On Lexical Subordination

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1 . Lexical Subordination

1 . 1 . Analysis by Levin and Rapoport (1988)

In their attempt to account for various constructions under a single process, Levin and Rapoport （1988 ; henceforth L&R） propose what they call 'lexical subordination,' which they claim enables verbs to have an extended meaning. They argue that the following construction types, all of which involve extended meanings of verbs, can be explained as a result of the process of lexical subordination.

（1） Resultative construction
　　Denise hammered the metal flat.
　　Claudia laughed herself silly.

（2） Verb-particle construction
　　Sylvia filed the serial number off.
　　The company processed the vitamins out/in.

（3） Verb-preposition construction
　　Sylvia filed the serial number off the terminal.
　　The company processed the vitamins out of/into the food.

(4) Gesture-expression construction

Pauline smiled her thanks.

Sheila snorted her disgust.

(5) "One's way" construction

Jack moaned his way out the door.

Phil explained his way past the guard.

(6) "A hole" constrution

Matilda poked a hole in the rice paper screen　(with her cane) .

Stephanie burned a hole in her coat　(with a cigarette) .

(L&R : 275-278)

According to their definition, lexical subordination 'takes a verb in its original, or basic, sense and subordinates it under a lexical predicate' (282). This is schematized as (7) :

(7) LCS : manner/instr → LCS : [result BY manner/instr]

(BY is used to represent 'by means of' or 'in the manner of')

(ibid . : 282)

In(7) the original LCS　(lexical conceptual structure) on the left hand of the arrow is demoted to be the subordinate clause in the new LCS on the right and a new component *result* is added to be the main clause.

Let us look at how lexical subordination works in actual sentences. Example (8)-(10) illustrate the way it works.

(8) a . The company processed the food.

process 1: [x 'process' y]

b . The company processed the vitamins out of the food.

process　2 : [x CAUSE　[y BECOME　(AT)　z]

BY　[x 'process' z]]

(ibid .　: 282)

(9) a . Evelyn wiped the dishes.

wipe　1 : [x 'wipe' y]

b . Evelyn wiped the dishes dry.

wipe　2 : [x CAUSE　[y BECOME　(AT)　z] BY [x 'wipe' y]]

(ibid . : 282)

(10) a . Pauline smiled.

smile　1 : [x DO 'smile']

b . Pauline smiled her thanks.

smile　2 : [x EXPRESS y BY　[x DO 'smile']]

(ibid . : 283)

The constituents in capital letters are semantic primitives. The compo-
nents with single quotation marks are used as 'an abbreviation for the
linguistically-relevant meaning of the verb' (282) and the variables such
as x, y and z are 'the arguments that are projected into the syntax'
(282). The sentences in (8 a), (9 a) and (10a) represent the simple
meaning of each verb. The (b) sentences of (8)-(10) illustrate the new
LCSs, where the original meanings of the verbs are in the subordinate
clause, and the new superordinate clauses. (that is, [x CAUSE　[y
BECOME (AT) z]] in (8 b) and (9 b) and [x EXPRESS y] in (10b))
appear at the same time. L&R argue that such new clauses are the
variants of the *result* clause of the derived LCS in (7). L&R hold that
the predicates in the variants taking the place of the *result* clause do not
consist of a set of arbitrary predicates but of several qualified members
which can be reduced to some kind of change, whether the change is
physical or abstract. The predicates which can substitute for those in
the paraphrases of the *result* clause are shown in (11) : [1]

(11) a. go : The bottle floated into the cave.

b. create : Francis kicked a hole in the fence.

c. remove : The company processed the vitamins out of the food.

d. cause-state : Evelyn wiped the dishes dry.

e. cause-location : Philip waltzed Sally across the room.

f. express : Pauline smiled her thanks.　　　　(ibid . : 283)

Then L&R assume that all these predicates in (11) can be reduced to one of the lexical structures in (12).[2]

(12) a. [x BECOME (AT) y]

b. [x CAUSE [y BECOME (AT) z]]　　　　(ibid . : 284)

On the basis of these assumptions presented so far, L&R conclude that these constructions, where verbs put on their extended meaning, have uniformly undergone lexical subordination.

1 . 2 . Middles and Re-Prefixation as Evidence for Lexical Subordination

L&R suggest that the middle construction and re-prefixation support their claim that lexical subordination causes the derivation of new meanings of verbs, subordinating the original meaning under the derived component *result*. They claim that the resulting constructions after the process of lexical subordination form a 'unified class,' which, according to L&R, is revealed as a uniform behavior with respect to middle formation and re-prefixation. In the next two subsections, let us briefly look at how middle formation and re-prefixation are analyzed in the context of lexical subordination.

1 . 2 . 1 . Middles

It is well-known that not all transitive verbs are equally grammatical in the middle construction. This is illustrated in (13) and (14) :

(13) a . This wood splits easily.

　　 b . This bread cuts easily.

　　 c . Tender meat fries well.　　　　　　　　　(L&R : 284)

(14) a . ＊Small houses paint easily.

　　 b . ＊Whales save easily.

　　 c . ＊This wall hits easily.　　　　　　　　　(ibid . : 284)

L&R argue that what licenses verbs in this construction is the existence of the notion CAUSE in the verb's (basic) LCS. Under their analysis, therefore, the contrast between (13b) and (14c), for example, comes from the difference of the LCSs of the two verbs, which is shown in (15):

(15) a . LCS of cut : [x CAUSE [y develop linear separation in material

　　　　　　　　　integrity...]]

　　 b . LCS of hit : [x come forcefully into contact with y]

　　　　　　　　　　　　　　　　　　(ibid . : 284)

Along with Hale and Keyser (1987) and Rapoport (1988) in favor of their argument, L&R claims 'in order for a verb to enter into a well-formed middle construction, the notion of CAUSE must be present in its LCS' (285). If this is the case, the acceptability of (16b) and (17b) below in spite of their unacceptable counterparts is predictable because

resultative sentences are assumed to undergo lexical subordination, deriving a new LCS which involves the CAUSE notion in the superordinate clause (See (9b), for an instance of the representation of the LCS in the case of the resultative construction).

(16) a. *This kind of meat pounds easily.

    b. This kind of meat pounds thin easily.   (ibid . : 285)

(17) a. *These dishes wipe easily.

    b. These dishes wipe dry easily.   (ibid . : 285)

L&R regard these facts as arguing for the derivation of a complex LCS such as (9 b) from the basic LCS like (9 a) by means of lexical subordination.

1 . 2 . 2 . Re-Prefixation

Another phenomenon which L&R claim supports them is the behavior of the constructions in question with the prefix *re*. Consider the contrast between the sentences (a) and the sentences (b) in (18) - (20) :

(18) a. The company re-processed the food.

    b. *The company re-processed the vitamins out of the food.

(19) a. Evelyn re-wiped the dishes.

    b. *Evelyn re-wiped the dishes dry.

(20) a. Carla re-squeezed the lemon.

    b. *Carla re-squeezed the juice out (of the lemon) .

                            (ibid . : 285)

L&R attribute the unacceptability of (18b), (19b) and (20b) to lexical subordination, claiming that *re-* cannot be added to verbs on the meaning associated with the complex LCS derived from lexical sub – ordination.[3]

2 . Some Problems of Lexical Subordination

In the preceding sections I have outlined the argument by Levin and Rapoport, who attempt to deal with different constructions under a single process of lexical subordination. Before exploring the mechanism of the semantic extension of verbs, it will be useful to re-examine their argument of the middle construction and re-prefixation because they are considered as providing evidence in support of their claim that lexical subordination allows the verbs in the constructions (1)-(6) to have their meaning extended.

2 . 1 . Middles

First, there seems to be apparent arbitrariness in assuming CAUSE in a verb's LCS, which is supposed to allow the middle construction. Though L&R consider 'hit' unacceptable as a middle verb because it does not have CAUSE in its LCS, the contrast between the two verbs in their acceptability as middle verbs leaves room for another possibility. This will be discussed in the next chapter.

Second, L&R's analysis cannot give any satisfactory explanation for the existence of the one-shot usage of middles found in adult's language in (21) and children's spontaneous speech in (22) which are reported in Pinker (1989).

(21) a . Its batteries can store up to ten years. [Advertisement for a

flashlight]

 b. The soup that eats like a meal. [Advertisement]

  It eats like steak but costs like ordinary dry. [Advertisement for dog food]

 c. This game isn't playing very well. [A sloppy basketball match]

                   (Pinker : 155)

(22) a. B : Come and see what Jenny got today. [B pulls on M's hand, M does not move.] Pull. Pull ! Come on !

 b. B : We have two kinds of corn : popcorn, and corn. Popcorn : it crunches. And corn doesn't crunch ; it eats!

 c. B : I think I better put it down there so it won't lose.

 d. B : They don't seem to see. Where are they ? [B and M are looking for B's sandals.]

 e. J : I can't hear it. [Puts clock to ear.] It can hear now. [J hears clock ticking.]

 f. J : They attract by the peanuts in the snow. [Squirrels see peanuts in snow, come to porch for more.]

                   (ibid. : 299)

The only way to account for the acceptability of these sentences with L&R's analysis is to assume the presence of CAUSE in the LCSs of these verbs. However, it is impossible for verbs such as 'eat' in (21b) and 'play' in (21c), for example, to have CAUSE in their LCSs. Then what makes these sentences in (21) and (22) possible ? I shall return to this question in the next chapter.

2. 2. Re- Prefixation

There are some examples which are against L&R's claim that verbs

on an extended meaning do not fit re- prefixation, as   the following examples illustrate :

(23) a. First John painted the house yellow╱red and then he repainted the house red.

b. John rehammered the nail flat. (after he hammered it crooked the first time)   (Keyser & Roeper, 1992 : 98-99)

(24) John redirected some of the cars into a different lot.

(ibid. : 155)

It follows from L&R's analysis that these sentences are also unacceptable, which is not the case. The condition they put on re- prefixation is only an ad hoc stipulation and cannot be considered to be any explanation as to why these sentences are not acceptable.

In the next chapter I will try to solve the problems presented in this section and propose an alternative approach to the middle construction and re- prefixation.

3 . Alternative Analysis of Middles and Re- Prefixation

In the preceding sections, I have shown some examples against L&R's approach. In this section, I am looking for an alternative analysis that deals with these problems.

3 . 1 . Analysis of Middle Construction Based on Pinker (1989)

In dealing with alternations in English, Pinker (1989) proposes what he calls 'broad-range rule' and 'narrow-range rule' for each of the alternations. The former rule defines only a necessary condition for a verb

to alternate and predicts a possible range of verbs to alternate, while the latter is a sufficient condition and therefore membership in one of the narrow-range class means actual alternation of the verbs.[4]

Let us turn to the middle alternation. If we assume a broad-range rule for the middle alternation, we can account for why the sentences such as shown in (21) and (22) actually exist. According to Pinker, the broad-range rule for the middle formation does not need a causing event as an input.[5] As has often been observed, middle construction is a generic, stative predication of the patient (syntactic subject). This is the reason why the sentences in (21) are possible where there is no causation at all.

Pinker observes that the children's ungrammatical spontaneous speech in (22) are 'overextended middles, both on semantic grounds, because they express a stative predication of a patient rather than an event description, and on grammatical grounds, because they contain grammatical devices indicating ease of acting on the patient'(301). It is important to remember here that in order to indicate ease of acting on the patient, most typical is an adverbial phrase like *easily*, but other means are also available for that purpose, as is shown in (25a-d) :

(25) a . Cut, damn you !
   b . Wow, this bread CUTS !
   c . This bread won't cut. (it's frozen)
   d . This bread doesn't cut. (cf. * This bread cuts.)
   e . This bread will cut now. (it's thawed out)
   f .? This bread will cut only with a very sharp knife.

    (Pinker: 300, except (d) from Roberts: 195)

Pinker points out the parallelism between the sentences in (22) and those in (25): (22a) and (25a) are in the imperative, (22b) and (25b) are

in an exclamation, (22c) and (25c) are negated and in the future tense, (22d) and (25d) are both negated, (22e) and (25e), and (22f) and (25f) are 'quasi-generic predications using modal and instrumental items that are also middle-like'(301).

Then what is the narrow-range rule for middle formation?   Pinker claims that it applies only to transitive verbs with specific effects regardless of whether the effects are the result of motion or contact. Consider the following contrast :

(26) a .   This glass smashes easily.
    b . * This glass hits easily.   (Roberts : 215)

If we follow L&R's claim that verbs with the notion CAUSE are quali-fied as middle verbs, we have to say that the notion exists in the LCS of the verb 'smash' but not in that of 'hit.' However, (26) does not rule out another explanation for the contrast: both verbs have 'motion' and 'con-tact,' but only the verb 'smash' specifies an effect, which the verb 'hit' does not say anything about.[6]

We can treat resultative middles under the same line of argument. Consider (16) again, repeated here as (27) :

(27) a . * This kind of meat pounds easily.
    b .   This kind of meat pounds thin easily.

Rather than stiputating the demotion of the basic meaning of the verb and addition of the new component CAUSE as the main clause in the new LCS, it seems more natural to assume that the adjective added serves to compensate for the lack of the feature 'effect' in the verb's meaning, which allows (27b) to be acceptable as middle construction.

3 . 2 . Re- Prefixation

We have already seen that even if verbs have an extended meaning, it is possible for such verbs to be associated with the prefix *re* as shown in (23) and (24). Relevant sentences are repeated in (28) and (29) :

(28) a. *The company re-processed the vitamins out of the food.

　　b. *Evelyn re-wiped the dishes dry.

(29) a. He repainted the wall red.

　　b. John rehammered the nail flat. (after he hammered it crooked
　　　　the first time)

What is responsible for the contrast between (28) and (29)? It may be partly due to pragmatic constraint. That is, it depends on whether the repetition of the action referred to is possible in the light of 'knowledge of the world.' It is quite possible to paint the wall which has been painted once. Similar argument holds true for (29b). However, we naturally think one cannot get vitamins out of the food which has already been 'processed' and removed vitamins out of it. And (28b) will be just meaningless when Evelyn has made the dishes dry by wiping them and then wipes the dry dishes again to cause them to be dry. Thus (29b) would be less acceptable and become as meaningless as (28b) without the context described in the parentheses.

4 . How Do the Semantic Structures Change?

In the preceding two sections it was revealed that the constructions of (1)-(6) do not constitute a unfied class derived as a result of

lexical subordination. I will provide an alternative analysis here.

Let us take the transitive resultative construction (9) as an example, repeated here as (30) :
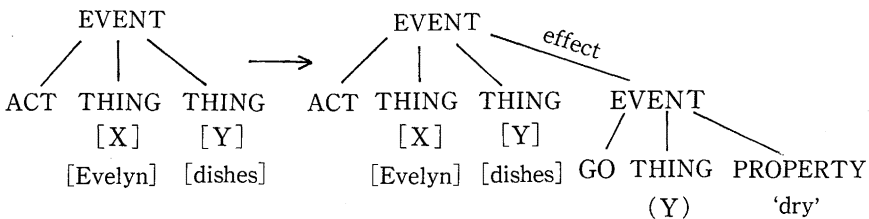
(30) a . Eveyln wiped the dishes.

b . Eveyln wiped the dishes dry.

As we have already seen, the extension in this case is represented by L&R in the following way :[7]

(31) [x 'wipe' y] →

[x CAUSE [y BECOME (AT) z] BY [x 'wipe' y]]

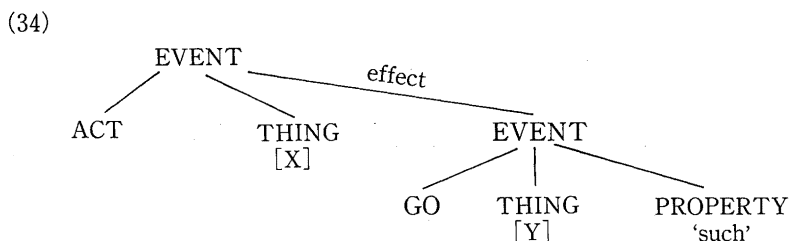Another approach is also possible following Pinker's analysis of semantic represetation.[8]

(32)

This approach differs from the first one in that it has the 'effect' branch appended as the subordinate clause instead of adding CAUSE to the superordinate clause. In such a case as this, however, it appears to make little difference whether we take either approach, but if we consider the case of unergative intransitive resultative, the latter proves to be more appropriate. As support for the second approach, consider (33):

(33) a. Claudia laughed herself silly.
　　 b. Tracy walked his feet sore.
　　 c. Nora worked herself sick.
　　 d. Herman ate the cupboard bare.　　　　(L&R : 276)

L&R argue that these intransitive resultatives are also susceptible to lexical subordination. In the case of (33), however, the actions themselves referred to by each verb do not have a direct effect on the pseudo-objects as long as these verbs are pure intransitives. Rather, the resultative state of affairs in (33) are caused by the 'event' denoted by the subject and the verb. L&R's approach cannot capture this characteristic of these sentences, whereas the representation in (34) can :

(34)

```
        EVENT                effect
       /    \     _____
     /        \              \
   ACT        THING          EVENT
              [X]           /   |   \
                          /     |     \
                        GO    THING   PROPERTY
                              [Y]      'such'
```

This suggests that the second analysis is more appropriate. Although similar approach seems available to the remaining constructions, I leave the matter untouched in this paper.

5 . Conclusion

In chapter 1, I outlined the argument of lexical subordination proposed by Levin and Rapoport who try to account for various con-structions uniformly.　In the second chapter some problems of their analysis were pointed out.　I suggested the possibility that lexical subor-dination is not an appropriate process of extension of a verb's meaning and proposed an alternative analysis to deal with the extension, mainly exemplifying the middle construction and resultative construction.

Notes

* This paper owes much to the thoughtful and helpful comments of Professor Inada and I also thank Dr. Reed for reading the entire paper in its original form.　Neither of them is responsible for the contents (with any surviving errors), however.

1 . L&R claim that the *result* component of a subordinated structure must fit one of the structures in (12) without giving any reason explicitly.　It is not clear how they successfully represent each variable of the *result* clause, [x EXPRESS y], for exam-ple, using the structures of (12).

2 . The primitive BECOME in (12) is supposed to express some change, including change of state, change of location, and creation.

3 . L&R also give double-object construction as another evidence.

(i) a.　June boiled an egg (for me).

　　　b.　June re-boiled an egg (for me).

(ii) a.　June boiled me an egg.

　　　b. ＊June re-boiled me an egg.　　　　　　　　　　(L&R : 287)

They argue that (iib) is unacceptable because it has a benefactive interpretation, which is produced by the presence of a complex LCS, derived by lexical subordina-tion.

4 . The alternations that he focuses on are dative alternation, passive alternation, locative alternation, and (anti)causative alternation.　For instance, he proposes (i)

and (ii) as the broad-range rules for the causative and passive alternation, respectively.

(i)

(Pinker : 223)

(ii)

(ibid. : 239)
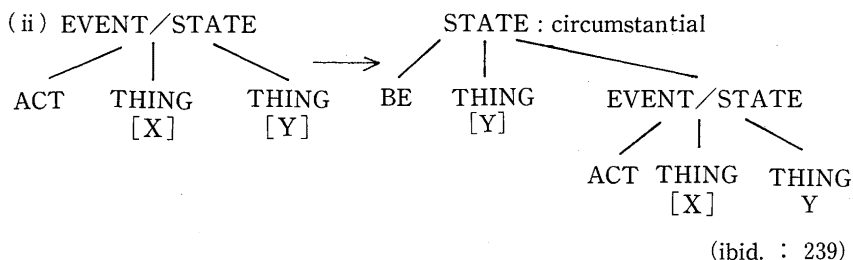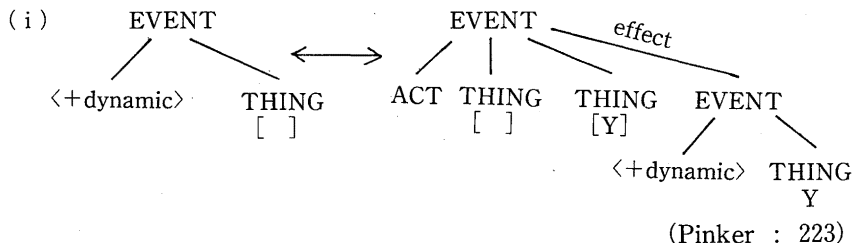
Broad-range rules change the thematic core of lexicosemantic structure. Arguments which occupy the open blankets in a semantic structure are projected via relevant linking rules onto syntactic representation, based on their position in semantic structure.

5. The representation of the broad-range rule for middle must be closely related to (ii) in Note 4, but I am not sure exactly how it looks with his approach.

6. There are some verbs which do not seem to specify an 'effect' but are quite comfortable with middle formation. For example,

This book reads easily/well.

I do not find any solution to this.

7. Jackendoff's (1990) analysis of the resultative construction also involves a process similar to lexical subordination.

8. See Note 4.

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