Iconicity, economy and language evolution: The case of causatives

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Leipzig University

SLE 3 September 2016 Naples
“Diachronic and functional explanations of typological universals”
Outline

1. Causative constructions: typological universal
2. Functional explanations
   • Corpus evidence
   • Typological evidence
   • Experimental evidence
3. Diachronic processes: pro or contra?
4. Conclusions
The causative continuum

Lexical <> Morphological <> Analytic (Periphrastic)

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e.g. kill, break

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e.g. kill, break
e.g. Turkish öldür- “kill”
    from öl- “die”

The causative continuum

Lexical <> Morphological <> Analytic (Periphrastic)

e.g. *kill, break*  e.g. Turkish *öldür*—“kill”  e.g. *cause X to die,*
from *öl*—“die” *make X disappear*  

The causative continuum

Lexical <> Morphological <> Analytic (Periphrastic)

- e.g. *kill, break*
- e.g. Turkish *öldür-* “kill”
  from *öl-* “die”
- e.g. *cause X to die, make X disappear*

- most compact
- FORM
- least compact

The causative continuum

Lexical <> Morphological <> Analytic (Periphrastic)

- *e.g. kill, break*
- *e.g. Turkish öl dü r- “kill” from öl- “die”*
- *e.g. cause X to die, make X disappear*

most compact  FORM  least compact

most direct causation  MEANING  least direct causation

Example

• LC: I raised the cup to my lips. [Causer acting directly]

• AC: I caused the cup to rise to my lips. [Causer acting indirectly, e.g. using telekinesis]

(Haiman 1983: 784)
Typological universal

• “[T]he kind of formal distinction found across languages is identical: the continuum from analytic via morphological to lexical causative correlates with the continuum from less direct to more direct causation” (Comrie 1981: 165)
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Functional explanation: Iconicity of cohesion

• “Meanings that belong together more closely semantically are expressed by more cohesive forms” (Haspelmath 2008: 2)

• If cause and effect are closely integrated semantically, the elements that express them will be formally integrated, too.
Problem for iconicity: Dixon’s (2000) multifactorial account

<table>
<thead>
<tr>
<th>More compact causative forms</th>
<th>Less compact causative forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.  non-causal verb describing a state</td>
<td>non-causal verb describing an action</td>
</tr>
<tr>
<td>2.  intransitive (or intransitive and simple transitive) non-causal verb</td>
<td>transitive (ditransitive) non-causal verb</td>
</tr>
<tr>
<td>3.  Causee lacking control</td>
<td>Causee having control</td>
</tr>
<tr>
<td>4.  Causee willing (‘let’)</td>
<td>Causee unwilling (‘make’)</td>
</tr>
<tr>
<td>5.  Causee partially affected</td>
<td>Causee fully affected</td>
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<tr>
<td>6.  Causer acts directly</td>
<td>Causer acts indirectly</td>
</tr>
<tr>
<td>7.  Causer achieves the result intentionally</td>
<td>Causer achieves the result accidentally</td>
</tr>
<tr>
<td>8.  causation occurring naturally</td>
<td>causation occurring with effort</td>
</tr>
</tbody>
</table>
Corpus evidence supporting Dixon’s account

• Tested in two case studies based on a parallel corpus of film subtitles
  • European lexical vs. analytic causatives (15 languages) – paper to appear in the next issue of *Folia Linguistica*
  • Lexical, morphological and analytic causatives in 10 diverse languages – discussed here
## Languages

<table>
<thead>
<tr>
<th>Language</th>
<th>Genus</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>Chinese</td>
<td>Sino-Tibetan</td>
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<td>Finnish</td>
<td>Finnic</td>
<td>Uralic</td>
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<td>French</td>
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<td>Hebrew</td>
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<td>Afro-Asiatic</td>
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<tr>
<td>Indonesian</td>
<td>Malayo-Sumbawan</td>
<td>Austronesian</td>
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<td>Japanese</td>
<td>Japanese</td>
<td>Japanese</td>
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<tr>
<td>Russian</td>
<td>Slavic</td>
<td>Indo-European</td>
</tr>
<tr>
<td>Thai</td>
<td>Kam-Tai</td>
<td>Tai-Kadai</td>
</tr>
<tr>
<td>Turkish</td>
<td>Turkic</td>
<td>Altaic</td>
</tr>
<tr>
<td>Vietnamese</td>
<td>Viet-Muong</td>
<td>Austro-Asiatic</td>
</tr>
</tbody>
</table>
Data set

• 344 causative situations found in the English segment of the ParTy corpus*

• Coded for various semantic and syntactic variables (mostly based on Dixon’s parameters)

• Translations in the 10 languages are found and coded into 3 types of constructions (Analytic, Morphological or Lexical)

*http://www.natalialevshina.com/corpus.html
<table>
<thead>
<tr>
<th>Variable</th>
<th>Values</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semantics of the caused event</td>
<td>‘State’</td>
<td>John killed Bill.</td>
</tr>
<tr>
<td></td>
<td>‘Action’</td>
<td>The teacher had the students ask questions</td>
</tr>
<tr>
<td>Number of main participants</td>
<td>‘2’</td>
<td>John killed Bill.</td>
</tr>
<tr>
<td></td>
<td>‘3’</td>
<td>John made Bill to kill Mary.</td>
</tr>
<tr>
<td>Controlling Causee</td>
<td>‘Yes’</td>
<td>The teacher had the students ask questions.</td>
</tr>
<tr>
<td></td>
<td>‘No’</td>
<td>John killed Bill.</td>
</tr>
<tr>
<td>Causee acting willingly</td>
<td>‘Yes’</td>
<td>The teacher let the students leave earlier.</td>
</tr>
<tr>
<td></td>
<td>‘No’</td>
<td>The minister made the journalists wait for him.</td>
</tr>
<tr>
<td></td>
<td>‘Undef’</td>
<td></td>
</tr>
<tr>
<td>Making or letting</td>
<td>‘Make’</td>
<td>John killed Bill.</td>
</tr>
<tr>
<td></td>
<td>‘Let’</td>
<td>The teacher let the students leave earlier.</td>
</tr>
<tr>
<td>Causer acting directly</td>
<td>‘Yes’</td>
<td>John broke Bill’s arm during the fight.</td>
</tr>
<tr>
<td></td>
<td>‘No’</td>
<td>The teacher had the students ask questions.</td>
</tr>
<tr>
<td>Causer acting intentionally</td>
<td>‘Yes’</td>
<td>The thieves broke the window to get in.</td>
</tr>
<tr>
<td></td>
<td>‘No’</td>
<td>Oops, I’ve broken your Ming vase.</td>
</tr>
<tr>
<td>Causer acting forcefully</td>
<td>‘Yes’</td>
<td>John forced Bill to kill Mary.</td>
</tr>
<tr>
<td></td>
<td>‘No’</td>
<td>The teacher had students ask questions.</td>
</tr>
<tr>
<td>Causer involved in caused event</td>
<td>‘Yes’</td>
<td>Bring your friends!</td>
</tr>
<tr>
<td></td>
<td>‘No’</td>
<td>John killed Bill.</td>
</tr>
<tr>
<td>Semantics of Causer</td>
<td>‘Anim’</td>
<td>John killed Bill.</td>
</tr>
<tr>
<td></td>
<td>‘Inanim’</td>
<td>Your haircut made me think of a bird’s nest.</td>
</tr>
<tr>
<td>Semantics of Causee</td>
<td>‘Anim’</td>
<td>John killed Bill.</td>
</tr>
<tr>
<td></td>
<td>‘Inanim’</td>
<td>I broke the vase.</td>
</tr>
</tbody>
</table>
Example from Avatar

Original
• ENG: Don't shoot, you'll *piss* him *off*.

Translations
• FRA: Ne tirez pas. Vous *allez l'énérer*. (Lexical)
• TUR: *Ateş etme.* *Ateş etme.* *Onu kızdiracaksin.* (Morphological, from *kızmek* ‘become angry’).
• VIE: *Đừng bắn.* Câu sẽ *làm nó nổi điên đó.* (Analytic)
Examples of constructions

<table>
<thead>
<tr>
<th></th>
<th><strong>Lexical</strong></th>
<th><strong>Morphological</strong></th>
<th><strong>Analytic</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>sha “kill”</td>
<td>-</td>
<td>ràng “let, make” + Pred</td>
</tr>
<tr>
<td>Finnish</td>
<td>tappaa “kill”</td>
<td>odotu-tt-aa “make wait”</td>
<td>antaa “give” + V1</td>
</tr>
<tr>
<td>French</td>
<td>tuer “kill”</td>
<td>-</td>
<td>faire + Vinf</td>
</tr>
<tr>
<td>Hebrew</td>
<td>harag “kill”</td>
<td>hotsi “take out”</td>
<td>natan “give” + le-Vinf</td>
</tr>
<tr>
<td>Indonesian</td>
<td>mem-bunuh “kill”</td>
<td>meng-ingat-kan “remind”</td>
<td>membuat “make” + Pred</td>
</tr>
<tr>
<td>Japanese</td>
<td>korosu “kill”</td>
<td>ikar-ase-ru “make angry”</td>
<td>V_te + morau “get”</td>
</tr>
<tr>
<td>Russian</td>
<td>ubit’ “kill”</td>
<td>-</td>
<td>zastavit’ + Vinf</td>
</tr>
<tr>
<td>Thai</td>
<td>kaa “kill”</td>
<td>-</td>
<td>tham hai “do give” + Pred</td>
</tr>
<tr>
<td>Turkish</td>
<td>açmak &quot;open&quot;</td>
<td>öl-dür- “kill”</td>
<td>V_mA_DAT + izin ver- “allow”</td>
</tr>
<tr>
<td>Vietnamese</td>
<td>giết hài “kill”</td>
<td>-</td>
<td>làm “do” + Pred</td>
</tr>
</tbody>
</table>
Conditional inference trees: analytic vs. lexical in Turkish
<table>
<thead>
<tr>
<th>Features that favour AC (vs. LC)</th>
<th>FIN</th>
<th>FRA</th>
<th>HEB</th>
<th>IND</th>
<th>RUS</th>
<th>THA</th>
<th>TUR</th>
<th>VIE</th>
<th>ZHO</th>
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<tr>
<td>Caused Action (vs. State)</td>
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<td>3 arguments (vs. 2)</td>
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<td>Letting (vs. making)</td>
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<td>Willing Causee</td>
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<tr>
<td>Animate Causee</td>
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<td>Non-intentional Causer</td>
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Features that boost MC (vs. LC)

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<th></th>
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</tr>
<tr>
<td>Indirectly acting Causer</td>
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</tbody>
</table>
Functional explanations: Economy instead of iconicity

• The iconicity-based account (directness/indirectness) doesn’t explain the multidimensional character of variation.

• A better explanation may be the Principle of Economy: Shorter constructions tend to refer to more frequent causative situations, and longer ones to less frequent causative situations (Haspelmath 2008).

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1. Causative constructions: typological universal
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   - Corpus evidence
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   - Experimental evidence
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Corpus evidence

• Santa-Barbara Corpus of Spoken American English (Du Bois et al. 2000-2005).
• A sample of 103 causative situations from seven informal spontaneous dialogues.
• Coded for the semantic and syntactic variables that have been found to be important.
Frequencies of causation types

Caused Event

Number of arguments

Making or Letting

Action | State
---|---
0 | 80
20 | 80
40 | 80
60 | 80
80 | 80

2 | 3

0 | 100
20 | 100
40 | 100
60 | 100
80 | 100
100 | 100

Make | Let
---|---
0 | 0
Frequencies of causation types
Frequencies of causation types

- **Intentional Causer**
  - No: 10
  - Yes: 90

- **Animate Causer**
  - No: 10
  - Yes: 90

- **Causer Acting Directly**
  - No: 20
  - Yes: 80
Interim conclusion

• The causation types that are associated with less compact causative forms cross-linguistically are also the rarer causation types in usage.
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Typological evidence

• Data base of causative constructions in 83 typologically diverse languages.
• 25 instances of contrasting causatives expressing direct vs. indirect, plus contact vs. distant, factitive vs. permissive or assistive causation, etc.
• Cx1 (more direct) and Cx2 (less direct).
## Typological evidence

<table>
<thead>
<tr>
<th>Difference in Length (Economy)</th>
<th>Difference in Cohesiveness (Iconicity)</th>
<th>Number of cases</th>
</tr>
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<tbody>
<tr>
<td>Cx1 shorter than Cx2</td>
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<td>14</td>
</tr>
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e.g. Hindi (Kulikov 1993: 130):

- **paṛh-nā** ‘to study’
- Cx1: **paṛh-ā-nā** ‘to teach’ (contact causation)
- Cx2: **paṛh-vā-nā** ‘to have [someone] to study’ (distant causation)
Typological evidence

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e.g. Korean (Patterson 1974: 9–10)

Cx1: *emeni-ka* Yenghi-*eykey* say-*os-lul* *ip-l-ess-ta.*

mother-SUBJ Yenghi-IO new-clothes-DOBJ wear-CAUS-PAST-DEC

‘Mother caused Yenghi to wear the new clothes.’ [direct]

Cx2: *emeni-ka Yenghi-eykey* say-*os-lul* *lp-key* *ha-ess-ta.*

mother-SUBJ Yenghi-IO new-clothes-DOBJ wear-COMP CAUS-PAST-DEC

‘Mother caused Yenghi to wear the new clothes.’ [indirect]
### Typological evidence

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Interim conclusions

• Length is more relevant for variation of causatives than cohesiveness.
• Thus, the economy-based explanation should be preferred to the iconicity-based one.

Levshina, N. 2017. *Functions of Language*. 
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Experimental evidence

• Artificial language learning experiment (learning a language spoken by aliens)

• A paradigm for testing hypotheses about language evolution (e.g. Christiansen 2000).

• The training set contained causative situations of two types:
  • A UFO blinks with yellow light, from above, and a cactus disappears/appears/grows/shrinks. Frequent (80%).
  • A UFO blinks with blue light, from the left side, and a cactus disappears/appears/grows/shrinks. Rare (20%).

• Types of morphological causatives: with prefixes ga-/gara- (yellow light and frequent) and te-/tere- (blue light and rare)

• Free variation of allomorphs, i.e. no rules when to use the shorter or longer forms.
Hypothesis

• The participants will tend to produce the shorter form (i.e. ga-/gara-) when describing the more frequent causative situations and the longer form for the less frequent causative situations (i.e. te-/tere-).

<table>
<thead>
<tr>
<th></th>
<th>Long form</th>
<th>Short form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequent situations</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Rare situations</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>
Participants

• Recruited via LinguistList and other networks
• So far, 26 people with diverse L1: Czech, English, German, Italian, Russian, etc.
• Nobody guessed about the purpose of the experiment.
• The subjects, as good linguists, were trying hard to find the rules, but were frustrated and probably angry with me.
Thanks and sorry!
Preliminary results

- **Subjects**
  - Short
  - Equal
  - Long
Interim conclusions

• Overall, subjects tend to prefer shorter forms.
• However, subjects more strongly prefer shorter forms when the meanings are more frequent.
• Longer forms may persist if they convey less frequent meanings.
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Diachronic evidence: form

• Today’s analytic causatives are often yesterday’s noncausative constructions, e.g. purposive ones.
  • Lat. *facere* +ACC + *V*\textsubscript{INF} < *facere* + *ut* + clause (SUBJ)

• Today’s causative affixes are often elements of yesterday’s analytic causatives.
  • *purify*, *solidify*, *simplify*, etc.: -fy < Lat. adj + *facere*

• Today’s lexical causatives are often yesterday’s morphological causatives.
  • *drench* < *drank*, *set* < *sat*, *raise* < *rose* + -jan (in pre-Old English)
  • But die – kill, etc.

Royster 1922, Givón 1971, Song 1996
Diachronic evidence: meaning

• Not much evidence
• Usually, the grammaticalized or lexicalized and therefore more compact forms also begin to denote more direct causation
  • E.g. the loss of morphological productivity of Lithuanian morphological causatives is accompanied by a semantic shift towards the semantic prototype of transitivity, e.g. the systematic increase of inanimate Causees/Patients (Arkadjev & Pakerys 2015)
• How come?
$kill = \text{[Direct causation]}$
Innovation due to expressivity needs or extravagance  
(Haspelmath 1999)
Wow, this unusual expression must mean something untypical, like indirect causation!

“cause to die”

Economy-based pragmatic inference,

e.g. Horn 1984
kill = [Direct causation]
cause to die = [Indirect causation]

Conventionalization, increase in frequency
Frequency effects

• If the form is used very frequently:
  1) chunking and erosion = formal reduction
  2) it becomes more expected and typical => gradual association with more expected causation types (e.g. direct causation) via the economy-based pragmatic mechanism.

• This provides the link between the functional explanation and the diachronic processes.
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Conclusions

• The typological correlation between form and function of causatives is best explained by the functional Principle of Economy. This claim is supported by the usage-based, typological and experimental evidence.

• The diachronic evidence does not challenge this functional account. The creation and conventionalization of newer, less compact causatives, as well as the semantic change of older, more compact causatives, should be driven by the pragmatic principles based on economy, too.
Thanks!

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natalevs@gmail.com
natalia.levshina@uni-leipzig.de

The slides are available from
www.natalialevshina.com/presentations.html