its basic event structure, so that *crumbs* has no subevent to be associated with.” This violates the second part of the Argument Realization Condition (4) (p. 113).

### (4) Argument Realization Condition

- a. There must be an argument XP in the syntax for each structure participant in the event structure.
- b. Each argument XP in the syntax must be associated with an identified subevent in the event structure.

That is, *crumbs* in (2b) cannot be associated with an identified subevent in the event structure, simply because there is no identified subevent in (3b).

However, Otsuka (2007) cites the following expression, which is structurally the same as the verb phrase in Sentence (2b).

- (5) sweep the city of violence (Genius)

Although *violence* could be argued to have no subevent to be associated with exactly as in (2b), this expression is acceptable, which suggests that the

metaphorical use of *sweep* in (5) is somewhat different in meaning from the literal use of it in (2b). In other words, the similarity between (2a) and (5) indicates that *sweep* is metaphorically extended to the type of *clear*, and that the event structure to be associated with the verb *sweep* in (5) is (6) below, where the manner constant <SWEEP> is converted to the state constant, and the constant participant *y* in the first subevent is missing. It is to be noted that semantic bleaching is involved in (5) in that there is no manner constant like <SWEEP> in the first subevent in (6). The loss of this constant explains the meaning of (5), where there is no sense in which violence disappears through the use of an instrument such as a broom normally implied by *sweep*.

(6) [[x ACT] CAUSE [BECOME [y <SWEPT>]]]

Under this assumption it is natural that *violence* is a participant associated with the state constant <SWEPT> just as *dishes* is a participant associated with the state constant <CLEAR>. However, this kind of radical restructuring of the lexical conceptual structure from (3b) to (6) might not be common as *Genius* states that this use of *sweep* is rare.

A metaphorical use of the basic meaning is not limited to *sweep*. The verbs *prune*, *wash*, and *wipe* as well as *sweep* all belong to the class of *wipe* verbs, according to the classification of English verbs by Levin (1993: 53). They participate in the formation of the *of* phrase variant:

- (7) a. In the months leading up to the shoot, Louise had spent countless hours trying to prune his English of its heavy Gallic tones and accent. (WB)  
 b. prune an essay of superfluous matters (*Genius*)
- (8) Before you wash your hands of the affair, find out if the lender or adviser is tied or independent—it could make all the difference. (BNC)
- (9) Isabel's head came up like a wary animal scenting the air, but her face was wiped of all expression. (BNC)

Although Levin shows that the *of* variant with the verb *wipe* is ungrammatical as in (10) below, sentences like (9), being metaphorically used, are not rare in the class of *wipe* verbs.

(10) Helen wiped the wall (\*of fingerprints).

Returning to the verb *sweep*, it is interesting to note at this point that Sentence (11) is considered to be at the intermediate stage between (3b) and (6).

(11) The race went on regardless of the crash. The track was not properly swept of debris after a start-line crash. (WB)

The expression *sweep the track of debris* is not a metaphorical use of the verb *sweep*. The event structure to be associated with the second sentence in (11)

could be:

(12) [[x ACT <sub><SWEEP></sub> *y*] CAUSE [BECOME [y <SWEPT>]]]

The surface participant *the track* corresponds to the constant participant *y* and the structure participant *y* in (12). The modifier constant <sub><SWEEP></sub> is necessary because *the track* would be swept with an instrument such as a broom normally implied by the verb *sweep*. The state constant <SWEPT> is also necessary because *debris* must be associated with it. Levin, B. and M. Rappaport Hovav (henceforth, L & RH) (1991: 144) actually cite three examples of the class of *wipe* verbs, stating that “[h] owever, occasionally *wipe* verbs are found taking an *of* phrase directly.” One of them is the following:

(13) ...the palm trees are trimmed of unsightly brown fronds...(S. Grafton, “*A*” is for *Alibi*, Bantam, New York, 1987, p. 8)

This sentence could also be associated with an event structure like (12).

### 3. Previous Analyses and New Data: Missing Subevents and Arguments

RH & L (1998: 110–111, 114) and L & RH (2005: 223) state that the verb *sweep* is a surface-contact verb and thus is associated with two participants: a sweeper and a surface. They assume that the stuff that might be on the surface like *the crumbs* in (1c) and *the leaves* in (1d) and (1f) above is not among the minimum set of participants.<sup>2</sup> Under this assumption, *Terry* and *the floor* in (1b) correspond to the structure participant *x* and the constant participant *y*, respectively, in the basic event structure (3b). The intransitive use of *sweep* in (1a) is “felicitous since there is a prototypical surface associated with a sweeping event: a floor” (RH & L 1998: 115). The acceptability of (1c), (1d), and (1f), in which the direct object is not a surface but a stuff on it, is accounted for by RH & L (1998) via Template Augmentation. These sentences are associated with (14):

(14) [[x ACT <sub><SWEEP></sub> *y*] CAUSE [BECOME [z <PLACE>]]]

The stuff direct objects correspond to the structure participant, *z*, in the added subevent, [BECOME [z <PLACE>]], as required by the Argument Realization Condition (4). RH & L (1998: 120–121) further argue that (15) and (16) are ungrammatical.

(15) \*Phil swept onto the floor / off the table.

(16) \*Phil swept the crumbs.

Sentence (15) is ungrammatical since there is no argument in the syntax realizing the second structure participant, thus violating (4a). Sentence (16) is ungrammatical for a different reason, since it satisfies (4) if we assume that it is associated with the same type of

event structure as (14): *the crumbs* can be associated with the second event structure. It is ungrammatical, because it violates another condition (p. 112):

(17) Subevent Identification Condition

Each subevent in the event structure must be identified by a lexical head (e.g., a V, an A, or a P) in the syntax.

There is no lexical head in the syntax to identify the second subevent in (16): thus it is ungrammatical. As for (1c), (1d), and (1f), the second subevent is identified by the preposition *into* in (1c) and (1f) and *off* in (1d), satisfying the condition (17).<sup>3</sup>

However, Otsuka (2007) points out that there may be some kind of variation in acceptability for a type of sentence like (16). There is an informant who accepts (18).

(18) Terry swept the leaves.

Actually, the Subevent Identification Condition (17) can be easily violated when  $\langle \text{PLACE} \rangle$  in the second subevent in (14) is clear from the context as in (19), where the place from which the ball is swept is obvious in the context of golf.

(19) Conversely, when you sweep the ball, contacting it just as the club is moving upward, very little backspin is applied to the ball. (COBUILD)

As noted earlier, *sweep* belongs to the class of *wipe* verbs. The verb *wipe* itself shows just the same phenomenon in this regard. Although the *that*-clause in Sentence (20) below observes the condition (17), with the preposition *from* identifying the second subevent structure, the sentences in (21) violate it.

(20) A large gust of wind blew a cloud of dust into his face and he put his back into the wind so that he could wipe the rest of the tears from his cheeks. (BNC)

(21) a. He shifted uncomfortably on the chair and wiped a bead of sweat that ran down the side of his face. (BNC)

b. Isaacs wiped the sweat with his sleeve and then sorted carefully through the pebbles. (WB)

(21a) and (21b) suggest that “he wiped a bead of sweat from the side of his face,” and that “Isaacs wiped the sweat (probably) from his forehead,” respectively. (Note that the expression *the side of his face* in (21a) is an argument within the relative clause, not an argument to be associated with *wipe*, and that the expression *with his sleeve* in (21b) is an instrument, and so does not correspond to  $\langle \text{PLACE} \rangle$  in (14).) This context-dependent optionality of (17) can be observed in the following metaphorical use of *wipe* as well:

(22) a. QIW has also said it intends to wipe the other condition requiring acceptance by 75 percent of Composite shareholders. (WB)

b. If she could have wiped his memory as well as her own, she’d have done it without any hesitation, and at whatever cost. (BNC)

It is possible to assume that a phrase such as *from the agreement* or something like that is omitted in (22a), and that *from her mind* is omitted in the *if*-clause in (22b).

We have so far observed some cases where the Subevent Identification Condition is violated. Another condition, the Argument Realization Condition (4) above can also be violated. Observe the following:

(23) He got angry and swept off the table with his arms. (WISDOM)

(24) He wiped off the table with a sponge. (COBUILD)

(25) a. He wiped off the blade and picked up a stack of fresh towels and then went back into the sitting room, where one of the ladies was just pouring cold drinks and dropping ice into the glasses. (WB)

b. Wipe off kitchen counters and glass-front appliances, even “dry-mop” your refrigerator shelves. (WB)

These sentences lack a direct object nominal of the verb *sweep* or *wipe*, violating (4a). For example, consider the event structure (14) (repeated here as (26)) corresponding to the string *swept off the table* in (23).

(26)  $[[x \text{ ACT}_{(\text{SWEEP})} \underline{y}] \text{ CAUSE } [\text{BECOME } [z \langle \text{PLACE} \rangle]]]$

The surface argument *the table* is realized by the object of the preposition *off* in (23), which is, however, not directly relevant to the discussion, since it corresponds to the constant participant,  $\underline{y}$ , which is allowed to be potentially unrealizable. The problem is the fact that the structure participant,  $z$ , is not realized in (23), thus the violation of (4a). If all of the sentences in (23), (24), and (25) are acceptable, we have to assume, at least,<sup>4</sup> that the structure participant is not realized in the syntax because we generally know what can be on the surface of a table, a kitchen counter, a glass-front appliance, and the blade of a knife. This means that the structure argument as well as the constant argument can be unrealizable depending on the context, which in turn means that it is not possible to make a clear distinction between the two types of argument in question in terms of realizability in the syntax.

#### 4. Conclusion

RH & L (1998: 105 and fn. 5) state that verb meaning is built up incrementally, and assume that it is built up “in a monotonic fashion, in a way which precludes the elimination of any basic element of meaning.” Moreover, they also state that “[t] here are some types of meaning change that are not monotonic.” An example

is semantic bleaching, which “to our knowledge never involves removal of grammatically-relevant aspects of verb meaning.” However, as shown in section 2, the metaphorical extension of the verb *sweep* involves semantic bleaching which causes the grammatically-relevant manner constant ⟨SWEEP⟩ to be removed. Note that it exists in the basic event structure (3b) but disappears in (6). Metaphorical usage can involve a non-monotonic expansion of verb meaning.

In section 3 we observed that the Subevent Identification Condition and the Argument Realization Condition are both sensitive to the context: they can be violated depending on the context. The remaining problem is why the same type of expression is judged as ungrammatical in some cases (e.g., (15) and (16)) but is actually found in the corpora (e.g., (19), (21), (24), and (25)). What I tentatively suggest at present is that expressions which bring the context easily to our mind are accepted. Therefore there can be some cases which are acceptable to some people but unacceptable to others.

## Notes

1. A list of dictionaries and sources of examples is shown at the end of the paper.
2. Otsuka (2007) argues that this assumption is problematic.
3. RH & L gives a detailed account to the ungrammaticality of (16), but I do not repeat their argument, since it is irrelevant to the following discussion.
4. I argued in Otsuka (2007) mainly based on Sentences (18), (23), and the meaning of the verb *sweep* that a stuff-on-the-surface nominal can optionally occupy the argument position of the con-

stant participant  $\underline{y}$  in the activity event structure of *sweep* (3b), repeated here as (i), for some people.

(i) [x ACT <sub>⟨SWEEP⟩</sub>  $\underline{y}$ ]

However, I remain “conservative” in the present paper, because my former argument needs eventually an assumption which is virtually the same suggested in this section.

## References

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## Dictionaries and Sources of Examples

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