

## THE PERCEPTUAL STRUCTURE IN BINDING

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This paper discusses a binding problem with nonvolitional causative constructions that the object Causee can bind into the subject Theme, violating the c-command requirement of the standard binding theory. I claim that nonvolitionality is a necessary but not sufficient factor for the permitted c-command violation; a deciding factor instead is whether or not the Causee bears a grammatically latent but logically prominent role for causation process. I utilize the thematic/categorical judgment distinction, originally an inner speech sentential level distinction first proposed by Brentano (1924), applying it to a single notion of Cause. I argue for the relevance of this distinction to binding, which is associated with the Causee's perception of a logical Cause.

Keywords: nonvolitional causatives, c-command violation, thematic/categorical judgment, Causee's perception

### 1. INTRODUCTION

The standard binding theory in generative grammar such as Chomsky (1981) and Reinhart (1976) assumes the structural condition on binding that an anaphor must be c-commanded by its antecedent. The relevance of the condition is illustrated in (1). (Italics indicate coreference.) In (1a) an antecedent of the reflexive anaphor *herself* is the c-commanding *Mary*, whereas in (1b) *Mary* cannot be the antecedent because it does not c-command the reflexive. Likewise, an antecedent of the reciprocal anaphor *each other* is the c-commanding *the men* in (1c), whereas in (1d) *the men* cannot be the antecedent since it does not c-command the reciprocal.

- (1)a. *Mary* found pictures of *herself*.
- b. \**Mary's* daughter found pictures of *herself*.
- c. *The men* praised *each other/each other's* idea.
- d. \**Each other/Each other's* sons praised *the men*.

This paper discusses binding phenomena anomalous to the c-command requirement, which were first identified as a problem with psych-verb constructions (Akatsuka-McCawley, 1976; Belletti and Rizzi, 1988; Giorgi, 1983/84; Lakoff, 1971; Pesetsky, 1987; Postal, 1971; and others), and later reidentified as a property of more general nonvolitional (nonagentive) causative constructions (Campbell and Martin, 1989; Fujita, 1996; Katada, 1990; Pesetsky 1995; and others). I provide further evidence that not all nonvolitional causatives display the

anomalous behavior, showing that the conventional volition/nonvolition dichotomy is not sufficiently far reaching for the categorization of causatives. I demonstrate that the logical notion of Cause should be conceptualized according to thethetic/categorical judgment distinction of Brentano and Marty's type as discussed in Kuroda (1979), and that this distinction, associated with the Causee's perception of the logical Causer, ultimately offers a natural explanation of the binding problem.

## 2. NONVOLITIONAL CAUSATIVES AND THE C-COMMAND VIOLATION

### 2.1 *The c-command violation with psych-verbs*

It is a well-known problem that the non-c-commanding mental Experiencer object can bind into the subject Theme, violating the standard c-command requirement on anaphoric binding. As the examples in (2) illustrate, the Experiencer object can be the antecedent of an anaphor embedded in the subject Theme, despite the fact that the object is not in the position which c-commands the subject.

(2) (from Pesetsky, 1987)

- a. Pictures of *each other* annoy *the politicians*.
- b. Stories about *herself* generally please *Mary*.
- c. *Each other's* health worried *the students*.
- d. *Each other's* books amazed *the men*.

The examples in (3) seem to reinforce the interpretation of the data that it must be the Experiencer that can violate the c-command requirement (Giorgi, 1983/84; Pesetsky, 1987).

(3) (from Pesetsky 1987)

- a. \*Pictures of *each other* annoy the millionaire which funded *the politicians*.
- b. \*Stories about *each other* generally please *Mary's* father.
- c. \**Each other's* health worried *the students'* doctor.
- d. \**Each other's* books amazed *the men's* teacher.

It is confirmed by Akatsuka-McCawley (1976), Grimshaw (1990), Lee (1971), Pesetsky (1987) Ruwet (1972) and others that the c-command violation is allowed only when the subject of experience verbs is the nonagentive Theme and that it is not allowed if the subject is agentive. If we replace the nonagentive Theme subject in (2) with an agentive subject as in (4), the intended coreference reading is no longer available.

- (4) a. \*Rivals of *each other* annoy *the politicians*.  
 b. \*Friends of *herself* generally please *Mary*.  
 c. \**Each other's* teachers worried *the students*.  
 d. \**Each other's* wives amazed *the men*.

According to a grammatical position in which the Experiencer argument appears, psych-verbs discussed above can be characterized as Experiencer Object (EO) verbs, and be distinguished from another set of experience verbs, the Experiencer Subject (ES) verbs. The two sets of verbs illustrated in (5-6) share a common semantic feature that they both are verbs of a mental state, but their argument structures apparently differ in that the Experiencer and Theme arguments are inversed.

- (5) ES-verbs
  - a. John(Exp) fears ghosts(Theme).
  - b. Mary(Exp) enjoys the music(Theme).
- (6) EO-verbs
  - a. Ghosts(Theme) frighten John(Exp).
  - b. The Music(Theme) amuses Mary(Exp).

The inversion of the two arguments has been assumed to be another anomaly characteristic of EO verbs. It is precisely the EO verb constructions in which the c-command violation is consistently allowed. (For possible analyses of the inversion phenomena, the readers may be referred to Anagnostopoulou (1995), Belletti and Rizzi (1988), Grimshaw (1990), Katada (1997), Pesetsky (1995), and Zubizarreta (1988) among others).

## 2.2 The c-command violation with causatives

In their attempts to explain the argument structure of the EO(psych)-verbs, Grimshaw (1990), Katada (1990, 1997), Pesetsky (1995) and others analyze them as instances of causative predicates. Their conclusion, though drawn from different reasonings, is consistent with the fact concerning the binding issue at hand noted by Campbell and Martin (1989), Fujita (1993, 1996), Katada (1990, 1996), Pesetsky (1995) and others—that causative predicates also display the permitted c-command violation. As the examples in (7) show, the object Causee, even though it is not the mental Experiencer, can bind into the subject Causer, violating the c-command requirement.

- (7)a. *Each other's* positive remarks encouraged *John and Mary*.
- b. Negative remarks about *herself* convinced *Mary* that she made a mistake.

The contrast observed in (8-9) illustrates the fact parallel with psych-verb constructions; that is, the c-command requirement can be violated but only when the Causer is nonvolitional (Theme) as in the (a) sentences; it can never be violated otherwise as in the (b) sentences.

- (8)a. *Each other's* encouragements helped *the students* significantly.
- b. \**Each other's* teachers helped *the students* significantly.
- (9)a. News items about *herself* generally make *Sue* laugh. (Campbell and Martin, 1989)
- b. \*A supervisor of *herself* usually makes *Sue* laugh.

The examples in (8) are simplex lexical causatives, whereas those in (9) are complex, periphrastic, syntactic causatives. It seems that regardless of whether the causative is lexical or syntactic, the only factor allowing the c-command violation is its nonvolitionality. Psych-verbs discussed in 2.1 are precisely a subcase of lexical causatives (cf. Katada 1990, 1996).

In short, as far as the data discussed in the literature are concerned, the volition/nonvolition dichotomy in causativity is the factor distinguishing the nonpermitted from permitted c-command violation. Various analyses proposed in the literature on the topic are all pursued under this dichotomy. However, I wish to show in the next section that this dichotomy is not sufficiently far-reaching.

### 3. NEW EVIDENCE

Evidence that would challenge the volition/nonvolition dichotomy comes from the contrast internal to nonvolitional causatives, as illustrated by (10) and (11) (Katada, 1996). Despite the fact that these causatives are all nonvolitional, only the ones in (10), but not in (11), allow the c-command requirement to be violated.

- (10)a. Rumors about *himself* angered *John*.
  - b. Opinions of *herself* let *Mary* decide to stay with the job.
  - c. Criticisms about *themselves* made *the students* mentally tough.
  - d. Rumors about *himself* got *John* to decide to leave the job.
- (11)a. \*Rumors about *himself* defamed *John*.
  - b. \*Opinions of *herself* got *Mary* promoted.
  - c. \*Criticisms about *themselves* made *the students* famous.
  - d. \*Rumors about *himself* got *John* fired.

Under the conventional distinction based on volitionality of the subject Causer, the sentences in (11) should also be grammatical; however, this is not the case. This contrast observed within the nonvolitional causative can be explained neither by volitionality of causation nor by the Thematic Hierarchy in the sense of Giorgi (1983/84). The breakdown of this conventional dichotomy shows that nonvolitionality, though certainly a necessary factor allowing the c-command violation, is not sufficient, and that there is something more to it which affects binding. Consequently, more relevant classification, at least for the purpose of binding, should be found internal to nonvolitional causatives.

### 4. THE LOGICAL NOTION OF CAUSE

#### 4.1 Another view of volitionality

As a preliminary step for seeking discriminating factors underlying between the grammatical (10) and the ungrammatical (11), Katada (1996) explored the logical notion of Cause for the nonvolitional causative. She first claimed that for the volitional causative as given in (12), it is the volition of the agentive subject (e.g., *the rivals/the supervisors/the coach*) which serves as a logical Cause for the corresponding presupposition, the caused event, as expressed in (14). In other words, a logical Causer is grammatically and sentence internally available. For the nonvolitional causative as given in (13), on the other hand, the Theme subject (e.g., *the criticisms/the rumors/the news*) is a mere trigger for the caused event likewise given in (14), and a logical Causer is grammatically latent.

- (12)a. The rivals annoy the students.
  - b. The supervisor angered the staff.
  - c. The coach made the golf player famous.
- (13)a. The criticisms annoy the students.
  - b. The rumors angered the staff.
  - c. The news made the golf player famous.
- (14)a. The students are annoyed.
  - b. The staff was angered/angry.
  - c. The golf player became famous.



For the nonvolitional cases, the existence of a third person who perceives the mere trigger is assumed, and it is the “perceiver” which functions as a logical Causer. This is an important feature specific to the nonvolitional causative; without it the sentences in (13) are not conceivable.

The notion of “perception” is claimed to be relevant independently to sentence grammar. For example, the sentences in (15a) and (15b) have the identical structure, both presupposing the factuality expressed in (16). However, as illustrated by the contrast between the two (cf. Akatsuka-McCawley 1976), when the experiencer *Mary*’s perception associated with *the lamp* (i.e. its ‘color’ but not ‘shape’) is blocked, due to her physical disability, a factor inducing the caused event (16) is lost, and sentence (15b), but not (15a), is ungrammatical. This is an example for sentences to encode certain cognitive factors in some crucial way.

- (15)a. By having a peculiar shape, the lamp persuaded Mary, who was blind,  
that she was in Borneo.  
b. ??By having a peculiar color, the lamp persuaded Mary, who was blind,  
that she was in Borneo  
(16) Mary was persuaded that she was in Borneo.

In summary, the conventional classification based on volitionality of the grammatical subject Causer may be viewed based on the notion of logical Cause, as stated in (17).

- (17)a. For the volitional causative, a logical Causer is coextensive with the grammatical subject.  
b. For the nonvolitional causative, a logical Causer is a covert perceiver of the grammatical subject.

There is not much to discuss (17a) since a logical Causer is grammatically represented. (17b), however, is subject to extensive discussion since a logical Causer is grammatically latent but is crucial for the conception of causative sentences. In the discussion that follows I show that this grammatically latent “logical Cause” leads to a natural explanation of the contrast observed in (10-11).

#### 4.2 *The thetic vs. categorical judgment and the notion of Cause*

The antecedent study which I wish to refer to is the judgment theory, much owing to scholars of almost a century ago (for references, see Kuroda 1979 and Nakajima 1939). A theory of judgment is introduced by Brentano (1924) which classifies judgments into two types: the categorical which is predication and the thetic judgment which is nonpredicational. Marty (as discussed in Kuroda 1979) elaborated this theory in a linguistic perspective. He postulated that existential and impersonal sentences such as in (18) do not conform to the form of associating a Subject with a Predicate; they are subjectless, simply recognizing the existence of an entity or a situation. Sentences of this type are said to be precipitated by a single cognitive act called “thetic” (single) judgment. In contrast, the sentences in (19) involve the recognition of a Subject and avowal or disavowal of a Predicate of the Subject. They conform to the form of the Subject-Predicate structure. Sentences of this type are said to be precipitated by two cognitive acts called a “categorical” (double) judgment.

- (18)a. There are some people out there.  
b. It heavily snowed.

- (19)a. Those people are linguists.  
 b. Paris suffered from heavy snow.

The thetic vs. categorical judgment as defined above is an inner speech sentence level distinction. However, I propose that this distinction apply to the judgment of a single notion of logical Cause, which would capture the contrast described in (17). For the volitional cases a logical Cause is judged “thetically” in the sense that the recognition of an entity, the agentive Subject, is sufficient to serve as the logical Cause. The judgment in such a manner is a single cognitive act not involving an association of a Subject and a Predicate. For the nonvolitional cases, by contrast, a logical Cause is judged categorically in the sense that the judgment involves double cognitive acts: (i) the recognition of the existence of a perceiver of the Theme subject and (ii) avowal of an abstract Predicate of the perceiver. In other words, the judgment of this type conforms to the form of the abstract structure illustrated in (20).

(20) Someone-PERCEIVE-Theme Causer

In short, under the theory of judgment applied to the cognitive notion of logical Cause, the classification in (17) may further be replaced with (21).

- (21)a. The volitional causative is subject to the thetic judgment.  
 b. The nonvolitional causative is subject to the categorical judgment.

(21b), associated with structure (20), is especially relevant for our present purpose and will be the focus of attention in the next section

## 5. THE PERCEPTUAL STRUCTURE IN CAUSATIVES AND BINDING

For the nonvolitional cases the judgment of a logical Cause, which is categorical, necessarily presupposes the structure in (20). Taking a closer look at the nonvolitional sentences such as in (13), we may realize another dichotomy concerning a cognitive act played by the Causee. The relevant sentences are reformulated in (22) together with their presupposed caused event.

- (22)a. The criticisms annoy the students.  
       The students are annoyed.  
 b. The rumors angered the staff.  
       The staff was angered/angry.  
 c. The news made the golf player famous.  
       The golf player became famous.

In (22a/b) the corresponding caused event necessarily involves a mental act of its subject (i.e. ‘annoyance’ felt by *the students* in (22a) or ‘anger’ felt by *the staff* in (22b)). These caused events associated with such mental acts would not have taken place if *the students/the staff* did not know *the criticisms/the rumors*. In (22c), on the other hand, the corresponding caused event does not presuppose such a mental act. The caused event (i.e. ‘the golf player’s becoming famous’) has taken place regardless of whether or not *the golf player* knew *the news*. What is presupposed in this case is ‘someone’ other than *the player*, perhaps a general ‘audience’ who read or heard *the news*.

Note that the subject of the caused event is always identical to the Causee of the corresponding causative counterpart. In other words, a logical cause for (22a/b) is the Causee’s perception of

the Theme subject, whereas that for (22c) is someone else's perception of the Theme subject. In other words, (20) may be either (23a) or (23b), depending on whether the perceiver is the Causee or someone else respectively.

- (23)a Causee-PERCEIVE-Theme Causer
- b. Someone-PERCEIVE-Theme Causer

Note that the deciding factor between (23a) and (23b) is available from the nature of the verb of the presupposed caused event. When the verb is necessarily associated with a cognitive act of its subject, (23a) should be the one; otherwise (23b). This difference leads us to an explanation of the contrast internal to the nonvolitional causative illustrated in (10-11). The relevant sentences are reformulated with the corresponding caused effects below as (24-25).

- (24)a. Rumors about *himself* angered *John*.  
John was angered/angry.
- b. Opinions of *herself* let *Mary* decide to stay with the job.  
Mary decided to stay with the job.
- c. Criticisms about *themselves* made *the students* mentally tough.  
The students became mentally tough.
- d. Rumors about *himself* got *John* to decide to leave the job.  
John decided to leave the job.
- (25)a. \*Rumors about *himself* defamed *John*.  
John was defamed.
- b. \*Opinions of *herself* got *Mary* promoted.  
Mary got promoted.
- c. \*Criticisms about *themselves* made *the students* famous.  
The students became famous.
- d. \*Rumors about *himself* got *John* fired.  
John was fired.

I claim that the crucial feature underlying the grammatical (24) and the ungrammatical (25) is whether or not the Causee's perception of the Theme Causer is presupposed (see also Katada, 1996). All of the caused events in (24) necessarily involve a cognitive act of its subject, the Causee, whereas none of those in (25) does so. For the judgment of a logical Causer, the causatives in (24) presuppose structure (23a), whereas those in (25) presuppose structure (23b). In (23a), but not in (23b), the Causee c-commands the Theme Causer containing the anaphors under the issue, hence the desired c-command relation established in (23a) but not in (23b). This difference induces the contrast internal to the nonvolitional causative for binding.

## 6. CONCLUSION

I have proposed that the judgment theory of Brentano/Marty apply to the judgment of a logical Cause for causative sentences. I have shown that thethetic vs. categorical judgment distinction not only conforms to an inner speech cognitive act of judging a logical Cause but simultaneously elicits the desired effect relevant to binding. The analysis has shown that cognitive factors are crucially involved in the explanation of syntactic phenomena such as binding. This would indicate that the perceptual structures generalized in (23) need to be expressed in a comprehensive theory of language. I would leave the actual pursuit of this task for future research.

## NOTES

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