Morphological blocking in English causatives

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Today

- *Morphological blocking* occurs when the existence of a lexically specified form “blocks” a rule derived form:
  - curious $\rightarrow$ ✓ curiosity
  - glorious $\rightarrow$ *gloriosity, but ✓ glory

- A novel paradigm of blocking in English causatives.
  - Such a pattern of causative blocking has been well studied in Japanese, but believed not to occur in English.

- An analysis in the framework of Distributed Morphology.
- Consequences for theories of morphology.
Background: Blocking effects in Distributed Morphology
The blocking effect

(1) The past tense paradigm
   a. walk + [PAST] → walked
   b. bend + [PAST] → bent, *bended

- Traditionally, blocking is thought of as the result of competition between words (Aronoff 1976 a.o.).
- A “simpler” form is preferred to more complex, rule-derived ones.

(2) The comparative paradigm
   a. intelligent + [COMP] → more intelligent
   b. smart + [COMP] → smarter, *more smart

Distributed Morphology

• A syntactic approach to word-formation.
  • Late insertion of phonological material into terminal nodes.

• There may be several ways of spelling out the same node:

(3) Vocabulary items for past tense (T[PAST]):

  a. $T_{[\text{PAST}]} \leftrightarrow -t \ / \ \{\sqrt{\text{leave}}, \sqrt{\text{bend}}, \ldots\}$

  b. $T_{[\text{PAST}]} \leftrightarrow \emptyset \ / \ \{\sqrt{\text{hit}}, \sqrt{\text{quit}}, \ldots\}$

  c. $T_{[\text{PAST}]} \leftrightarrow -ed$

• If multiple rules can apply, the most specified one is used.
“Blocking” is caused because Vocabulary Insertion can apply only once for each terminal node.

- T[PAST] ↔ either -t, -ed, or ∅.
- T[PAST] ↔ -t in the context of √bend “blocks” realization with -ed.
- The form bended is never generated.

(4) **Rules Apply** (Embick and Maranz 2008):

Perform a computation when the structural description of the rule is met.

- If a rule of affixation *can* apply in a particular structural context, it *must* apply.
  - With [COMP] affixed to √smart, it realizes “smarter.”
  - “more smart” is never generated.
Blocking effects in causatives
Japanese causatives: Form

- Two ways of forming a causative:

(5) Two causative forms for *narab*-

  - a. *lexical*: *narab*-e-
  - b. *analytic*: *narab*-ase-

- **Lexical causatives** are specified in the lexicon, unproductive.
- **Analytic causatives** are rule-derived, productive *(s)ase*.
Japanese causatives: Meaning

- The two causatives correspond to two different meanings:

(6) **Lexical causative form = causation semantics:**

Kyooshi-ga kaado-o kyootaku-ni narab-e-ta.

teacher-NOM card-ACC teacher’s desk-on line up-CAUSE-PAST

‘The teacher arranged the cards on the teacher’s desk.’

- **Causation:** the (primarily physical) actions of the subject bring about the described state of affairs.

- Compatible with all kinds of causees.
  - With an animate causee, e.g. *the students*, the sentence is judged as semantically odd.
Japanese causatives: Meaning

- The two causatives correspond to two different meanings:

(7) **Analytic causative form = compulsion semantics:**

<table>
<thead>
<tr>
<th>Kyooshi-ga</th>
<th>seito-o</th>
<th>kootei-ni</th>
<th>narab-ase-ta.</th>
</tr>
</thead>
<tbody>
<tr>
<td>teacher-NOM</td>
<td>student-ACC</td>
<td>schoolyard-in line up-CAUSE-PAST</td>
<td>‘The teacher made the students line up in the schoolyard.’</td>
</tr>
</tbody>
</table>

- **Compulsion:** the subject puts the causee under an obligation.
- Compatible with *animate, volitional* causees (cf Shibatani 1973 for Japanese, among many others).
  - Incompatible with inanimate causees, e.g. *the cards.*
Blocking effects in Japanese causatives

(8) Causatives with inanimate causees:

Kyooshi-ga kaado-o kyootaku-ni narab-\{\check{e}/*ase\}-ta.

teacher-NOM card-ACC teacher’s desk-on line up-CAUSE-PAST

‘The teacher arranged the cards on the teacher’s desk.’

- Because the causee is inanimate, it must be a causation meaning.
- Causation meaning $\rightarrow$ narab-e- (lexical), *narab-ase- (analytic)
  $\rightarrow$ This is blocking!

- Blocking only occurs if the verb has a lexical causative specified.
  - If the verb does not have a lexical causative form, analytic causative form (-sase) can be used with causation meaning.
Blocking effects in Japanese causatives

- Two kinds of causatives and two types of causees:
  - Lexical/analytic causative
  - Animate/inanimate causee

(9) For verbs with a lexical causative form specified:

  a. ✓ [inanimate causee] … [lexical causative]
  b. # [animate causee] … [lexical causative]
  c. * [inanimate causee] … [analytic causative] ← blocked!
  d. ✓ [animate causee] … [analytic causative]

- This Japanese blocking paradigm has been very well studied.
- It has been believed that such blocking does not occur in English.
English causatives

- Two ways of forming a causative:

(10) **Two causative forms for bounce:**

  a. *lexical*: bounce (verb)
  b. *analytic*: make bounce (make verb)

- *Lexical causatives* are specified in the lexicon, unproductive.
- *Analytic causatives* are rule-derived, productive.
English causatives

- At first glance, English does not parallel the Japanese behavior.

(11) The four-way paradigm:

   a. The coach bounced the ball on the floor.
   b. #The coach bounced the gymnast on the floor.
   c. The coach made the ball bounce on the floor.
   d. The coach made the gymnast bounce on the floor.

With an inanimate causee, “make ... bounce” is not blocked.
English causatives

However, the Japanese paradigm emerges when the causee is moved out of the way.

(12) The four-way paradigm with movement of causee:

a. That’s the ball that the coach bounced on the floor.

b. # That’s the gymnast that the coach bounced on the floor.

c. * That’s the ball that the coach made bounce on the floor.

d. That’s the gymnast that the coach made bounce on the floor.
English causatives

(13) The four-way paradigm, moved causee:

a. That’s [inanimate] that … [lexical causative] …

b. # That’s [animate] that … [lexical causative] …

c. * That’s [inanimate] that … [analytic causative]…

d. That’s [animate] that … [analytic causative] …

Methods:
48 items (24 target, 24 filler paradigms),
8 pseudo-randomized lists,
80 native speaker participants (recruited on Amazon Mechanical Turk),
Rating task: natural/unnatural.

Results:
Main effects of animacy and causative type, and interaction
(two-way ANOVA, all $p < 0.05$).
English causatives

• This is replicated with other types of movement, e.g. object relative clause, heavy NP shift, \textit{wh}-question.

\begin{enumerate}
\item \textbf{Effect in (12) not limited to clefts:}
\begin{enumerate}
\item * The ball that the coach \textit{made bounce} on the floor was bright red.
\item * The coach \textit{made bounce} on the floor \textit{[the bright red ball that my mother gave me for Christmas last year]}.
\item * Which ball did the coach \textit{made bounce} on the floor?
\end{enumerate}
\end{enumerate}
Proposal
Proposal

- Lexical and analytic causatives are built from structures of two different sizes (English: Hale and Keyser 1993; Pylkkänen 2002; Blanco 2010; Japanese: Miyagawa 2010; and in particular Harley 2008).
- \( v_{\text{CAUSE}} \) takes a \( \sqrt{P} \) or a \( vP \) as its complement.

\[
\text{(15) } \begin{align*}
\text{a. } & \sqrt{P} \text{ embedding:} \\
& vP \\
& \quad \downarrow \\
& \quad v_{\text{CAUS}} \\
& \quad \downarrow \\
& \quad \text{subject} \\
& \quad \downarrow \\
& \quad \text{causee} \\
\text{Causation semantics} \\
& \text{No animacy restriction}
\end{align*} \\
\text{b. } & vP \text{ embedding:} \\
& vP \\
& \quad \downarrow \\
& \quad v_{\text{CAUS}} \\
& \quad \downarrow \\
& \quad \text{subject} \\
& \quad \downarrow \\
& \quad \text{causee} \\
& \quad \downarrow \\
& \quad v \\
& \quad \downarrow \\
& \quad \sqrt{P} \\
\text{Compulsion semantics} \\
& \text{Only animate causees}
\]


Proposal

- Vocabulary insertion rule for the causative head:
  - $v_{CAUSE} \leftrightarrow make$

- For verbs with a lexical causative, there is one specific Vocabulary Insertion rule which realizes both $v_{CAUSE}$ and $\sqrt{bounce}$ together:
  - $v_{CAUSE} + \sqrt{bounce} \leftrightarrow bounce$

- **Fusion** (Halle and Marantz 1993):
  - Combines two targets of Vocabulary Insertion into one.
  - $v_{CAUSE}$ and $\sqrt{bounce}$ must undergo Fusion to be realized together as “bounce.”
Proposal

Fusion requires linear adjacency.

- Null heads intervene in the structure, but traces do not count at PF.

- Furthermore, Fusion must apply when possible (Rules Apply).

- Therefore, whenever $v_{\text{CAUSE}}$ is linearly adjacent to a root that has a lexically specified causative form, that form must be used.
  - $v_{\text{CAUSE}} \sqrt{\text{bounce}}$ → “bounce”
  - $v_{\text{CAUSE}} \sqrt{\text{scatter}}$ → “scatter”
  - $v_{\text{CAUSE}} \sqrt{\text{play}}$ → “make play”
  - $v_{\text{CAUSE}} \sqrt{\text{stay}}$ → “make stay”
Derivations with moved causee

- Causation causative = \( \sqrt{P} \) embedding:

(16) a. if \( \sqrt{P} \) has a lexical causative b. otherwise

- Rules Apply: Fusion applies so the lexical causative form can be realized (16a). Otherwise, spell out “make verb” (16b).

⇒ Blocking behavior!
Derivations with moved causee

- Compulsion causative = \( vP \) embedding:

\[
(17)
\]

\[
\begin{array}{c}
\text{subject} \\
\text{\( v_{\text{CAUS}} \)} \\
\text{\( vP \)} \\
\text{\( t \)} \\
\text{\( v \)} \\
\text{\( \sqrt{P} \)} \\
\end{array}
\]

\( \Rightarrow \text{“make verb”} \)

- The \( v \) head intervenes between \( v_{\text{CAUSE}} \) and the root.
  - Fusion never applies.
  - This structure is always spelled out as “make verb.”
English paradigm explained

(18) A four-way paradigm with movement:

a.  That’s the ball that the coach bounced on the floor.
b.  # That’s the gymnast that the coach bounced on the floor.
c.  * That’s the ball that the coach made bounce on the floor.
d.  That’s the gymnast that the coach made bounce on the floor.

•  (18b) contains bounced. This must be a lexical causative, involving a causation meaning, hence the oddness.

•  (18c) contains make bounce with an inanimate causee.
  •  This cannot be a compulsion meaning.
  •  Causative meaning is formed with the smaller √P structure.
  •  Make and bounce are linearly adjacent but failed to Fuse.
    ➔ Blocking!
Derivations with in-situ causee

• Causation causative:

(19) a. with head-movement:

$$\text{subject} \quad \sqrt{\text{v}+\sqrt{\text{vCAUS}}} \quad \text{causee} \quad t$$

$$\Rightarrow \text{“verb”}$$

b. without:

$$\text{subject} \quad \sqrt{\text{vCAUS}} \quad \text{causee}$$

$$\Rightarrow \text{“make verb”}$$

• Optional head-movement of root to $v_{\text{CAUSE}}$.
  • Fusion applies if head movement happens (19a).
  • Otherwise structure spelled out as “make verb” (19b).
Derivations with in-situ causee

• Compulsion causative:

(20)

$\begin{array}{c}
\text{subject} \\
v_{\text{CAUS}}
\end{array}$

$vP$

$v_{\text{CAUS}}$

$vP$

$\begin{array}{c}
\text{causee} \\
v
\end{array}$

$vP$

$\sqrt{P}$

$\Rightarrow \text{“make verb”}$

• The $v$ head intervenes between $v_{\text{CAUSE}}$ and the root.
  • Fusion does not apply.
  • This structure is always spelled out as “make verb.”
English paradigm explained

(21) A four-way paradigm with in-situ causee:
   a. The coach bounced the ball on the floor.
   b. The coach bounced the gymnast on the floor.
   c. The coach made the ball bounce on the floor.
   d. The coach made the gymnast bounce on the floor.

- (21b) contains *bounced*. This must be a *lexical causative*, involving a causation meaning, hence the oddness.
- (21c) contains the string *make .. bounce* with an inanimate causee. This is a causation causative, but the *causee intervenes*.
  ➞ Fusion does not occurs, no blocking effect.
Summary

• For verbs without a lexical causative:
  • “make…verb” for both structures

• For verbs with a lexical causative:
  • Causee moved out of the way:
    • verb $\Rightarrow$ causation causative (Fusion has applied $\rightarrow \sqrt{P}$ structure)
    • make…verb $\Rightarrow$ compulsion causative
  • Causee not moved out of the way:
    • verb $\Rightarrow$ causation causative (Fusion has applied $\rightarrow \sqrt{P}$ structure)
    • make…verb $\Rightarrow$ compulsion causative, or
      causation causative with no head-movement
Consequences

• The different behavior in English when the causee is/is not moved motivates a **linear adjacency requirement on Fusion**.

• Harley (2008) proposes a *structural adjacency* condition governing causative blocking in Japanese. However, Japanese is head final, therefore linear and structural adjacency cannot be teased apart.

• Consequence for theories of morphology:
  • The determination of morphological form must occur **after linearization** at PF.
Conclusion

• A novel paradigm of morphological blocking in English causatives.
  • In causation (√P embedding) causatives, a *lexical causative* form blocks the *analytic (make) causative* form.
  • *If the causee does not linearly intervene.*
  • Parallels a well-studied paradigm in Japanese.

• Proposal (particularly following Harley 2008): structures of two different sizes which correspond to different meanings.
  • *Motivates a linear adjacency* condition on Fusion.
    • Argues for the post-syntactic resolution of morphology (DM).
Thank you! Questions?

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Evidence for two sizes of structure

(22) **Manner adjunct with lexical and analytic causatives:**

a. That’s the gymnast_j that the coach_i balanced PRO_{i/*j} using a pole.  
   **lexical**

b. That’s the gymnast_j that the coach_i made balance PRO_{i/j} using a pole.  
   **analytic**

(23) **Temporal adjuncts in lexical and analytic causatives:**

a. That’s the gymnast that the coach bounced \{twice, repeatedly, for 2 minutes\}
   
   **unambiguous**

   **lexical**

b. That’s the gymnast that the coach made bounce \{twice, repeatedly, for 2 minutes\}.  
   **ambiguous**

   **analytic**

(24) **Subject-oriented adverb in lexical and analytic causatives:**

a. That’s the hostage that the robber sat on the ground calmly.  
   **unambiguous:** the robber was calm.  
   **lexical**

b. That’s the hostage that the robber made sit on the ground calmly.  
   **ambiguous:** the robber was calm or the hostage was calm.  
   **analytic**
Evidence for linear adjacency

- Our theory predicts that any material that intervenes between $v_{\text{CAUSE}}$ and *verb* should disrupt Fusion and allow spellout of a causation causative with *make* ... *verb*.

(25) **Intervening adverbs**

a. *That’s the ball that John made roll.*
b. *That’s the ball that John made roll on the floor.*
c. *That’s the ball that John made roll quietly on the floor.*
d. That’s the ball that John made quietly roll on the floor.*
Evidence for linear adjacency

- Our theory predicts that any material that intervenes between $v_{\text{CAUSE}}$ and *verb* should disrupt Fusion and allow spellout of a causation causative with *make* ... *verb*.

(26) Subextraction (Gary Thoms, p.c.)

a. The scientist made half of that solution boil furiously.
b. *That's the solution that the scientist made boil furiously.
c. That's the solution that the scientist boiled furiously.
d. ?That's the solution that the scientist made half of boil furiously.
Direct and indirect causation

(27) a. John started the engine. \hspace{1cm} \textit{direct causation}
   b. John made the engine start. \hspace{1cm} \textit{indirect causation}

- Both sentences are $\sqrt{P}$, causation causatives.
- When causee is moved out of the way, we see blocking behavior.

(28) a. Which engine did John \textit{start} ___ with a match?
   b. *Which engine did John \textit{make} ___ start with a match?

(29) Which racer did the coach \textit{make} ___ start on time?

- Gricean explanation for (27a-b) can be maintained (McCawley 1978; Kiparsky 2005, a.o.). This distinction is orthogonal to the one discussed here.
The status of traces

- *Wanna contraction* is possible when no words separate *want* and *to*.

(30) I want Jim to visit Fred. \(\rightarrow\) *I wanna Jim visit Fred.

(31) Who do you want PRO to visit ___? \(\rightarrow\) Who do you wanna visit ___?

- One prominent theory suggests that *traces* disrupt contraction in (32).

(32) Who do you want ___ to visit Fred? \(\rightarrow\) *Who do you wanna visit Fred?

- However, other theories have proposed that a *null head* is responsible for the behavior in (32).

- Furthermore, other types of contraction seem insensitive to traces:

(33) Who do you think ___ is dancing? \(\rightarrow\) Who do you think’s dancing?