Predictability and informativeness in iconicity of complexity: A Gricean perspective

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SYNOPSIS

- A new study design for semantic typology
- Preliminary findings
- Iconicity in causatives: a Gricean account
- Summary
A NEW STUDY DESIGN FOR SEMANTIC TYPOLOGY

- domain: form-meaning mapping in causatives
  - the ‘Iconicity Principle’ (Haiman 1983): simple ‘direct’ causal chains favor simple causative constructions

(1.1) Le=máak=o’ t-u=nik-ah le=bàaso-s-o’b=o’
YUC DEF=person=D2 PRV-A3=scatter-CMP(B3SG) DEF=cup-PL-PL=D2
‘The man, he scattered the cups’

Figure 3.1. HO5_cuptower
the Iconicity Principle (cont.)

- while more complex constructions/descriptions are preferred for more complex, ‘indirect’ chains
  - e.g. Bohnemeyer et al (2010); Comrie (1981); Dixon (2000); Haiman (1983); Haspelmath (2008); Kemmer & Verhagen (1994); Levin & Rappaport-Hovav (1995); Levshina 2015, 2016, 2017; McCawley (1976, 1978); Shibatani ed. (1976); Shibatani & Pardeshi (2002); Talmy (1976); Verhagen & Kemmer (1997); Wolff (2003); inter alia

(1.2) a. #Le=x-ch’úupal=o’ t-u=nik-ah  
    le=bàaso-s-o’b=o’
    YUC  DEF=female:child=D2  PRV-A3=shatter+slap-APP-CMP(B3SG)  DEF=cup-PL-PL=D2
    ‘The girl, she scattered the cups’

b. Le=x-ch’úupal=o’  t-u=mèet-ah
    DEF=F-female:child=D2  PRV-A3=make-CMP(B3SG)
    u=nik-ik  le=bàaso-o’b  le=máak=o’
    A3=scatter-INC(B3SG)  DEF=cup-PL  DEF=person=D2
    ‘The girl, she made the man scatter the cup’

Figure 3.2. HUO2_cups
our research question: what exactly does ‘simple’ or ‘direct’ mean - and does it mean the same thing across languages?

some candidate variables
(cf. Bohnemeyer et al 2010; Dixon 2000)

mediation - the presence/absence of an intermediate subevent b/w cause and effect

≈ an intermediate participant (CE) b/w CR and AF

prototypicality - the extent to which the causal chain conforms to the prototypical agent-patient schema

hypothesized to be associated with simple transitive causative clauses (Hopper & Thompson 1980)

in particular, agentivity of the CR
and patientivity of the CE/AF (the second chain participant)
some candidate variables (cont.)

- **domain** - physical/biological vs. psychological vs. social causation

- **force dynamics** - causation vs. letting/enabling (Talmy 1988)

- **contiguity** of subevents - absence/presence of temporal/spatial gaps b/w subevents

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**Figure 1.1.** A multidimensional continuum model of causation directness
previous quantitative studies into the form-meaning mapping in causatives

- typological “library” studies: Escamilla 2012

- elicited production studies: Bohnemeyer et al 2010

a new approach

Figure 1.2. *A hybrid study design for semantic typology*
advantages of this hybrid design type

vis-à-vis corpus studies

applicable to languages for which (large) corpora are unavailable

provides both positive and negative evidence

gives direct access to the scene being described

vis-à-vis traditional elicited production studies (the staple in contemporary semantic typology)

allows rapid data collection and analysis from a larger number of speakers

provides both positive and negative evidence
SYNOPSIS

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PRELIMINARY FINDINGS

- the languages from which data has been collected for the Semantic Typology subproject so far

Figure 2.1. The current sample of the CAL Semantic Typology subproject
populations included in the analysis so far and researchers waiting in the wings:

- Ewe (J. Essegbey, UFL); Mandarin (J. Du, F. Li, Beihang U)

**Table 2.1. The current sample of the CAL Semantic Typology subproject**

<table>
<thead>
<tr>
<th>Language</th>
<th>Genus</th>
<th>Field site</th>
<th>Participants</th>
<th>Researcher</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Datooga</td>
<td>Nilotic</td>
<td>Tanzania</td>
<td>12</td>
<td>A. Mitchell</td>
<td>U of Bristol</td>
</tr>
<tr>
<td>English</td>
<td>Germanic</td>
<td>U.S.A.</td>
<td>13</td>
<td>E. Bellingham, S. Evers</td>
<td>UB</td>
</tr>
<tr>
<td>Japanese</td>
<td>Japonic</td>
<td>Japan</td>
<td>14</td>
<td>K. Kawachi</td>
<td>National Defense Academy of Japan</td>
</tr>
<tr>
<td>Korean</td>
<td>Isolate</td>
<td>R.O.K.</td>
<td>12</td>
<td>S. Park</td>
<td>UB</td>
</tr>
<tr>
<td>Russian</td>
<td>Slavic</td>
<td>Russia</td>
<td>12</td>
<td>A. Stepanova</td>
<td>UB</td>
</tr>
<tr>
<td>Sidaama</td>
<td>Cushitic</td>
<td>Ethiopia</td>
<td>12</td>
<td>K. Kawachi</td>
<td>National Defense Academy of Japan</td>
</tr>
<tr>
<td>Yucatec</td>
<td>Mayan</td>
<td>Mexico</td>
<td>12</td>
<td>J. Bohnemeyer</td>
<td>UB</td>
</tr>
<tr>
<td>Zauzou</td>
<td>Lolo-Burmese</td>
<td>P.R.C.</td>
<td>12</td>
<td>Y. Li</td>
<td>UB</td>
</tr>
</tbody>
</table>
causative coding devices included in the analysis

Table 2.2. Causative coding devices in the sample languages that were included in the analysis

<table>
<thead>
<tr>
<th>Construction</th>
<th>Datooga</th>
<th>English</th>
<th>Swedish</th>
<th>Japanese</th>
<th>Korean</th>
<th>Russian</th>
<th>Sidaama</th>
<th>Yucatec</th>
<th>Zauzou</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transitive causative verbs</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>Morphological causatives</td>
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<td>No</td>
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<td>✔️</td>
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<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Resultative constructions</td>
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<td>✔️</td>
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<td>✔️</td>
<td>No</td>
<td>No</td>
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<td>✔️</td>
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<tr>
<td>Periphrastic causatives</td>
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<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>Single-core constructions augmented by an oblique</td>
<td>✔️</td>
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<td>No</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>No</td>
<td>✔️</td>
<td>No</td>
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<tr>
<td>Event nominalizations used as causer arguments</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<td>No</td>
</tr>
<tr>
<td>Causal converb constructions</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>✔️</td>
<td>✔️</td>
<td>No</td>
<td>✔️</td>
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<tr>
<td>Causal connective constructions</td>
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<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>‘So X that Y’-type constructions</td>
<td>No</td>
<td>✔️</td>
<td>✔️</td>
<td>No</td>
<td>No</td>
<td>✔️</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
we used the **Layered Structure of the Clause** model of Role and Reference Grammar (Van Valin 2005)

to assign a complexity level to each construction type

**Figure 2.3.** Juncture (left) and nexus types in the Layered Structure of the Clause model (Van Valin 2005: 188)
distribution of construction types of juncture levels

**Table 2.3.** Construction types by language and juncture (AC – Adjunct causer/reason (‘because of x’), CC – Causal connective, CV – Converb, MC – Morphological causative, PC – Periphrastic causative, RV – Resultative construction (incl. resultative-type serial verb construction), SC - Scalar Connective construction (‘So x that y’), TC - Transitive causative verb)

<table>
<thead>
<tr>
<th>Language</th>
<th>Juncture level</th>
<th>Field site</th>
<th>Simplex or nuclear-layer</th>
<th>Core-layer</th>
<th>Clause-layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Datooga (Nilotic)</td>
<td>Tanzania</td>
<td>MC, TC</td>
<td>AC, PC, SC</td>
<td>CC</td>
<td></td>
</tr>
<tr>
<td>English (Germanic)</td>
<td>United States</td>
<td>RV, TC</td>
<td>PC</td>
<td>AC, CC, SC</td>
<td></td>
</tr>
<tr>
<td>Japanese (Japonic)</td>
<td>Japan</td>
<td>MC, TC</td>
<td>AC</td>
<td>CC</td>
<td></td>
</tr>
<tr>
<td>Korean (isolate)</td>
<td>South Korea</td>
<td>MC, RV, TC</td>
<td>PC</td>
<td>CC, CV</td>
<td></td>
</tr>
<tr>
<td>Russian (Slavic)</td>
<td>Russia</td>
<td>TC</td>
<td>PC</td>
<td>AC, CC, SC</td>
<td></td>
</tr>
<tr>
<td>Sidaama (Cushitic)</td>
<td>Ethiopia</td>
<td>MC, TC</td>
<td>AC, PC</td>
<td>CC</td>
<td></td>
</tr>
<tr>
<td>Swedish (Germanic)</td>
<td>Sweden</td>
<td>RV, TC</td>
<td>PC</td>
<td>CC, SC</td>
<td></td>
</tr>
<tr>
<td>Yucatec (Mayan)</td>
<td>Mexico</td>
<td>MC, TC</td>
<td>PC</td>
<td>CC</td>
<td></td>
</tr>
<tr>
<td>Zauzou (Loloish)</td>
<td>China</td>
<td>RV</td>
<td>CC, CV, PC</td>
<td>CC</td>
<td></td>
</tr>
</tbody>
</table>
- analysis: a descriptive look at the data
- compact response types: simplex causative verbs, morphological causatives, complex predicates
- rarely acceptable with mediated (‘indirect’) chains
- exceptions occur in languages that allow compact causatives of already base-transitive verbs (Japanese, Sidaama, Zauzou)

Figure 2.4. Compact response types: proportion of ceiling rating per clip by mediation and causer type (dots represent clips)
analysis: a descriptive look at the data (cont.)

periphrastic causatives: acceptable with both unmediated and mediated chains

Figure 2.5. Periphrastic causatives: proportion of ceiling rating per clip by mediation and causer type (dots represent clips)
analysis: predictive models - conditional inference trees (Hothorn, Hornik, & Zeileis 2006; Tagliamonte & Baayen 2012)

compact response types only: mediation is the most powerful predictor in most languages

Figure 2.6. Conditional inference trees predicting ceiling rating for compact responses in English, Yucatec, Swedish, Zauzou, and Russian (left to right and top to bottom). IntPart - Mediation; CRType - Causer Type; CEAFType - Causee/Affectee Type)
analysis: predictive models - conditional inference trees (cont.)

- exceptions occur in Japanese and Korean due to specific properties of morphological (Japanese) and syntactic (Korean) causatives in these languages.
- the Datooga and Sidaama data could not be modeled due to paucity of observations (Datooga) and rampant inter-speaker variation (Sidaama).

**Figure 2.7.** Conditional inference trees predicting ceiling rating for compact responses in Japanese (left) and Korean (IntPart - Mediation; CRType - Causer Type; CEAFType - Causee/Affectee Type)
analysis: predictive models - conditional inference trees (cont.)

a cross-population model of the compact stimulus ratings shows the same effects

Figure 2.8. Conditional inference tree predicting ceiling rating for compact responses across populations
(IntPart - Mediation; CRTYPE - Causer Type; CEAFTYPE - Causee/Affectee Type; Da - Datooga; En - English; Jp - Japanese; Ko - Korean; Ru - Russian; Si - Sidaama; Sw - Swedish; Yu - Yucatec; Za - Zauzou)
STUDY II: SEMANTIC TYPOLOGY (CONT.)

- analysis: predictive models - conditional inference trees (cont.)
- in contrast, core junctures show much more variation across populations

Figure 2.9. Conditional inference tree predicting ceiling rating for core junctures across populations (IntPart - Mediation; CRTyp - Causer Type; CEAFTyp - Causee/Afectee Type; Da - Datooga; En - English; Jp - Japanese; Ko - Korean; Ru - Russian; Si - Sidaama; Sw - Swedish; Yu - Yucatec; Za - Zauzou)
analysis: predictive models - conditional inference trees (cont.)

- for clause-layer junctures, mediation no longer is a significant factor

**Figure 2.10.** Conditional inference tree predicting ceiling rating for clausal junctures across populations (IntPart - Mediation; CRType - Causer Type; CEAFType - Causee/Afectee Type; Da - Datooga; En - English; Jp - Japanese; Ko - Korean; Ru - Russian; Si - Sidaama; Sw - Swedish; Yu - Yucatec; Za - Zauzou)
interim conclusions

- the Iconicity Principle is borne out quantitatively across languages
- however, the preferred structural complexity level of causatives is driven not only by Mediation
- but also by Causer Type and Causee/Affectee Type
- and in some languages, those competing variables dominate over Mediation

Figure 2.11. A multidimensional continuum model of causation directness
SYNOPSIS

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**ICONICITY IN CAUSATIVES: A GRICEAN ACCOUNT**

- why does the Iconicity Principle hold across languages?

(5.1) \( \text{Le=máak=’} \ t-u=\text{nik-ah} \quad \text{le=bàaso-s-o’b=’} \)

**YUC**  
DEF=person=D2  PRV-A3=scatter-CMP(B3SG)  DEF=cup-PL-PL=D2  
‘The man, he scattered the cups’

(5.2) a. #\( \text{Le=x-ch’úupal=’} \ t-u=\text{nik-ah} \quad \text{le=bàaso-s-o’b=’} \)

**YUC**  
DEF=female:child=D2  PRV-A3=shatter+slap-APP-CMP(B3SG)  DEF=cup-PL-PL=D2  
‘The girl, she scattered the cups’

b. \( \text{Le=x-ch’úupal=’} \ t-u=\text{mèet-ah} \)

**YUC**  
DEF=F-female:child=D2  PRV-A3=make-CMP(B3SG)  
\( u=\text{nik-ik} \quad \text{le=bàaso-o’b} \quad \text{le=máak=’} \)

\( \text{A3=scatter-INC(B3SG)} \quad \text{DEF=cup-PL} \quad \text{DEF=person=D2} \)

‘The girl, she made the man scatter the cup’
why does the Iconicity Principle hold across languages? (cont.)

- Haspelmath (2008): frequency/predictability
  - more frequent = predictable constructions are used for more frequent = predictable meanings

- Zipf’s Law of Abbreviation (Zipf 1935, 1945)

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th></th>
<th>Frequency</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>stop</td>
<td>3267</td>
<td>cause to stop</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>kill</td>
<td>2400</td>
<td>cause to die</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>raise</td>
<td>466</td>
<td>cause to rise</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>bring down</td>
<td>269</td>
<td>cause to come down</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>drown</td>
<td>80</td>
<td>cause to drown</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

*Table 5.1. Frequency of some lexical and syntactic causatives in the British National Corpus (Haspelmath 2008: 23)*
why does the Iconicity Principle hold across languages? (cont.)

McCawley (1978): Gricean account of the frequency/predictability effect

(5.3) *Sally stopped the car*
Simple high-frequency expression: stereotype implicature
(Atlas & Levinson 1981) to direct causation

(5.4) *Sally caused the car to stop*
Complex, infrequent expression: manner implicature to indirect causation
why does the Iconicity Principle hold across languages? (cont.)

- however, iconicity of complexity is driven not only by manner and stereotype implicatures
  - but also by scalar implicatures

(5.5) **Entailment patterns between more/less informative utterances involving non-causative descriptions**

a. *Floyd has more than two cats* :: *Floyd has two cats*
b. *Sally and Floyd bought a piano* :: *Sally bought a piano*

(5.6) **Implicatures licensed by the entailment relation in (5.5)**

a. *Floyd has two cats* -> *Floyd has exactly two cats*
b. *Sally bought a piano* -> *Sally bought a piano by herself*
(5.7) **Entailment patterns between more/less informative utterances involving causative descriptions**

a. *Floyd broke the vase* :: *The vase broke*
b. *Sally made Floyd break the vase* :: *Floyd broke the vase*

(5.8) **Implicatures licensed by the entailment relation in (5.7)**

a. *The vase broke* +> *Nobody broke the vase (intentionally)*
b. *Floyd broke the vase* +> *Nobody made Floyd break the vase*
cf. also Rappaport-Hovav (2014)

who anticipates the above analysis w/o explicitly treating it as scalar implicature phenomena

“In the description of a change of state, the cause of the change of state is relevant; therefore, since an utterance which specifies the cause of the change of state is more informative than one which expresses just the change of state, it is to be preferred, all things being equal. (…) When are all things not equal? That is, when is the anticausative licensed even though the corresponding causative is more informative? I suggest that there are two such conditions: (i) the cause is recoverable from context; (ii) the speaker does not know the cause.” (Rappaport-Hovav 2014: 23)
fundamentally, all generalized conversational implicatures involve a metalinguistic comparison

between the actual utterance $U$ and potential alternative descriptions of the same situation $s$
due to this metalinguistic aspect, both Manner and Quantity maxims promote iconicity of complexity

"(A) We might be well advised to consider more closely the nature of representation and its connection with meaning, and to do so in the light of three perhaps not implausible suppositions.

(1) That representation by means of verbal formulations is an artificial and noniconic mode of representation. (2) That to replace an iconic system of representation by a noniconic system will be to introduce a new and powerful extension to the original system, one which can do everything the former system can do and more besides. (3) That every artificial or noniconic system is founded upon an antecedent natural iconic system." (Grice 1989: 358; emphasis JB)
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Summary
SUMMARY

- the Iconicity Principle is empirically confirmed
  - contrary to Escamilla (2012)
  - across languages, speakers prefer
    - morphosyntactically simpler representations for semantically simpler (more direct) causal chains
    - morphosyntactically more complex representations for semantically more complex (less direct) causal chains
- however, directness of causation is sensitive not only to mediation, but also to a host of other factors
  - including agentivity, patientivity, and force dynamics
languages differ in the primary semantic variable that governs complexity of causatives

- in most languages in our sample, this is mediation
  - i.e., the presence/absence of an intermediate participant in the causal chain

- however, in Japanese, the dominant variable is agentivity

  compact descriptions (incl. morphological causatives) are acceptable with mediated chains,

  but not with accidental human causers or natural force causers
iconicity of complexity in causative representations is driven not only by frequency/predictability

- high-frequency constructions <-> stereotypical scenes
- low-frequency constructions <-> atypical scenes

but also by informativeness

- less informative representations trigger scalar implicatures
  - to the non-applicability of richer alternatives

both effects are predicted and explained under a broad Gricean framework of communication
ACKNOWLEDGMENTS

- epic thanks to the CAL researchers who contributed to the studies presented here

Clockwise from top left: Erika Bellingham, Pia Järnefelt, Yu Li, Guillermo Montero-Melis, Anastasia Stepanova, Sang-Hee Park, Alice Mitchell, Kazuhiro Kawachi
massive thanks also to

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all of whom shall be held blameless for any foolish and harebrained claims in this presentation

our sponsor

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REFERENCES


ありがとう!

ありがとうございます!

Thanks!