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Multiple Conceptual Structures of a Single Verb: the Case of *Strike*

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0. Introduction

Quite often, a single verb participates in a number of constructions. An adequate analysis ought to capture the relationships between them explicitly, because they constitute an important part of lexical knowledge, especially in view of language acquisition.

This article addresses this problem within the framework of Conceptual Semantics advocated by Jackendoff (1983, 87). Our focal example is the verb *strike*. We will consider the following sentences.

(1) a. He struck the fence.
    b. He struck a stick against the fence.
    c. A bullet struck the fence.
(2) a. The words strike me.
    b. An idea struck me.
    c. Tom strikes me as being honest.

After a brief overview of Conceptual Semantics in Section 1, we will posit conceptual structures for the sentences in (1) in Section 2 and examine their relationships in Section 3. Section 4 deals with those in (2). It will be shown that these *strike*'s are related to each other by general processes, although at first glance this might be hard to recognize.

1. Conceptual Semantics

Within the framework of Conceptual Semantics advocated by Jackendoff (1983, 87b), a conceptual structure is generated by a set of formation rules, just like a syntactic structure. Let us see how the whole structure is put together

from its parts. The verb *enter* has a lexical entry (3).

(3) [enter
[-N, +V]
--- (NP_j)
[$_{Event}$ GO([$_{Thing}$]$_i$,[$_{Path}$ TO([$_{Place}$ IN
([$_{Thing}$]$_j$)])])]]

The subscripts stipulate correspondence between syntactic and conceptual positions, and *i* is taken by convention to indicate subject position. Semantically, *enter* requires two arguments, the Thing in motion and the Thing that specifies the goal of this motion. The first relates to subject position and is therefore indexed *i*. The second argument is filled in with the reading of the post verbal NP, with which it is coindexed in the subcategorization feature by *j*. So the reading of (4a) is (4b).

(4) a. John entered the room.
b. [$_{Event}$ GO([$_{Thing}$ JOHN] ,[$_{Path}$ TO([$_{Place}$ IN
([$_{Thing}$ ROOM])])])]

However, this is not just a matter of substitution. The reading of syntactic constituent is fused with the semantic markers already present in the constituent. Every conceptual constituent has a semantic marker inside it. For instance, *drink* will have a lexical entry like (5).

(5) [drink
[-N, +V]
--- (NP_j)
[$_{Event}$ CAUSE([$_{Thing}$]$_i$, [$_{Event}$ GO([$_{Thing}$ LIQUID]$_j$,
[$_{Path}$ TO([$_{Place}$ IN([$_{Thing}$ MOUTH OF
([$_{Thing}$]$_i$)])])])])]

The first argument of GO is $[_{Thing}$ LIQUID$]_3$, which syntactically corresponds to direct object. In *Harry drank the wine*, the reading of *wine* satisfies all the markers and is fused into this constituent. In *Harry drank it*, the result of the fusion is the reading 'contextually specific liquid'. In *Harry drank the powder*, however, fusion cannot apply because *powder*, with the marker SOLID, clashes with LIQUID. In *Harry drank sincerity*, the category feature Property of *sincerity* clashes with the feature Thing. These are just the effects of a selectional restriction.

What if syntactic and conceptual positions do not correspond to each other? Even such cases can be handled as a natural extension of the above mechanism. If a constituent is unindexed, its features appear as the content of an "implicit argument." For example, *butter* will have a lexical entry (6).

(6)
$$\left[\begin{array}{l} \text{butter} \\ [-N,\ +V] \\ \text{--- } NP_3 \\ [_{Event}\ CAUSE([_{Thing}\ ]_1,[_{Event}\ GO([_{Thing}\ BUTTER], \\ \qquad [_{Path}\ TO([_{Place}\ ON([_{Thing}\ ]_3)])])])] \end{array}\right]$$

The first argument of GO bears no index and thus is not to be connected to a subcategorized position. As a result, this argument is totally filled in with information from the verb and understood as 'nonspecific butter'.

2. Three *strike*'s

Let us start with the *strike*'s in (1), repeated here as (7). For convenience' sake, we will henceforth refer to them as (A), (B), and (C).

(7) a. He struck the fence. (A)
b. He struck a stick against the fence. (B)
c. A bullet struck the fence. (C)

First consider *strike* (C). It basically means that an object comes into contact with a place. So it can be analyzed as a GO-verb. Hence the following conceptual structure results.

(8) A bullet struck the fence. (C)
[GO([BULLET],[TO FENCE])]

Significantly, the subject must denote something that comes suddenly and forcefully of its own force. In (8), *a bullet* meets this requirement. Even when an object that is not so readily interpreted as such stands as subject, this reading is forced. Thus, (9) means that a stick flew to the fence forcefully.

(9) A stick struck the fence.

Note that this is just the effect of a selectional restriction. In order to accommodate this information, we resort to the semantic marker IMPACT. Consequently, the lexical entry will be (10).

(10) $\left[\begin{array}{l}\text{strike (C)} \\ \text{[-N,+V]} \\ \text{---NP}_j \\ [_{\text{Event}}\ \text{GO}([_{\text{Thing}}\text{IMPACT}]_i,[_{\text{Path}}\ \text{TO}([_{\text{Thing}}\ ]_j)])]\end{array}\right]$

IMPACT is in the first argument slot of GO, which corresponds to subject position.

Let us turn to *strike* (B) next. The *against*-PP cannot be omitted without substantial meaning change.

(11) a. He struck a stick against the fence.
b. *He struck a stick.

Besides, this PP falls inside *do-so*.

(12) John struck a stick against the fence, and
Bill did so, too.

From these observations, we assume that this PP is an argument and corresponds to a constituent in the conceptual structure. *Strike* (B) essentially means that an object designated by the direct object comes into contact with a place expressed by the PP, and the subject NP stands for an instigator. So its representation should be (13).[1]

(13) He struck a stick against the fence. (B)
[CAUSE([HE],[GO([STICK],[AGAINST FENCE])])]

We get the following lexical entry based on (13).

(14)
$$\left[\begin{array}{l} \text{strike (B)} \\ \text{[-N, +V]} \\ \text{--- NP}_k \text{ against NP}_j \\ [_{\text{Event}}\ \text{CAUSE}\ ([_{\text{Thing}}\ ]_i, [_{\text{Event}}\ \text{GO}\ ([_{\text{Thing}}\ \text{IMPACT}]_k, \\ \quad [_{\text{Path}}\ \text{AGAINST}([_{\text{Thing}}\ ]_j)])])] \end{array}\right]$$

The direct object denotes something that comes forcefully into contact with a target place. So we write IMPACT in the first argument slot of GO, which is related to the direct object position by the subscript *k*. And the subscript *j* ensures the correspondence between the NP in the *against*-phrase and the reference object position of the path-function.

Next comes *strike* (A). It may take a *with*-phrase, but this PP is instrumental. Omitting this PP does not result in ill-formedness nor does it change substantial meaning.

(15) a. He struck the fence with a stick.
b. He struck the fence.

Moreover, this *with*-phrase appears outside of *do-so*, and can be topicalized.

(16) a. John struck Mary with that hammer,
and Bill did so with another hammer.
b. With that hammer, I believe he struck Mary.
(Oka 1986:141-46)

Oka (1986) analyzes the *with*-phrase of *strike* as adjunct within the framework of GB syntax. For details, see Oka (1986).

So we assume that this *with*-phrase does not qualify as an argument. Only subject and direct object NPs count as arguments. Here we seem to have difficulty detecting the thematic relation. Unlike other *strike*'s, none of the argument NPs of *strike* (A) is asserted to move; Neither subject nor direct object NP can be construed as undergoing motion as in other cases. As a result, the thematic analysis appears to fail.

We can overcome this apparent difficulty by recourse to lexical decomposition. Notice that *strike* (A) can be paraphrased as "to give an impact to." On this basis, we get the following representation.

(17) He struck the fence. (A)
[CAUSE([HE],[GO([IMPACT],[TO FENCE])])]

Three argument slots are available in conceptual structure, although only two of them realize syntactically. Therefore, its lexical entry will be (18).

(18) ⌈strike (A) ⌉

$$\left[\begin{array}{l}[\text{-N, +V}] \\ \text{--- NP}_j \\ [_{\text{Event}}\ \text{CAUSE}\ ([_{\text{Thing}}\ ]_i, [_{\text{Event}}\ \text{GO}\ ([_{\text{Thing}}\ \text{IMPACT}], \\ \quad [_{\text{Path}}\ \text{TO}\ ([_{\text{Thing}}\ ]_j)])])]\end{array}\right]$$

Unlike other *strike*'s, the syntactic-conceptual mapping is not a one-to-one correspondence in this case. Because IMPACT is an incorporated argument, the first argument slot of GO is unindexed. The direct object is related to the argument of TO by the subscript *j*.

This incorporation analysis gets support from the following facts. Let us consider a typical incorporation case. The verb *paint* incorporates *paint*. Green (1974) observes that (19) as it stands is bad because it is redundant. But when the *with*-phrase succeeds in adding nonredundant information, it can occur without any oddity as in (20).

(19) She painted the woodwork with paint.

(20) She painted the woodwork with { red paint. / paint I sold her. }

(Green 1974:222)

The *with*-phrase that thus realizes the incorporated material behaves in the following manner. First, it appears outside of *do-so*.

(21) John painted the wall with black paint, and Mary did so with red paint.

Next, extraction out of this PP is not allowed. But the whole PP can be topicalized.

(22) a. *Red paint, I believe John painted the wall with.
b. With red paint, I believe John painted the wall.

Parallel phenomena are observable for *strike* (A). The *with*-phrase in the following sentences can be regarded as a realization of IMPACT.

(23) I struck John with a heavy blow.
(24)?*I struck John with a blow.

And this *with*-phrase behaves the following way. It appears outside of *do-so*.

(25) John struck the fence with a hard blow, and I did so with a soft blow.

Extraction is not possible, while pied-piping is possible.

(26) a. *A heavy blow, I believe he struck the fence with.
b. With a heavy blow, I believe he struck the fence.

These syntactic phenomena argue in favor of our analysis.

3. Relations between *strike*'s

Let us examine the relationships between the three *strike*'s in terms of the lexical entries we have just established.

(27)
$$\begin{bmatrix} \text{strike (A)} \\ [\text{-N, +V}] \\ \text{--- NP}_j \\ [_{\text{Event}}\ \text{CAUSE}\ ([_{\text{Thing}}\ ]_i, [_{\text{Event}}\ \text{GO}\ ([_{\text{Thing}}\ \text{IMPACT}], \\ \quad [_{\text{Path}}\ \text{TO}\ ([_{\text{Thing}}\ ]_j)])])] \end{bmatrix}$$

(28)
$$\begin{bmatrix} \text{strike (B)} \\ [\text{-N, +V}] \end{bmatrix}$$

$$
\left[\begin{array}{l}
\text{--- } NP_k \text{ against } NP_j \\
[_{\text{Event}}\ \text{CAUSE}\ ([_{\text{Thing}}\ ]_i, [_{\text{Event}}\ \text{GO}\ ([_{\text{Thing}}\ \text{IMPACT}]_k, \\
\quad [_{\text{Path}}\ \text{AGAINST}\ ([_{\text{Thing}}\ ]_j)])])]
\end{array}\right]
$$

(29)

$$
\left\{\begin{array}{l}
\text{strike (C)} \\
[\text{-N, +V}] \\
\text{--- } NP_j \\
[_{\text{Event}}\ \text{GO}\ ([_{\text{Thing}}\ \text{IMPACT}]_i, [_{\text{Path}}\ \text{TO}\ ([_{\text{Thing}}\ ]_j)])]
\end{array}\right\}
$$

These lexical entries reveal both similarities and differences between the three *strike*'s explicitly, showing that they are related to each other in a systematic way.

First compare *strike*'s (A) and (B). They have almost the same conceptual structure; They both have a CAUSE, and the first argument slot of the embedded GO has IMPACT inside it. Their difference lies in the indexing of the arguments inside the embedded GO, reflecting the different syntactic correspondences in the two cases. Particularly noteworthy is the difference in the choice of direct object. Two options are available because there are two arguments, i.e. the first argument of GO and the reference object of the path-function. Of these two, *strike* (A) chooses to relate the reference object of the path to direct object. The alternative is to realize the first argument of GO as direct object, which is just the mapping of *strike* (B). The two *strike*'s alternate complements in this regard.

Notice that it is quite common for a single verb to have such alternating complements that express essentially the same thematic relation. A well-known class of verbs called *spray/load* type are a case in point. For instance, *spray* enters into this alternation (*spray paint on the wall/ spray the wall with paint*). The relation between *strike*'s (A) and (B) is just parallel to this alternation. Whatever the precise nature may be, the same mechanism is at work in both cases.

Let us turn to *strike* (C). It is systematically related

to the other *strike*'s. Note that the conceptual structures are essentially the following:

(30) a. [CAUSE([],[$_{Event}$ GO([IMPACT],[])])]: A,B
b. [$_{Event}$ GO([IMPACT],[])] : C

In terms of semantic function, *strike* (C) has a GO and other *strike*'s consist of a CAUSE with a GO as its second argument. Furthermore, the shared part is essentially the same. With respect to the EVENT/STATE distinction, it is eventive. What's more, the semantic marker IMPACT is present in the first argument slot of GO. So *strike* (C) is embedded as complement of the CAUSE of other *strike*'s in conceptual structure.

Here again, this relationship is not unique to *strike*. The contrast in (30) reminds us of a causative-ergative pair. A class of verbs called ergatives exhibit both the monadic (intransitive) and dyadic (transitive) uses. *Sink* is a good example (*The boat sank/ John sank the boat*). The transitive can be analyzed as a causative of the intransitive. That is, the intransitive use is embedded as complement of the transitive in conceptual structure.

Compare this relationship with that between *strike* (C) and other *strike*'s. Indeed, the number of arguments is not the same; Ergative verbs exhibit monadic and dyadic uses, while *strike* has dyadic and triadic uses. Despite this valency difference, however, the parallelism is obvious. In both cases, a single verb has multiple uses, one of which is a causative of the other in conceptual structure.

Turning our eyes to morphology, we find that the parallelism goes on still further. The causative-ergative pair brings about no morphological change (*crack/crack, open/open, tighten/tighten, drop/drop*, etc. See Hale & Keyser (1986)). And, of course, the three *strike*'s are all of the same morphology.

In fact, it is quite common for a verb to have multiple uses which are related in this way. Probably a general process (either causativizing or decausativizing) is operative in the lexicon, which serves to relate the multiple uses of a single verb. Transitivity alternations (ergative, middle) are particular instances making use of this process. This seems to be the case cross-linguistically, not limited to a particular language.

It isn't unreasonable to assume that a verb is constrained in some way in developing multiple uses and cannot create new frames randomly. Quite probably, the available processes are only finite. Both complement alternation and causative-pair are among the general processes available in the English lexicon, although the precise mechanisms are not clearly understood at present and await future research. *Strike* utilizes these two processes in acquiring the three frames.

Now the relationships between the three *strike*'s can be diagrammatically represented as in Fig. 1.

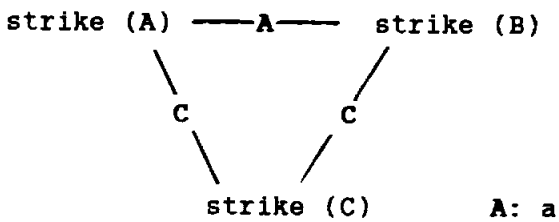


Fig. 1

4. Psychological *strike*

Let us move on to the following *strike*'s. We will refer to them as (D), (E), and (F).

(31) a. The words strike me. (D)

b. An idea struck me. (E)

c. Tom strikes me as being honest. (F)

These *strike*'s are different from (A)-(C) as to the mode of sense. *Strike* (A), (B), and (C) are purely in spatial sense, whereas (D), (E), and (F) have to do with psychological sense. Of these, (D) and (E) take a sole complement, entirely parallel to (A) and (C). So we can regard (D) and (E) as metaphorical extensions of (A) and (C) (Here, metaphor does not mean a poetic or rhetorical device, nor is it just a matter of language. We will henceforth use 'metaphor' rather in the sense of Lakoff and Johnson (1980), who claim that metaphorical concepts are part of the ordinary, everyday way we think and act as well as talk).

(32) a. He struck the fence. (A)
b. A bullet struck the fence. (C)

The key to understanding the metaphorical mapping lies in the direct object. Notice that human NPs occupy the direct object position with (D) and (E), in contrast to place NPs in (32). This suggests that the metaphorical mapping is effected by the conceptualization of a human mind as an abstract place.

Let us see them in turn. First consider *strike* (A). Because of the conceptualization of a human mind as a place, the meaning shifts from "to give a (physical) impact to a place" to "to give a mental impact to a human mind." And this is just what *strike* (D) means. So it is represented as in the following.

(33) The words strike me. (D)
[CAUSE([WORD],[GO([MENTAL IMPACT],
[TO([MY MIND])])])]

It follows then that (E) should be an extension of (C), which turns out to be the case. (C) is a GO-verb and means

essentially that an object suddenly comes to a place. When we construe a human mind as a place, the meaning amounts to "to suddenly come to the mind of".

(34) An idea struck me. (E)
[GO([IDEA],[TO([MY MIND])])]

We are left with (F). Seeing that a human NP must stand as direct object, this *strike* is expected to be analyzed along the same lines.

(35) Tom strikes me as being honest. (F)

Compare this with *strike* (D). Syntactically, both take a human NP as direct object. The minimal difference is the presence of *as*-PP. Semantically, they can be paraphrased as "to give a mental impact to one's mind," and "to give a particular impression to one's mind," respectively. This suggests the possibility of analyzing (F) in terms of the same function. Notice further that the *as*-PP expresses the content of the impression. So the following representation results.

(36) Tom strikes me as being honest.
[CAUSE([TOM$_i$],[GO([i HONEST],[TO MY MIND])])]

Both *strike* (D) and (F) express the transmission of a mental object to a human mind. It is a mental impact with the former, and a particular impression with the latter. The mental object appears in the first argument slot of GO, which is an incorporated argument with the former and is realized by the *as*-PP with the latter.

The extension to psychological sense is so systematic and established that the above three can be collectively called 'psychological *strike*.'[2] This class of verbs all have

to take a mental object and a human mind as arguments, but it may be possible to avoid reference to such constraints in each lexical entry by specifying them as characteristics of the class as a whole. Hence, they will have the following lexical entries.

(37) [strike (D)
[-N,+V]
---NP$_j$
[$_{\text{state}}$ CAUSE([ ]$_i$,[$_{\text{event}}$ GO([IMPACT],
[$_{\text{path}}$ TO([ ]$_j$)])])]]

(38) [strike (E)
[-N,+V]
---NP$_j$
[$_{\text{event}}$ GO([IMPACT]$_i$,[$_{\text{path}}$ TO([ ]$_j$)])]]

(39) [strike (F)
[-N,+V]
---NP$_j$ as XP$_k$
[$_{\text{state}}$ CAUSE([ ]$_i$,[$_{\text{event}}$ GO([IMPACT]$_k$,
[$_{\text{path}}$ TO([ ]$_j$)])])]]

(D) and (F) differ as to the syntactic correspondence of the first argument of GO, so that the subscripts are different. It is unindexed with (D), and is related to an *as*-PP by *k* with (F).

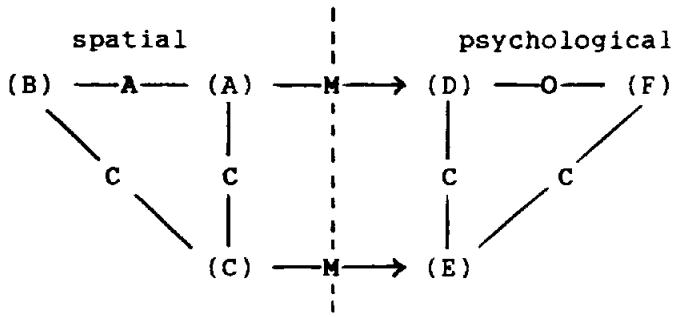
Let us examine the relationships between (D), (E), and (F) in terms of the above lexical entries. First compare (E) with (D) and (F). Just parallel to spatial *strike*'s, (E) is embedded as complement of the other two. Furthermore, the shared part is eventive, and IMPACT is present.[3]

(40) a. [CAUSE([ ],[$_{\text{event}}$ GO([IMPACT],[])])] : D, F
b. [$_{\text{event}}$ GO([IMPACT],[])] : E

As for (D) and (F), they are essentially the same except for

the indexing of the first argument of GO. While (D) incorporates IMPACT, (F) realizes it in the *as*-PP. It may be possible to suppose that its syntactic correspondence is 'optional'.

We can now diagrammatically represent the relationships of six *strike*'s as in Fig. 2.



A: alternating complements
O: optional mapping
C: causative-pair
M: metaphorical extension

Fig.2

5. Japanese

In this section, we will consider the Japanese counterparts for the *strike*'s. Let us start with spatial uses. There are several verbs of physical impact in Japanese which are often used in translating *strike*: *utsu(butsu), tataku, naguru, ateru, butsukeru*. They appear in the following frames.[4]

(41) Taro-wo (sutekki-de) { utsu (butsu) / tataku / naguru / *ateru / *butsukeru }
acc stick with

'strike Taro (with a stick)'

(42) Sutekki-wo Taro-ni { *utsu (*butsu) / *tataku / *naguru / ateru / butsukeru }
stick acc. loc.

'strike a stick against Taro'

The grammatical relations are marked by particles or postpositions in Japanese. (41) and (42) correspond to the frames for (A) and (B), respectively. In (41), the direct object expresses a target place, and an instrumental phrase optionally appears; On the other hand, the direct object designates a moving object, and the oblique expresses the target place in (42). Similarly, (43) is a translation of (C).

(43) bohru ga kabe ni { ataru / butsukaru }
ball nom. wall loc.

'A ball struck the wall.'

The correspondences are summarized as in (44).

(44) (A): utsu(butsu), tataku, naguru,
(B): ateru, butsukeru
(C): ataru, butsukaru

Different verbs appear in the three frames. And verbs in the (B) frame are morphologically related to those in the (C) frame. In fact, the vowel change *e/a* is a marker of causative pair, thereby morphologically expressing the semantic relationship. But verbs in the (A) frame do not have such a morphologically related variant. Instead, they can be all paraphrased by 'shougeki wo ataeru,' literally 'to give an impact'. So these verbs are to be analyzed as incorporating IMPACT in conceptual structure.

Let us turn to the psychological uses next. The following expressions are the Japanese translations of (D), (E), and (F).

(45) a. Taro-no - kokoro wo utsu
gen. mind acc.
'strike Taro's mind'
b. kokoro ni seishinteki-shougeki wo ataeru
mind loc. mental impact acc. give
'give a mental impact to one's mind'

(46) kangae ga kokoro ni ukabu
idea nom. mind loc. float
'An idea floats on my mind.'

(47) Taro wa shojiki-da-to-iu-insho wo ataeru
nom. honest be comp. impression acc. give
'Taro gives me an impression of being honest.'

(45a) is the most straightforward translation of (D), consisting of *utsu* 'strike' along with *kokoro* 'mind'. Remarkably, *utsu* is a verb of physical impact and the very verb corresponding to (A). Unlike *strike*, however, *utsu* requires the presence of *kokoro* 'mind' in order to express a psychological meaning. It is also possible to convey the same meaning periphrastically as in (45b). In this case, either *kokoro* or *seishinteki* (mental) is necessary, and the whole expression directly reflects the representation in conceptual structure. As for (E), Japanese makes use of a different verb *ukabu* 'float', as seen in (46). And there is no single Japanese verb that perfectly corresponds to (F). In order to convery the intended meaning, we must resort to a periphrastic expression with *insho* 'impression' being a necessary part.[5]

(48) (D): kokoro wo utsu,
kokoro ni seishinteki shougeki wo ataeru
(F): kokoro ni ukabu
(G): insho wo ataeru

In sum, there are differences in expressing the various senses between the two languages. The representations in conceptual structure surface more straightforwardly in Japanese than in English. Because English uses one word *strike*, it is not immediately obvious that the various uses ought to be distinguished from each other. On the other hand, Japanese tends to overtly express the representations in conceptual structure. The various senses are expressed by different verbs. Moreover, supplementary phrases such as *kokoro* serve to clarify the mode of sense with the metaphorically extended uses. The behavior of the Japanese counterparts gives substance to our analysis of *strike*.

6. Application

So far we have dealt with the relationships between the six *strike*'s. The study of the systematic relationships among the meanings of a lexical item is of theoretical significance, because it constitutes a firm basis of an adequate linguistic theory. Let us see what insight our analysis offers by examining the analysis of psychological *strike*.

Because of its behavioral peculiarities, *strike* (F) has drawn attention of a number of grammarians. But almost all of the studies focus on *strike* (F) alone independent of other *strike*'s. As a result, an important generalization has been missed and this sometimes leads to a wrong analysis. Jackendoff (1972) analyzes *strike* (F) in terms of thematic relations in the following manner.

(49) Bill strikes Harry as pompous.

(theme) (goal) (location)

The *as*-phrase consists of an adjective *pompous*, which is predicated of the subject *Bill*. Since adjectives can be generally regarded as abstract locations, the *as*-phrase expresses Location. And the predicative relation between the subject and the *as*-phrase ensures that the subject expresses Theme. The direct object is Goal, because *to* appears in the alternative form.

(50) Bill is striking to Harry.

He further argues that this analysis gets independent support from the possibility of passivization.

(51) *Harry is struck by Bill as pompous.

The ill-formedness results from the violation of Thematic Hierarchy Condition.

(52) The Thematic Hierarchy
1. Agent
2. Location, Source, Goal
3. Theme

(53) Thematic Hierarchy Condition (THC)
The passive *by*-phrase must be higher on the Thematic Hierarchy than the derived subject.

In (51) *Bill* is Theme and is therefore lower than *Harry*, Goal, in violation of THC, so he claims.

However, this analysis has a serious flaw. In the above analysis, Jackendoff is assuming that the thematic relations are identical between the verbal *strike --- as* and the adjectival *is striking to*. It follows then that the verbal form corresponding to *is striking to* should also share the

same thematic relations. This reasoning leads to predict that (54b) should be barred by THC, just like the *strike---as*. However, this prediction is not borne out.

(54) a. The idea struck me.
b. I was struck by the idea.

Let us consider this problem in terms of the conceptual structures for (D) and (F). As Jackendoff (1987b) explicitly claims, thematic relations are relational notions defined structurally over conceptual structure; Theme is the first argument of GO, BE, Source is the argument of FROM, Goal is the argument of TO, etc. Because (D) and (F) have the same function in conceptual structure, their thematic relations are identical. So the thematic relations are not responsible for the ill-formedness of (51).

What distinguishes between them with respect to passivization, then? An entirely different factor resides here, i.e. (55).

(55) Visser's generalization
Verbs whose complements are predicated of their subjects do not passivize.
(Visser 1963-73 part III. 2:2118)

(F) cannot be passivized because the *as*-PP is a subject -control complement, just parallel to *promise*. Thus, when the subject-control complement is present, passivization is not allowed.

(56) a. He strikes his friends as pompous.
b. Mary promised Frank to leave.
(57) a. *His friends are struck (by him) as pompous.
b. *Frank was promised to leave.
(Bresnan 1982: 354)

On the other hand, passivization is possible in the absence of a subject-control complement.

(58) a. John was struck by Bill's pomposity.
b. John was promised.
c. John was promised the book.
(Williams 1980: 211)

In this case, passivizability depends upon the presence /absence of the subject-control complement, not thematic relations.

7. Conclusions

We have analyzed the various *strike*'s within the framework of Conceptual Semantics, thereby showing that they are related to each other by general processes: incorporation, alternating complements, causative-pair, and metaphorical extension. Although these are not so easily discernible in the six *strike*'s, they are more overtly reflected in the Japanese counterparts.

Notes

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[1] Although the path-function is AGAINST here, it may well be TO. At present, however, I am not certain what function is most appropriate.

[2] In fact, it is quite common for a verb of physical impact to have psychological uses as well.

French -*frapper*-

(i) a. John me frappe par sa suffisance.
'John strikes me as pompous.'
b. Il m'a frappé.
'He struck me.' (Ruwet (1972: 224))

Italian *-colpire-*

(ii) a. Gianni mi ha colpito con un bastone.
'Gianni struck me with a stick.'
b. Gianni mi ha colpito per la sua prontezza.
'Gianni struck me for his quickness.'
(Belletti and Rizzi (1986: 9))

We are here dealing with a case where the semantics of motion and location provide the key to a new semantic field. This is just what the Thematic Relations Hypothesis tries to capture.

Thematic Relations Hypothesis (TRH)
In any semantic field of [EVENTS] and [STATES], the principal event-, state-, path-, and place-functions are a subset of those used for the analysis of spatial location and motion. Fields differ in only three possible ways:
a. what sorts of entities may appear as theme;
b. what sorts of entities may appear as reference objects;
c. what kind of relation assumes the role played by location in the field of spatial expressions.
(Jackendoff (1983: 188))

It is therefore possible to define the psychological field as follows, according to criteria (a-c) of the Thematic Relations Hypothesis.

Psychological field:
a. [CONCEPTS] appear as theme.
b. [THINGS] appear as reference objects.

c. The person who has the concept in mind plays the role of location.

[5] IMPACT seems to be carried over to psychological *strike*'s. In both (E) and (F), an idea or an impression comes to the mind suddenly and has a strong effect.

[6] There are subtle meaning differences among these verbs. The direct object is construed as a movable object by *utsu*, a stable place by *tataku*. Both *butsu* (a variant of *utsu*) and *naguru* are used to express causing damage to animate beings.(cf. Kunihiro (1970)) Thus, *naguru* and *butsu* cannot occur in the following environment.

(i) kabe wo (sutekki de) { utsu / tataku / *naguru / *butsu }
wall acc. stick with

'strike a wall with a stick'

[7] *Insho* consists of two chinese characters *in* "mark" and *sho* "image". This is interesting in view of the fact that in English *impress*, which conveys the similar meaning, originally meant "to imprint".

References

Belletti, Adriana, and Luigi Rizzi. 1986. "Psych-Verbs and Th-Theory." Lexicon Project Working Papers 13, Center for Cognitive Science. Cambridge, MA: MIT.

Bresnan, Joan. 1982. "Control and Complementation." in Bresnan (ed.) *The Mental Representation of Grammatical Relations*. Cambridge, MA: MIT Press.

Fillmore, Charles. 1970. "The Grammar of Hitting and Breaking." in R.A. Jacobs and P.S. Rosenbaum,eds., *Readings in English Transformational Grammar*. Waltham, Mass. :Ginn, 120-34.

---------. 1977. "Topics in Lexical Semantics." in R.W.Cole, ed., *Current Issues in Linguistic Theory*. Bloomington, London: Indiana University Press, 76-138.

Green, Georgia. 1974. *Semantics and syntactic regularity*. Bloomington: Indiana University Press.

Gruber, Jeffrey. 1976. *Lexical structures in syntax and semantics*. Amsterdam: North-Holland.

Grunau, Justin. 1985. "Towards a systematic theory of the semantic role inventory." *CLS*21. 144-59.

Hale, Ken, and Jay Keyser. 1986a. "Some Transitivity Alternations in English." Lexicon Project Working Papers 7, Center for Cognitive Science. Cambridge, MA: MIT.

---------. 1986b. "A View from the Middle." Lexicon Project Working Papers 10, Center for Cognitive Science. Cambridge, MA: MIT.

Iwata, Seiji. 1988. "Cross-field generalization: conceptual structures for *strike* and *impress*." *English Linguistics* 5.

Jackendoff, Ray. 1972. *Semantic Interpretation in Generative Grammar*. Cambridge, MA: MIT Press.

---------. 1983. *Semantics and Cognition*. Cambridge, MA: MIT Press.

---------. 1987a. "The Status of Thematic Relations in Linguistic Theory." *LI* 18. 369-411.

---------. 1987b. "Adjuncts." draft.

Konishi, Tomoshichi. (ed.) 1980. *Eigo kihon doushi jiten*. Tokyo: Taishukan.

Kunihiro, Tetsuya. 1970. *Imi no shosou*. Tokyo: Sanseido.

Lakoff, George and Mark Johnson. 1980. *Metaphors We Live By*. Chicago: The University of Chicago Press.

Norvig, Peter, and George, Lakoff. 1987. "Taking: A Study in Lexical Network Theory." *BLS* 13. 195-206.

Oka, Toshifusa. 1986. "Inherent Case." *Tsukuba English Studies* 5.123-66.

Ruwet, Nicolas. 1972. *Théorie syntaxique et syntax du*

français. Paris: Seuil.
Williams, Edwin. 1980. "Predication." *LI* 11:1. 203-38.

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