

# 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 → ✓curiosity
  - glorious → \*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*

- *Words* and *phrases* can participate in a blocking paradigm (Poser 1992). A challenge for the lexical competition view.

# 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[PAST]       $\leftrightarrow$     $-t$    / { $\surd$ *leave*,  $\surd$ *bend*, ...} \_\_\_\_\_
  - b. T[PAST]       $\leftrightarrow$     $\emptyset$    / { $\surd$ *hit*,  $\surd$ *quit*, ...} \_\_\_\_\_
  - c. T[PAST]       $\leftrightarrow$     $-ed$
- If multiple rules can apply, the most specified one is used.

# Blocking in Distributed Morphology

- “Blocking” is caused because Vocabulary Insertion can apply only once for each terminal node.
  - T[PAST]  $\leftrightarrow$  either *-t*, *-ed*, or  $\emptyset$ .
  - T[PAST]  $\leftrightarrow$  *-t* in the context of  $\surd_{bend}$  “blocks” realization with *-ed*.
  - The form *bended* is never generated.

## (4) **Rules Apply** (Embick and Marantz 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  $\surd_{smart}$ , 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-* ‘line up’:**

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:

Kyooshi-ga seito-o kootei-ni narab-**ase**-ta.

teacher-NOM student-ACC schoolyard-in line up-CAUSE-PAST

‘The teacher made the students line up in the schoolyard.’

- ***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- $\{\checkmark e/*ase\}$ -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:

- ✓ [inanimate causee] ... [lexical causative]
  - # [animate causee] ... [lexical causative]
  - \* [inanimate causee] ... [analytic causative] ← blocked!
  - ✓ [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.

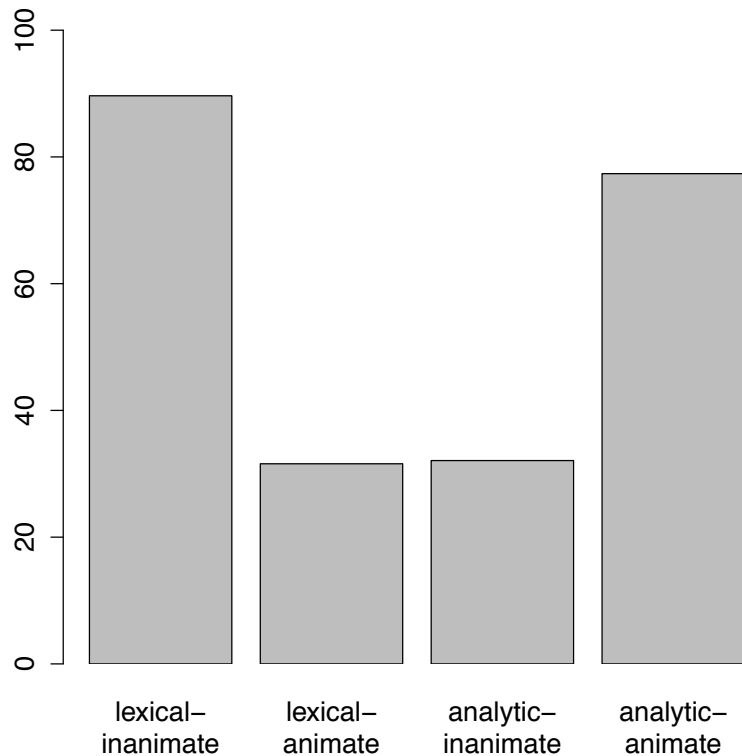
# English causatives

☞ 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



## 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  $p < 0.05$ ).

## (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] ...



# English causatives

- This is replicated with other types of movement, e.g. object relative clause, heavy NP shift, *wh*-question.

(14) **Effect in (12) not limited to clefts:**

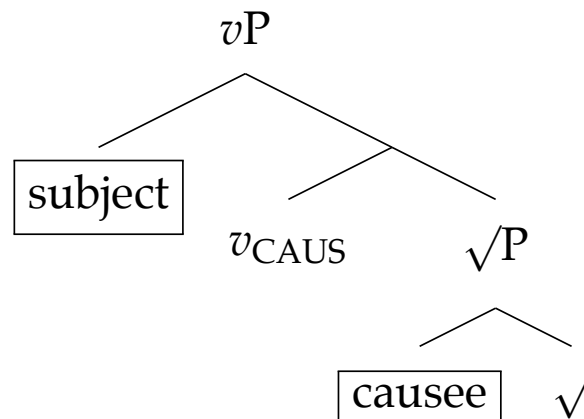
- a. \* The ball that the coach *made bounce* on the floor was bright red.
- b. \* The coach *made bounce* on the floor [the bright red ball that my mother gave me for Christmas last year].
- c. \* Which ball did the coach *made bounce* on the floor?

# Proposal

# Proposal

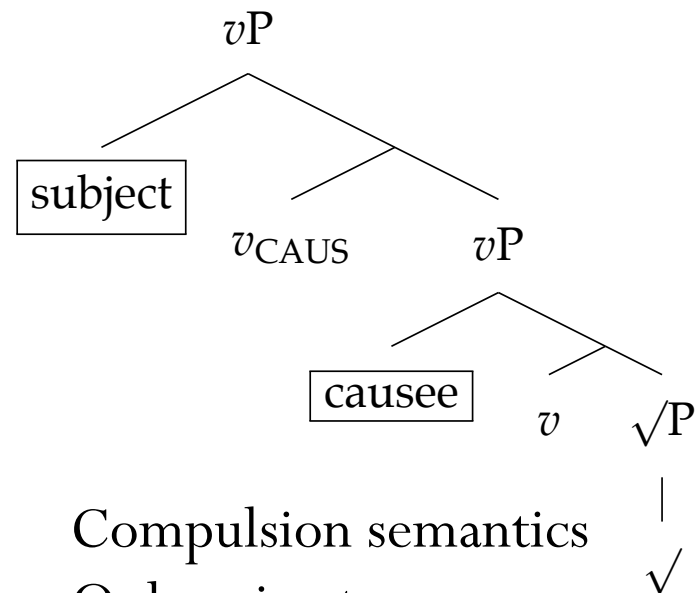
- Lexical and analytic causatives are built from structures of two different sizes (English: Hale and Keyser 1993; Pytkänen 2002; Blanco 2010; Japanese: Miyagawa 2010; and in particular Harley 2008).
  - $v_{\text{CAUSE}}$  takes a  $\sqrt{\text{P}}$  or a  $v\text{P}$  as its complement.

(15) a.  $\sqrt{\text{P}}$  embedding:



Causation semantics  
No animacy restriction

b.  $v\text{P}$  embedding:



Compulsion semantics  
Only animate causees

# Proposal

- Vocabulary insertion rule for the causative head:
  - $v_{\text{CAUSE}} \leftrightarrow \textit{make}$
- For verbs with a lexical causative, there is one specific Vocabulary Insertion rule which realizes both  $v_{\text{CAUSE}}$  and  $\sqrt{\textit{bounce}}$  together:
  - $v_{\text{CAUSE}} + \sqrt{\textit{bounce}} \leftrightarrow \textit{bounce}$
- **Fusion** (Halle and Marantz 1993):
  - Combines two targets of Vocabulary Insertion into one.
  - $v_{\text{CAUSE}}$  and  $\sqrt{\textit{bounce}}$  must undergo Fusion to be realized together as “*bounce.*”

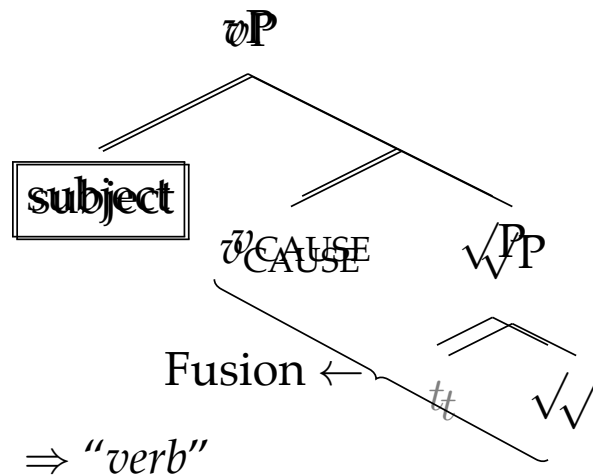
# Proposal

- ☞ **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*”

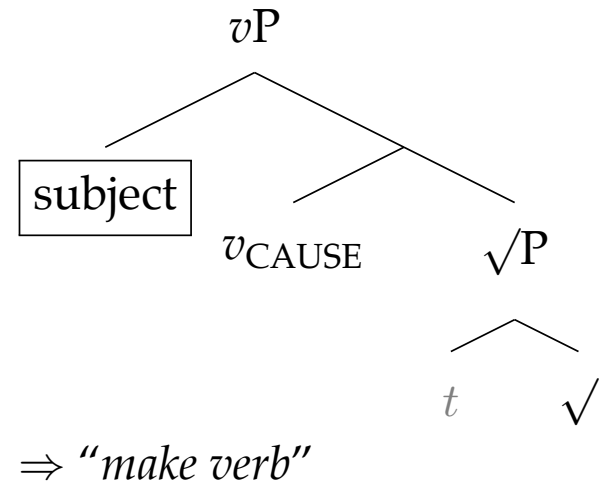
# Derivations with moved causee

- Causation causative =  $\sqrt{P}$  embedding:

(16) a. if  $\sqrt{V}$  has a lexical causative



b. otherwise



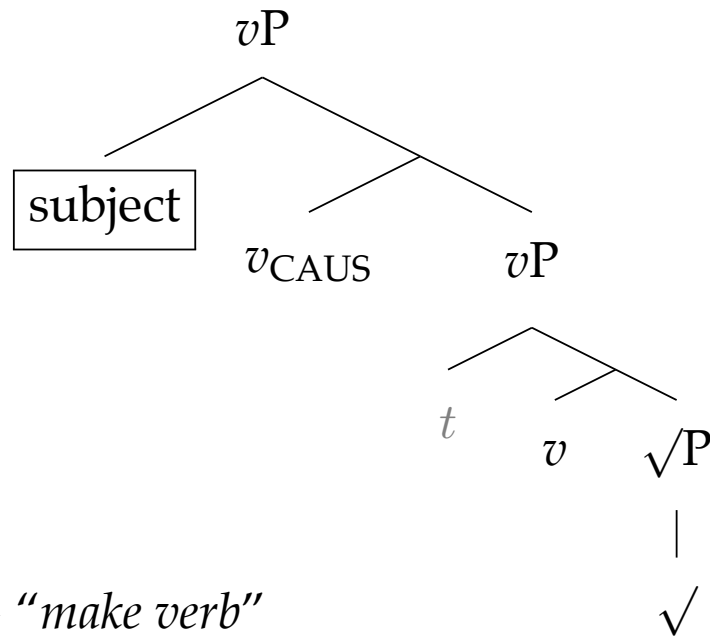
- Rules Apply: Fusion applies so the lexical causative form can be realized (16a). Otherwise, spell out "make verb" (16b).

→ Blocking behavior!

# Derivations with moved causee

- Compulsion causative =  $vP$  embedding:

(17)



- The  $v$  head intervenes between  $v_{CAUSE}$  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.

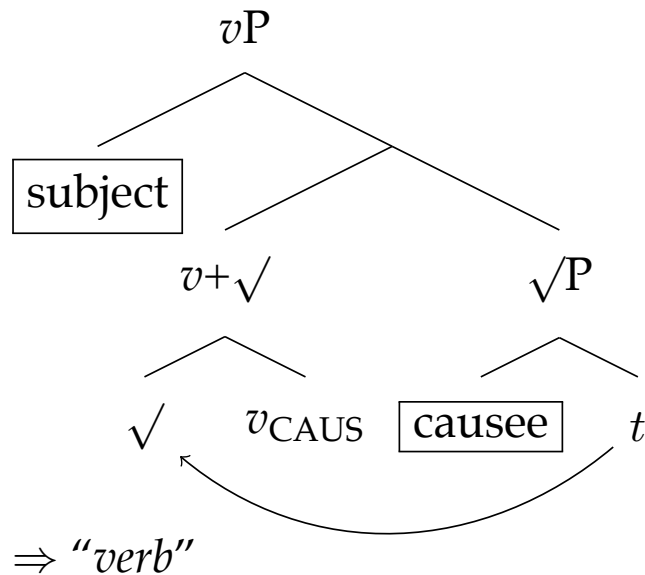
- (18b) contains *bounced*. This must be a *lexical causative*, involving a causation meaning, hence the oddness.
- (18c) contains *make bounce* with an inanimate causee.
  - This cannot be a compulsion meaning.
  - Causative meaning is formed with the smaller  $\sqrt{P}$  structure.
  - *Make* and *bounce* are linearly adjacent but failed to Fuse.  
→ *Blocking!*



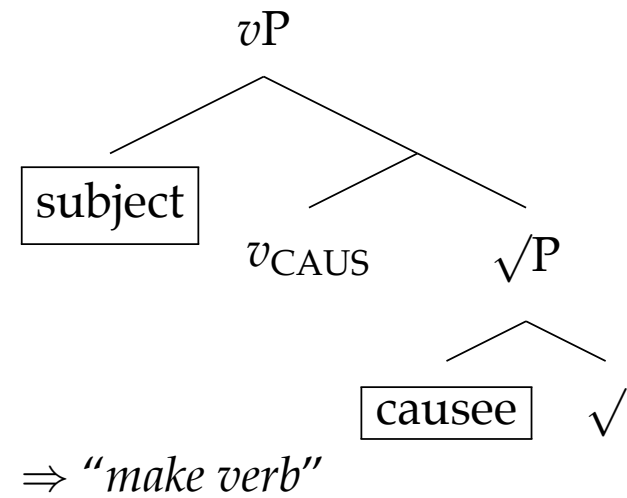
# Derivations with in-situ causee

- Causation causative:

(19) a. with head-movement:



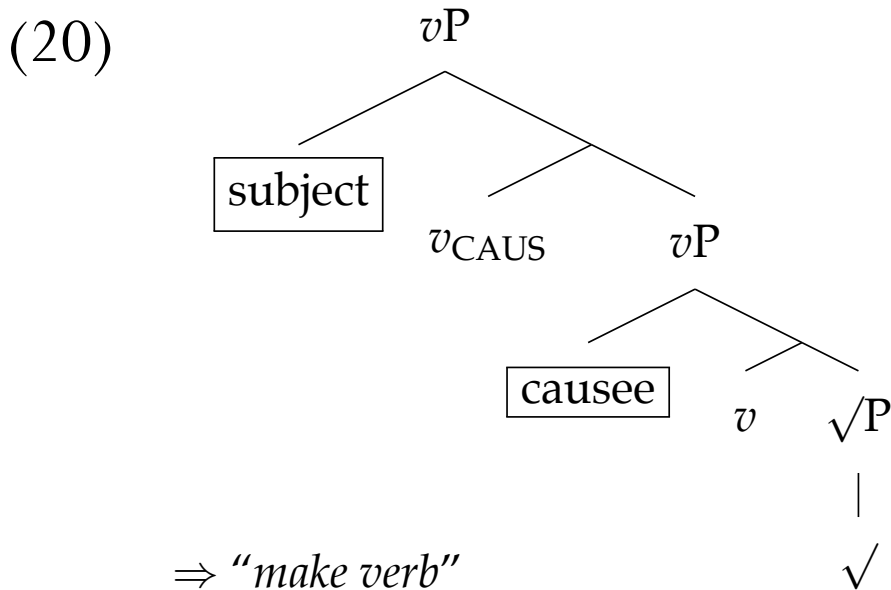
b. without:



- Optional head-movement of root to  $v_{CAUSE}$ .
  - Fusion applies if head movement happens (19a).
  - Otherwise structure spelled out as "make verb" (19b).

# Derivations with in-situ causee

- Compulsion causative:



- 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 occur, 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 ( $\sqrt{P}$  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?

Manuscript available: <http://ling.auf.net/lingbuzz/001896>

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# Evidence for two sizes of structure

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

- a. That's the gymnast<sub>j</sub> that the coach<sub>i</sub> balanced PRO<sub>i/\*j</sub> using a pole. lexical
- b. That's the gymnast<sub>j</sub> that the coach<sub>i</sub> made balance PRO<sub>i/j</sub> 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. lexical  
unambiguous: the robber was calm.
- b. That's the hostage that the robber made sit on the ground calmly. analytic  
ambiguous: the robber was calm or the hostage was calm.



# 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. *direct causation*  
b. John *made* the engine *start*. *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 *start* \_\_\_\_ with a match?  
b. \*Which engine did John *make* \_\_\_\_ *start* with a match?

- (29) Which racer did the coach *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. → \*I *wanna* Jim visit Fred.

(31) Who do you *want* PRO *to* visit \_\_\_\_? → Who do you *wanna* visit \_\_\_\_?

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

(32) Who do you *want* \_\_\_\_ *to* visit Fred? → \*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? → Who do you *think's* dancing?