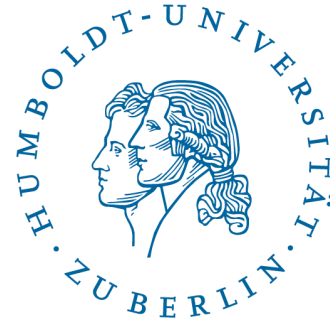# Causativity in Language: Unaccusatives, Causative Alternation, Continuous Causation in the Dative Alternation
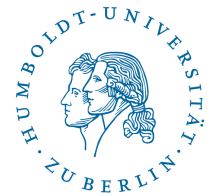
ZIF Bielefeld
November 10, 2011

Manfred Krifka

## Overview

Causality as a cognitive dimension relevant for language on several levels:

- ▶ Discourse relations: *because, as, in spite of*
- ▶ Question formation: *why, for which reason*
  - ▷ German: *warum, weshalb, aus welchem Grund, wieso, wozu, wofür, für was, was*
- ▶ Causative word derivations, e.g. Swahili:

    *(1) Juma a-li-ona     pija.*
    Juma  he-PAST-see picture
    'Juma saw a picture.'

    *Juma a-li-mw-on-<u>esha</u> Ali pija.*
    Juma  he-PAST-him-see-<u>CAUSE</u> Ali picture
    'Juma showed Ali a picture.'

- ▶ Three topics of this talk:
  - ▷ The semantics of unaccusative verbs
  - ▷ Restrictions for the causative alternation
  - ▷ Continuous causation in the dative alternation

# I. Unaccusatives
## Two kinds of intransitives: Active languages.

► Prototypical transitive verbs involve an causer (agent, actor)
and an entity undergoing change (theme, undergoer);
the first is realized as subject, the second one as object.
*Mary painted the wall.*

► With intransitive verbs, the subject might be an agent or a theme:
*John was working.*
*John was stumbling.*

► In English, these two cases are encoded in the same way;
but many languages, so-called **active languages**, treat them differently (Mithun 1991)

► Example: Guaraní (Paraguay).
  ▷ Agent subjects
  *a-xá* 'I go', *a-pu'á* 'I get up'
  ▷ Theme subjects
  *še-rasí* 'I am sick', *še-ropehíí* 'I am sleepy'
  ▷ Relation to subjects and objects in transitive clauses:
  *a-gwerú aina* 'I am bringing them now', *še-rerahá* 'They will carry me off.'

► Example Batsbi / Tova-Tush (Caucasus): fluid case marking
*As vuiz-n-as.* 'I fell down.'
*So vuiz-n-so.* 'I let myself fall down.'

# I. Unaccusatives
## Two kinds of intransitives in German

► One popular analysis (Perlmutter 1978):
  ▷ Themes can only occur in object positions.
  ▷ Themes of intransitive verbs  occur in object positions, but as such verbs cannot assign
  case, they have to move to the subject positions: "unaccusative verbs"

► Subtle criteria for this distinction, e.g. in German:
  ▷ Impersonal passives with agentive verbs (just as passives with transitive verbs),
  but not with unaccusative verbs.
  *Es wird hier geraucht.*
  *Es wurde damals viel getanzt.*
  *Es darf gelacht werden.*
  *\*Es wurde hier oft hingefallen.*
  *\*Es wird ständig gekommen.*
  *\*Hier wurde gestorben.*
  *\*Bei dieser Passage wird errötet.*
  ▷ Auxiliaries *haben* with agentive verbs (just as with transitive verbs),
  vs. *sein* with unaccusative verbs.
  *Hans hat geraucht / getanzt / gelacht.*
  *Hans ist hingefallen / gekommen / gestorben / errötet.*
  ▷ Accented subjects in all-new-utterances with unaccusative verbs
  (accented objects with transitive verbs).
  *Was ist passiert? -- HANS ist gekommen / hingefallen / gestorben.*
  *Was ist passiert? -- Hans hat geRAUCHT /  geTANZT /  geLACHT*

► Interpreted as saying that in unaccusatives, the subject is a deep-structure object.

# I: Unaccusatives
# Classification of intransitives as unaccusatives

Languages may classify the same (?) notions differently (cf. Rosen 1983):

| Verb | Unergative | Unaccusative |
|---|---|---|
| 'die' | Choctaw | Italian |
| 'sweat' | Italian | Choctaw |
| 'bleed' | Italian | Turkish, Eastern Pomo |
| 'suffer' | Italian | Choctaw |
| 'be hungry' | Lakhota | Choctaw |
| 'sneeze' | Italian, Dutch, Choctaw | Eastern Pomo, Choctaw |

Alternation in German dialects:
> *Er hat angefangen.* (Standard)
> *Er ist angefangen* (Northern variety)

# II: Causative Alternation
# What is it?

▸ An alternation between verb uses, implicating causality (Levin 1993):
> *Janet broke the cup.*         (causative variant, transitive)
> *The cup broke.*         (anti-causative variant, intransitive)

▸ Frequent alternation that works with many verbs and found in many languages, but there are interesting differences in its realization (Schäfer 2008):

▷ Anticausatives without reflexives:
> *Hans zerbrach die Tasse.*
> *Die Tasse zerbrach (\*sich).*

▷ Anticausatives with reflexives:
> *Hans öffnete die Tür.*
> *Die Tür öffnete \*(sich).*

▷ Anticausatives with optional reflexives:
> *Hans kühlte das Wasser ab.*
> *Das Wasser kühlte (sich) ab.*

▷ Causative verbs (restricted):
> *Hans fällt den Baum.*
> *Der Baum fällt.*
> *Hans fällte den Baum.*
> *Der Baum fiel.*

# II: Causative Alternation
# Possible approaches

Basic assumption:
- We don't want to assume two distinct verbs that happen to be homophonous:

  *Janet broke$_1$ the vase.*

  *The vase broke$_2$.*

- We rather want that the lexical meaning entries of the verbs are related to each other.

Possible approaches:
- The transitive form is derived from the intransitive form, by adding one argument (Dowty 1979, Parsons 1990, Härtl 2003 ...)
  - ▷ [x CHANGE] ⇒ [y CAUSE [x CHANGE]]

    *The vase broke.*           *Janet broke the vase*

    [the.vase BREAK]        [Janet CAUSE [the.vase BREAK]]
- The intransitive form is derived from the intransitive, by cancelling one argument (Levin & Rappaport Hovav 1995, Chierchia 2003, Reinhart 2002 ...)
  - ▷ [y CAUSE [x CHANGE]] ⇒ ∃y[y CAUSE [x CHANGE]]

    *Janet broke the vase.*        *The vase broke.*

    [Janet CAUSE [the.vase BREAK]]    ∃x[x CAUSE [the.vase BREAK]]
  - ▷ Point in favor of this approach:
    Added complexity of intransitive form in many languages, e.g. by reflexives:

    *Hans öffnet die Tür.*        *Die Türe hat <u>sich</u> geöffnet.*

    [Hans CAUSE [the.door OPEN]]    [the.door CAUSE [the.door OPEN]]

# II. Causative Alternation
# Rappaport-Hovav & Levin 2011

- Lexicon Uniformity Principle (Reinhart 2002):
  - ▷ Different verb alternants (verb concepts)
    correspond to one underlying thematic structure (i.e. one basic meaning).
  - ▷ The various thematic form of a given verb
    are derived by valence-changing operations from this thematic structure.
- Contrary to Rappaport-Hovav & Levin 1995 (and others),
  the transitive (causative) form is derived from the intransitive (anti-causative) form;
  this conforms to the Lexicon Uniformity Principle.
- There are general semantic conditions that specify when this derivation is possible.
- The inverse derivation, intransitive from transitive, does not conform to the principle.
- (These rules cannot be expressed by a featural system, as e.g. in Reinhart 2002).

## II. Causative Alternation
## Anticausative derivation and its problems:

Rappaport-Hovav & Levin 1995, Reinhart 2002:

▸ Causative form is basic

  ▷ Anti-causative form possible for those verbs that do not impose semantic restrictions on their cause argument ("external control verbs", Smith 1970):

    *Antonia / the wind / the ball broke the window,* hence: *The window broke.*

    *Patty / the sun / the microwave melted the chocolate,* hence: *The chocolate melted.*

  ▷ No alternation if the verb poses restrictions on a possible cause argument, syntactic causative construction is possible ("internal control verbs")

    *Mary shuddered.*
    *\*The green monster shuddered Mary.*
    *The green monster made Mary shudder.*

▸ Problem: Obligatory transitive verbs.

    *Sue ate an apple.* in contrast to: *\*The apple ate.*

    *Bill wrote a novel.* in contrast to: *\*The novel wrote.*

  ▷ Explanation by Rappaport-Hovav & Levin 1995:
No anti-causative form if the verb describes an event that necessarily involves an agent.

  ▷ But: Agents may occur in the situation:

    *Sally kept tugging on the door so that it finally opened.*

  ▷ Even if agents occur, the intransitive form may be unavailable:

    *\*The wind was enormous, and the table cleared.*

## II. Causative Alternation
## Anticausative derivation and its problems

▸ Problem: The choice of causer argument is restricted with alternating verbs, contradicting the condition that the verb does not impose semantic restrictions on the subject.

    *John broke his promise / the contract / the world record,* but: *\*The world record broke.*

    *The waiter cleared the counter,*
    but: *\*The counter cleared.* in contrast to: *The sky cleared.*

    *The taylor lenghtened the skirt,*
    but: *\*The skirt lenghthened.* in contrast to: *A low-carb diet may lengthen your life.*

▸ Problem: With internal cause verbs, an agent is sometimes possible.

    *The fruit trees blossomed.*
    *\*The farmer / the new fertilizer blossomed the fruit trees.*
    *Early summer heat blossomed fruit trees across the valley.*
    *Raindrops selectively erode clay particles.*
    *Bright sunlight wilted the roses.*

  ▷ As it would be strange to assume an underlying transitive *blossom* here, we have to allow for the possibility to derive the transitive from the intransitive use.

  ▷ But notice: German does not allow such alternations; must be expressed syntactically with *lassen*:

    *Die frühe Sommerhitze \*erblühte die Bäume / ließ die Bäume erblühen.*
    *Das helle Sonnenlicht \*verblühte die Rosen / ließ die Rosen verblühen.*

  ▷ This also holds for verbs of "calibratable change of states"
    ###

## II. Causative alternation
## Explanation by Rappaport-Hovav & Levin 2011:

Classes of verbs:
▶ Verbs with transitive roots, subject and object lexically specified;
  subject cannot be eliminated by alternation (except by passive).
  *John wrote this letter. / *This letter wrote.*
  [x CAUSE-by.writing [y EXIST]]
▶ Verbs with intransitive roots expressing a change of state.
  *The cup broke.*
  [the.cup BREAK]
▶ Extension of intransitive roots, following the Direct Causation Condition DCC
  (Wolff 2003):
  [x CHANGE] ⇒ [y DIRECT-CAUSE [x CHANGE]] iff
  ▷ y represents a direct causation of [x CHANGE];
  ▷ where "direct causation" means that
    — there are no intermediate entities at the same level of granularity
      as either the initial causer or final causee;
    — or any intermediate entities that are present can be construed
      as enabling conditions rather than an intervening causer.
▶ Extension possible in many cases, if subject can be seen as direct cause.
  *John / The wind broke the window.*
  [John / the.wind DIRECT-CAUSE [the.cup BREAK]]
  possible, as John's action or the wind can be a direct cause of the breaking of the cup

## II. Causative alternation
## Explanation by Rappaport-Hovav & Levin 2011:

▶ Internally caused change-of-state verbs
  ▷ Express change of states internal to the entity that undergoes the change.
  ▷ Transitive use typically not possible, as the subjects do not denote direct causes.
    *The farmer / *The new fertilizer blossomed the trees.*
  ▷ But natural forces are conceived as most direct causes, hence allow for transitive uses:
    *Early summer heat blossomed the fruir trees across the valley.*
    *Bright sun light wilted the roses.*
    *Salt air rusted the chain-link fences.*
  ▷ Exception: verbs expressing control by agents in the laboratory etc.
    are conceived as direct causes, just like natural forces.
    *The scientists germinated the seeds.*
    *The wine-maker fermented the grapes.*
▶ Verbs of calibratable change of state
  ▷ Transitive uses are restricted.
    *My personal growth skyrocketed.*
    *My mother skyrocketed my personal growth.*
  ▷ Explanation: Changes in the value of properties inherently possessed by animates
    are controlled by the possessor, hence cannot be directly manipulated by a third party.
  ▷ But: If the understood agent of an event subject is the possessor, transitive forms
    are possible:
    *Solving this issue skyrocketed my personal growth.*

▸ Verbs of sound emission
  ▹ Generally do not allow transitive uses:
    *The old car rattled (along the road).*
    *\*The driver rattled the old car along the road.*
    *The tea kettle whistled.*
    *\*The boiling water whistled the tea kettle.*
  ▹ Explanation: As with internally caused events, the sound emitted is tied to the nature of the emitter, hence the subject is not construed as the direct cause.
  ▹ But there are transitive uses:
    *The nurses were clattering the tea cups.*
    *By noon, rain still rattled her window.*
  ▹ Explanation: These cases involve direct manipulation of the sound emitter, where the acts of the subjects can be construed as direct causes.a

## II. Causative alternation
## Explanation by Rappaport-Hovav & Levin 2011:

▸ Cases of apparent obligatory expression of causers
  ▹ A clear case of an alternating verb: *clear*
    *The sky cleared.*
    *The wind cleared the sky.*
  ▹ Problem: The subject sometimes is obligatory.
    *The waiter cleared the counter.*
    *\*The counter cleared.*
  ▹ Should we assume here that the transitive use is basic?
  ▹ Alternative explanation: Proper Containment Condition
    When a change of state is properly contained within a causing act,
    the argument representing the act must be expressed in the same clause as the verb describing the change of state.
    *The sky cleared.*
    Is typically not seen as part of a causing act.
    *\*The counter cleared.*
    Must be embedded in a causing act, as counters do not clear by themselves.
  ▹ Condition of proper containment:
    causing event and changing event are cotemporaneous.

# II. Causative Alternation
## Some remarks on German

▸ Reflexive causative form suggests that the transitive form is basic.
  *Die Tür öffnete sich.*
  *Das Gerücht verbreitet sich.*

▸ However, reflexives occur also with intransitive verbs with non-agentive subjects:
  *Peter schämt sich.*
  [Peter EMBARASSED]

▸ This allows for an analysis of an intransitive base form,
  *Die Tür öffnete sich.*
  [the.door OPEN]

# III: Continuous Causation:
## The Dative Alternation

▸ Another verb alternation of English, with ditransitive verbs
  ▹ Double Object construction (DO):
  *Mary gave John the book.*
  ▹ Prepositional Object construction (PO):
  *Mary gave the book to John.*

▸ Much literature on this phenomenon, e.g. Levin & Rappaport-Hovav (2002)
  ▹ Monosemy view: DO and PO have the same meaning,
  differ at most in information structure.
  ▹ Polysemy view: DO and PO have different, but related meanings.

▸ Arguments for polysemy: Restrictions of the constructions.
  ▹ Animacy restriction for DO:
  *We sent a package to London.*
  *We sent London a package.*   (o.k. if *London* is a metonym, e.g. for organization)
  ▹ Success implication for DO:
  *John sent a package to Mary, but she didn't get it.*
  *John sent Mary a package, #but she didn't get it.*
  ▹ Restriction of verbs expressing continuous imparting of force:
  *John dragged the box to Mary.*        *John dragged Mary the box.*
  *John threw the box to Mary.*          *John threw Mary the box.*
  ▹ Restrictions of verbs expressing manner of communication:
  *John whispered the news to Mary.*     *John whispered Mary the news.*
  *John e-mailed the news to Mary.*      *John e-mailed Mary the news.*

# III. Continuous causation
## Explanation of restrictions of Dative Alternation

Krifka 1999, 2004, building on previous literature
- e.g. Pinker 1989, Jackendoff 1990

proposes different lexical representations within an event semantics.
- DO pattern: Caused change of possession.
    *John VERBed Mary the box.*
    ∃e∃s[AGENT(e, John) ∧ CAUSE(e, s) ∧ s: HAVE(Mary, the.box)]
- PO pattern: Caused movement to a goal.
    *John VERBed the box to Mary.*
    ∃e∃e′[AGENT(e, John) ∧ CAUSE(e, e′) ∧ MOVE(e′) ∧
        THEME(e′, the.box) ∧ GOAL(e′, Mary)]
- Explanation of animacy requirement of the DO pattern:
    ▷ HAVE(x, y) requires that x (the possessor) is animate.
    ▷ GOAL(e′, x) does not require possessor to be animate.
- Explanation lack of success implication of PO vs. success implication with DO pattern:
    ▷ GOAL(e′, x) does not necessarily imply that the goal x has been attained.
    ▷ CAUSE(e, s) implies that the state s obtains, where s: HAVE(y, x).
- Explanation of restrictions for the Dative Alternation:
    ▷ Assume: Specific verb meanings impose additional information on the patterns;
    ▷ the DO pattern sometimes is not able to accomodate this additional information.

# III. Continuous causation
## Explanation of restrictions of Dative Alternation

- Verbs expressing continuous imparting of force, e.g. *drag, pull*:
  MANNER(drag)(e, e′)
    ▷ e, the causing event, application of force to an object, in a "dragging" way.
    ▷ e′, the movement event, the object moves due to causing event e
    ▷ there is a mapping between parts of e and parts of e′, roughly:
      For every temporal part of e there is a corresponding temporal part of e′
      such that the first causes the second.
    ▷ The two events are cotemporaneous.
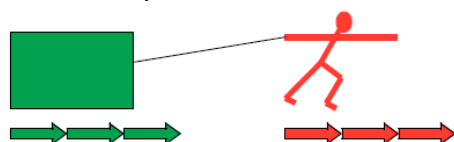


- Verbs expressing initial imparting of force, e.g. *throw, kick*:
  MANNER(throw)(e)
    ▷ e i an event in which the agent of e imparts force on the theme of e
      with his hands and then releases the theme of e.
      Notice: No reference to a movement event.
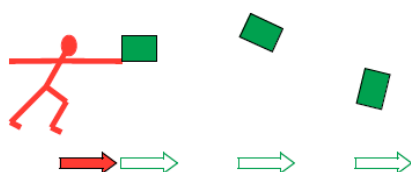
# III: Continuous Causation
## Explanation of restrictions of Dative Alternation

▶ No restriction for *throw*,
  as its meanings can be expressed with PO and DO pattern:
  *John threw the box to Mary.*
  ∃e∃e′[AGENT(e, John) ∧ **MANNER(throw)(e)** ∧ CAUSE(e, e′) ∧
      MOVE(e′) ∧ THEME(e′, the.box) ∧ GOAL(e′, Mary)]
  *John threw Mary the box.*
  ∃e∃s[AGENT(e, John) ∧ **MANNER(throw)(e)** ∧ CAUSE(e, s) ∧
      s: HAVE(Mary, the.box)]

▶ Restriction for *drag*,
  as its meaning needs a co-temporaneous movement event, which only PO provides:
  *John dragged the box to Mary.*
  ∃e∃e′[AGENT(e John) ∧ **MANNER(drag)(e, e')** ∧ CAUSE(e, e′)
      ∧ MOVE(e′) ∧ THEME(e′, the box) ∧ GOAL(e′, Mary)]
  *\*John dragged Mary the box.*
  ∃e∃s[AGENT(e, John) ∧ **MANNER(drag)(e, ?)** ∧ CAUSE(e, s) ∧
      s: HAVE(Mary, the.box)]

▶ Verbs of manner of speaking, e.g. *whisper*
  co-temporaneous manner specification, similar to *drag.*

▶ Verbs of initiating message, e.g. *e-mail*
  initial sending of message, similar to *throw.*

# References

▶ Krifka, Manfred. 1999. Manner in dative alternation. *West Coast Conference on Formal Linguistics*. Tucson: Cascadilla Press, 260-271.

▶ Krifka, Manfred. 2004. Semantics and pragmatics of the Dative Alternation (in the face of new evidence from the WWW). *Evidence in Linguistics* (Slides). Tübingen.

▶ Mithun, Marianne. 1991. Active/agentive case marking and its motivations. *Language* 67: 510-546.

▶ Rosen, Carol. 1984. The interface between semantic roles and initial grammatical relations. In: Perlmutter, David & Carol Rosen, (eds), *Studies in Relational Grammar(2)*. Chicago: University of Chicago Press, 38-77.

▶ Levin, Beth & Malka Rappaport Hovav. 1995. *Unaccusativity. At the syntax - lexical semantics interface*. Cambridge, Mass.: MIT Press.

▶ Rappaport Hovav, Malka & Beth Levin. 2011. Lexicon uniformity and the causative alternation. In: Everart, Martin, M. Marelj & T. Siloni, (eds), *The Theta system: Argument structure at the interface*. Oxford: Oxford University Press, .