

Causative-Inchoative Alternation and the Notion of Change of State*

Satomi SATO

1. Introduction

In this paper, we will deal with the causative-inchoative alternation in English and Japanese. In English, most verbs appear in the constructions that take the form in (1a) alternating with the form in (1b), and the morphological form of a verb in a transitive use and that in an intransitive use are the same.

- (1) a. NP₁ VP NP₂
b. NP₂ VP

For example, the same form *break* is used for both the intransitive use and the transitive use as shown in (2).

- (2) John broke the window/ The window broke.

In Japanese, the same verbs also occur either with or without an object NP, though the morphological forms are different between the intransitive use and the transitive use because stems of verbs always require a suffix. For example, the verb *tok-* (*melt*) has the form *tok-asu* in its transitive use, and it has the form *tok-eru* in its intransitive use. In this study, we call this type of alternation the causative-inchoative alternation.

Setting the morphological matter aside, many verbs in both English and Japanese have the transitive form that alternates with the intransitive form. However, some verbs do not show this alternation. What are the factors that allow this alternation? How does the lexical meaning of verbs contribute to determination of their syntactic behavior? According to Levin and Rappaport Hovav (1995), the verbs that license this alternation are causative verbs. However, this is not always the case. The verb *cut* implies that change of state is caused at the entity that is cut: this verb is a causative verb. But this verb does not allow this alternation:

- (3) a. John cut the paper.
b. *The paper cut.

In the following, focusing on causative verbs *cut* and *kir-*, we will consider the factors that license

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this alternation from the lexical semantic point of view. I will claim that causative-inchoative alternation is sensitive to the notion “complete change of state”. Furthermore, I will demonstrate that the verb’s meaning in isolation cannot determine the syntactic frame in which it occurs, and I will claim that an object rather than a subject play a crucial role in participation in this alternation. In addition, I will discuss the interesting phenomenon in which some English verbs and their Japanese counterparts show different behavior with respect to this alternation.

2. Previous analysis: Levin (1993)

Causative verbs are the verbs that denote causation of certain change of state at the denotation of a theme/ patient argument. In both English and Japanese, causative verbs allow the causative-inchoative alternation as illustrated in (4-5):

(4) English

- a. John broke the door.
- b. The door broke.

(5) Japanese

- a. John-wa doa-o kowa-s-ita.
 John-NOM door-ACC break-ACC-PAST
 John broke the door.
- b. doa-ga kowa-re-ta.
 door-NOM break-NOM-PAST
 The door broke.

However, as shown in the contrast between (6) and (7), the verb *cut* does not seem to participate in this alternation in both languages, although this verb is a causative verb; it denotes a change of state:

(6) a. John cut the cake.

- b. John-wa keiki-o ki-tta.
 John-NOM cake-ACC cut-ACC-PAST

(7) a.*The cake cut.

- b.*Keiki-ga kir-e-ta.
 cake-NOM cut-NOM-PAST

Why the verb *cut* does not allow the causative-inchoative alternation although it is a causative verb?

According to Levin (1993), this alternation is sensitive to pure change of state verbs. She claims that the verb *cut* is not a pure change of state verb because *cut*’s meaning involves also notions of

1 Washio and Mitaka (1997) present a similar analysis.

contact and motion. The question now arises: why do the notions of contact and motion prevent this verb from participating in this alternation? Levin's analysis gives no answer for this question.

In other words, Levin (1993) claim that the way an agent is involved in the event denoted by a verb is lexically determined in the verb's lexical meaning, and the possibility of participation in this alternation is attributed to this lexical meaning. Thus, *break*'s lexical meaning does not specify how an agent cause the change of state, while *cut*'s lexical meaning specify the way an agent is involved in the event denoted by the verb; *cutting involves bringing a sharp object into contact with a surface and causing a "separation in its material integrity" in the words of Hale and Keyser (1986)* (Levin 1993; 9)¹. However, this analysis cannot give any explanation to the phenomenon Japanese verb *kir* (*cut*) shows. In the case of Japanese, acceptability of inchoative use varies depending on the patient/ theme argument which the verb selects:

- (8) a. John-wa rope/ito-o ki-tta.
 John-NOM rope/ string-ACC cut-ACC-PAST
John cut the rope/ string.
 b. Rope/ ito-ga kir-e-ta.
 rope/ string-NOM cut-NOM-PAST
*The rope/ string was broken. (*The rope/ string cut.)*
- (9) a. John-wa keiki/ tsume-o ki-tta.
 John-NOM cake/ (his) nail cut-ACC-PAST
John cut the cake/ his nails.
 b. *Keki/ tsume-ga kir-e-ta.
 Cake/ nails-NOM cut-NOM- PAST
**The cake/ his nails cut.*

If we adopt the analysis that an agent plays a critical role in allowance of this alternation and intrinsically determined lexical meaning of verbs determine the possibility of this alternation, we cannot capture the contrast between (8-9). Moreover, if we assume distinct lexical meaning between (8b) and (9b), these verbs would have different meaning although they have the morphologically same form, and there should be detailed specification of arguments the verb can select lexically. This analysis is inadequate in view of language acquisition, because such a lexicon would increase the burden in acquiring a language.

3. Analysis

Following Rappaport Hovav and Levin (n. d.), we adopt lexical event structure templates in (10). These templates are defined by the aspectuality classification proposed in Vendler (1957) and Dowty (1979), and they specify the verb's lexical meaning. I assume that this lexical meaning specified in the templates determines verbs' syntactic behavior to a certain extent.

- (10) a. [x ACT _{<MANNER>} (y)] (activity)

- b. [x <STATE>] (state)
 - c. [BECOME [x <STATE>]] (achievement)
 - d. [x CAUSE [BECOME [y <STATE>]]] (accomplishment)
- (Rappaport Hovav and Levin (n. d.); 5)

Generally, causative verbs, which allow the causative-inchoative alternation, have the template in (10d). This template consists of two subevents: causation of the change of state (i.e., an action performed by an agent) and the occurrence of the resultant state. This compositional property of the template in (10d) makes it possible for pure change of state verbs to participate in the causative-inchoative alternation. Consider the following examples:

- (11) a. John broke the window.
 a' . [x CAUSE [BECOME [y <broken>]]]
- b. The window broke.
 b' . [BECOME [y <broken>]]]

When the upper event in (10d) (*x CAUSE*) does not occur for some reason, the verb has the achievement template (10c) and becomes inchoative.

Now, let us consider the lexical event representation of the English verb *cut*. As suggested in Levin (1993), *cut*'s meaning involves the notions of contact and motion (i.e., the meaning of activity verbs) besides the notion of change of state. On the basis of this fact, I postulate the lexical event template in (12) for the English verb *cut*:

- (12) [[x ACT _{<MANNER>} y] CAUSE [BECOME [y <STATE>]]]

The template in (12) consists of two subevents: activity and achievement. The uppermost event (*x ACT* _{<MANNER>} *y*) represents the notions of contact and motion involved in the meaning of *cut*.

Next, consider the notion of change of state denoted by the verb *cut*. When we say "John cut the cake", it does not mean change of the essential property of the cake; the cake still retains the property of cake after John cut the cake. Hale and Keyser (1987) define the lexical meaning of *cut* as follows:

- (13) [x CAUSE [y develop linear separation in material integrity ...]]

In (13), the event denoted by the verb *cut* does not involve change of the essential property of the entity *y*. I distinguish the change of state of this type from that of the verb *break*. I call the former incomplete change of state, and call the latter complete change of state.

Here, I assume the lexical event licensing condition in (14):

(14) Subevent Prominence Condition

Lexical event templates are licensed if and only if they contain one prominent subevent.

The prominent event plays a crucial role in the specification of the lexical meaning of verbs.

In the case of the English verb *cut*, its embedded subevent of change of state is incomplete, and it is insufficient to determine the event denoted by the verb. In this case, the first event in (12) *x ACT* <MANNER> *y* is prominent. This is why the verb *cut* requires the first subevent. The ungrammatical case in (15a) would have the template in (15b):

- (15) a. *The cake cut.
b. [BECOME [y <STATE> (incomplete)]]

In (15b), the event is not a prominent because the change is incomplete change. Since there is no prominent subevent in (15b), the template is excluded by the Subevent Prominence Condition.

On the other hand, in the case of the verb *break*, the verb has the lexical event template in (16b):

- (16) a. John broke the window.
b. [[x ACT] CAUSE [BECOME [y <STATE> (complete)]]]

In (16b), the change of state is complete change, so that this subevent becomes a prominent event. Therefore, the template does not violate the condition even in the absence of the first subevent *x ACT*, and the inchoative in (17) is allowed:

- (17) a. The window broke.
b. [BECOME [y <STATE> (complete)]]

There are some pieces of evidence for this analysis. In (12), since the event change of state is not prominent, we predict that we can omit the theme/ patient argument *y*. And this is the case:

- (18) The sewing instructor always cut in straight lines. (Goldberg 2000:4)

In (18), we can omit the object *something* given an adequate context. On the other hand, the change of state in (16b) is complete one, so that we cannot omit the argument *y* as shown in (19):

- (19) *That man always breaks. (Goldberg 2000:10)

There is another piece of evidence supporting for the present analysis. In (12), since the event change of state is not prominent, we predict that we can eliminate the event change of state. This

prediction is born out: in (20a), the verb *cut* can appear in the conative construction. On the other hand, the verb *break* cannot appear in this construction as shown in (20b). Because this verb denotes the event complete change of state and this event is always prominent, we cannot omit this event:

- (20) a. Margaret cut at the bread.
 b. *Janet broke at the vase. (Levin 1993; 6)

The conative construction does not entail that the action denoted by the verb is completed, and have the interpretation like “Margaret tried to cut the bread”. That is, in (20a), the subevent change of state is eliminated. The facts in (18-20) support the analysis that the activity of an agent rather than the change of state is prominent, and that the only one prominent event activity is suffice to license the lexical event template.

4. Japanese verb *kir-* (cut)

Now, let us turn to the Japanese verb *kir-* (*cut*). As we saw in the section (8-9) (repeated here as (21-22)), the Japanese verb *kir-* (*cut*) allows the causative-inchoative alternation depending on its object:

- (21) a. John-wa rope/ito-o ki-tta.
 John-NOM rope/ string-ACC cut-ACC-PAST
John cut the rope/ string.
 b. Rope/ ito-ga kir-e-ta.
 rope/ string-NOM cut-NOM-PAST
*The rope/ string was broken. (*The rope/ string cut.)*
- (22) a. John-wa keiki/ tsume-o ki-tta.
 John-NOM cake/ (his) nail cut-ACC-PAST
John cut the cake/ his nails.
 b. *Keki/ tsume-ga kir-e-ta.
 Cake/ nails-NOM cut-NOM- PAST
 *The cake/ his nails cut.

We assume that the verb *kir-* has the same template as (12) (repeated here as (23)), because the other counterpart in (22) shows the same syntactic behavior as for the causative-inchoative alternation.

- (23) [[x ACT <MANNER> y] CAUSE [BECOME [y <STATE> (incomplete)]]]

The question now arises: why isn't (21b) ruled out by the Subevent Prominence Condition?

In order to account for the facts in (21), I postulate a parameter: in English the degree of the event prominence is fixed in individual templates, whereas in Japanese it is flexible to a certain extent and the most deeply embedded subevent becomes prominent if it is qualified as a prominent subevent.

The verb *kir-* in (21b) means something like “The rope/ string was broken”, that is, the event denoted by this verb entail complete change of state. Therefore, the event change of state in (21b) is qualified as a prominent subevent. The prominence is shifted from the activity event to the event change of state, so that (21b) becomes grammatical without the topmost event $x \text{ ACT}_{\langle \text{MANNER} \rangle} y$. Consider the following example:

- (24) Rope-ga hitorideni kir-e-ta.
rope-NOM spontaneously cut-NOM-PAST.
The rope broke spontaneously (because of decay) .

The verb in (24) does not entail the activity by an agent any longer. This fact is attributed to shifting of the event prominence from the activity event to the event change of state. The event change of state can specify the event denoted by the verb in isolation. This enables the verb *kir-* in (21b) to participate in the causative-inchoative alternation.

5. Conclusion

In this paper, I claimed that the event prominence determine whether the verb allow the causative-inchoative alternation. And I proposed that the most deeply embedded subevent in the lexical event template (i.e., change of state) is promoted to the most prominent subevent if the event is eligible for the promotion, that is, when it is a complete change of state. Furthermore, I claimed that the event prominence is determined by the theme/ patient argument the verb selects as well as the lexical meaning of verbs. Since this analysis does not assumes distinct templates between the Japanese *cut* verb which allow an inchoative use and the one which does not allow this use, it is appropriate in view of language acquisition.

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