# Modeling causative complexity across languages with the Interclausal Relations Hierarchy

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# SYNOPSIS

- Introducing CAL
- A new study design for semantic typology
- Variables and stimuli: the CAL Clips
- Preliminary findings
- Summary

# INTRODUCING CAL

- Causality Across Languages
  - NSF Award #BCS-1535846; PI J. Bohnemeyer
- a new horizon in semantic typology: causality
  - first ever large-scale *meaning-based* crosslinguistic study of the representation of causality

- subprojects
  - *The semantic typology of causality*
    - how are causal chains semantically categorized across languages for the purposes of linguistic encoding?
  - *The representation of causality in discourse*
    - how are causal chains represented in narratives across languages?
  - *Causality at the syntax-semantics interface*
    - how much variation is there across languages in form-to-meaning mapping in the representation of causal chains?
  - *Causality in language and cognition*
    - how are causal chains cognitively categorized across cultures and what role does language play in this variation?

- the sample

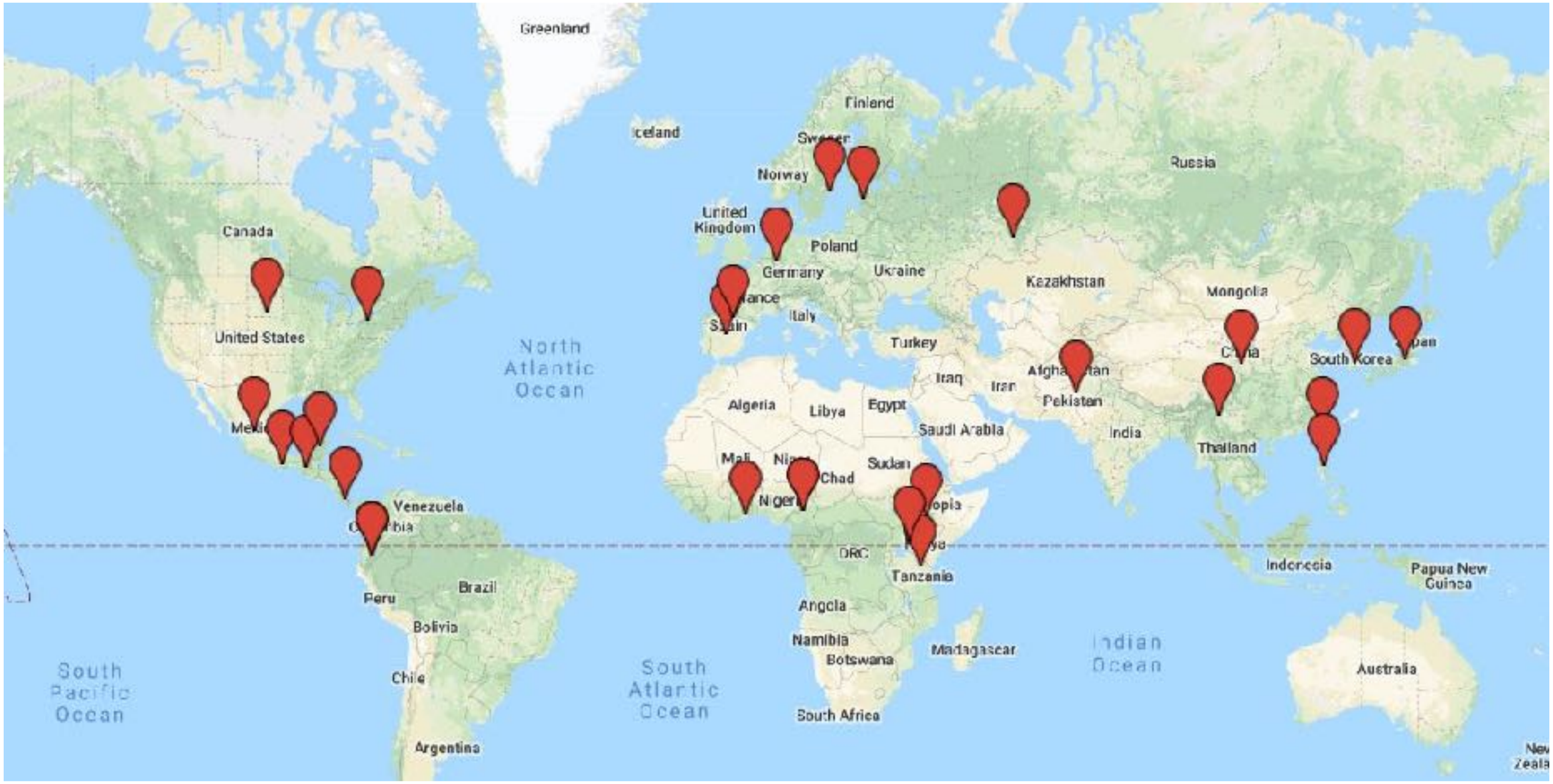


**Figure 1.1.** *Big map, lotsa languages, southern void*

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# A NEW STUDY DESIGN FOR SEMANTIC TYPOLOGY

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

(2.1) 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 2.1.** *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); *inter alia*

(2.2) 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 2.2.** *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:** the extent to which the causer is a prototypical intentional human agent

- 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

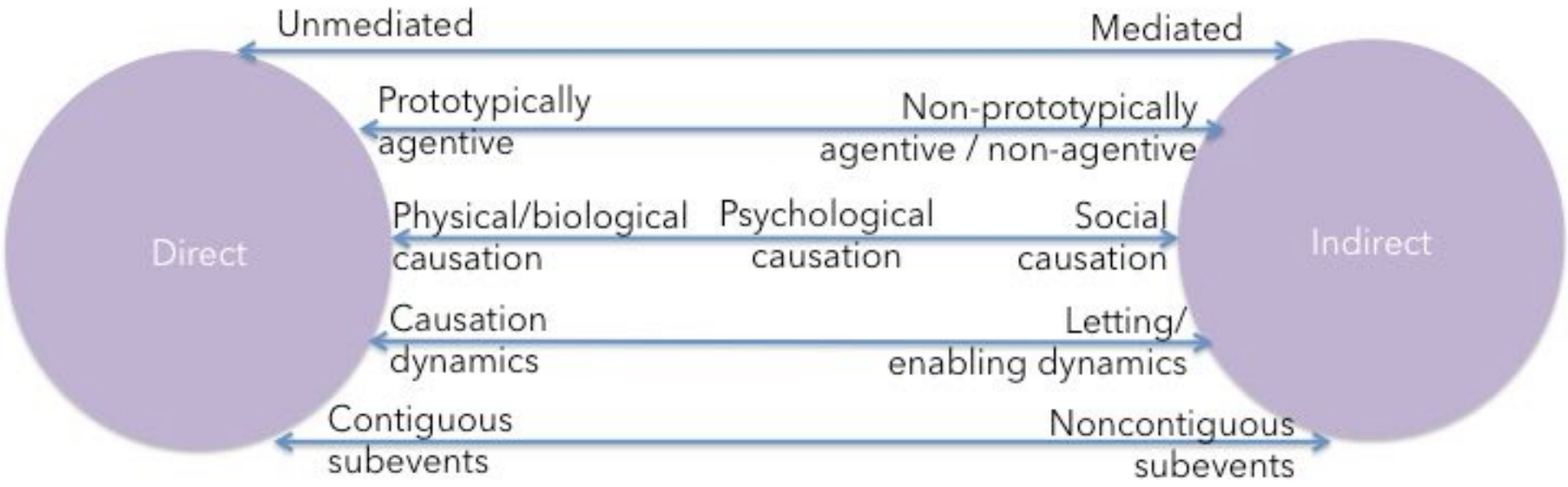


**Figure 2.3.** *A multidimensional continuum model of causation directness*

- previous quantitative studies
  into the form-meaning mapping in causatives
  - typological "library" studies: Escamilla 2012
  - elicited production studies: Bohnemeyer et al 2010
  - corpus-based studies:
    Haspelmath 2008: 22-23; Levshina 2015, 2016, 2017

- a new approach

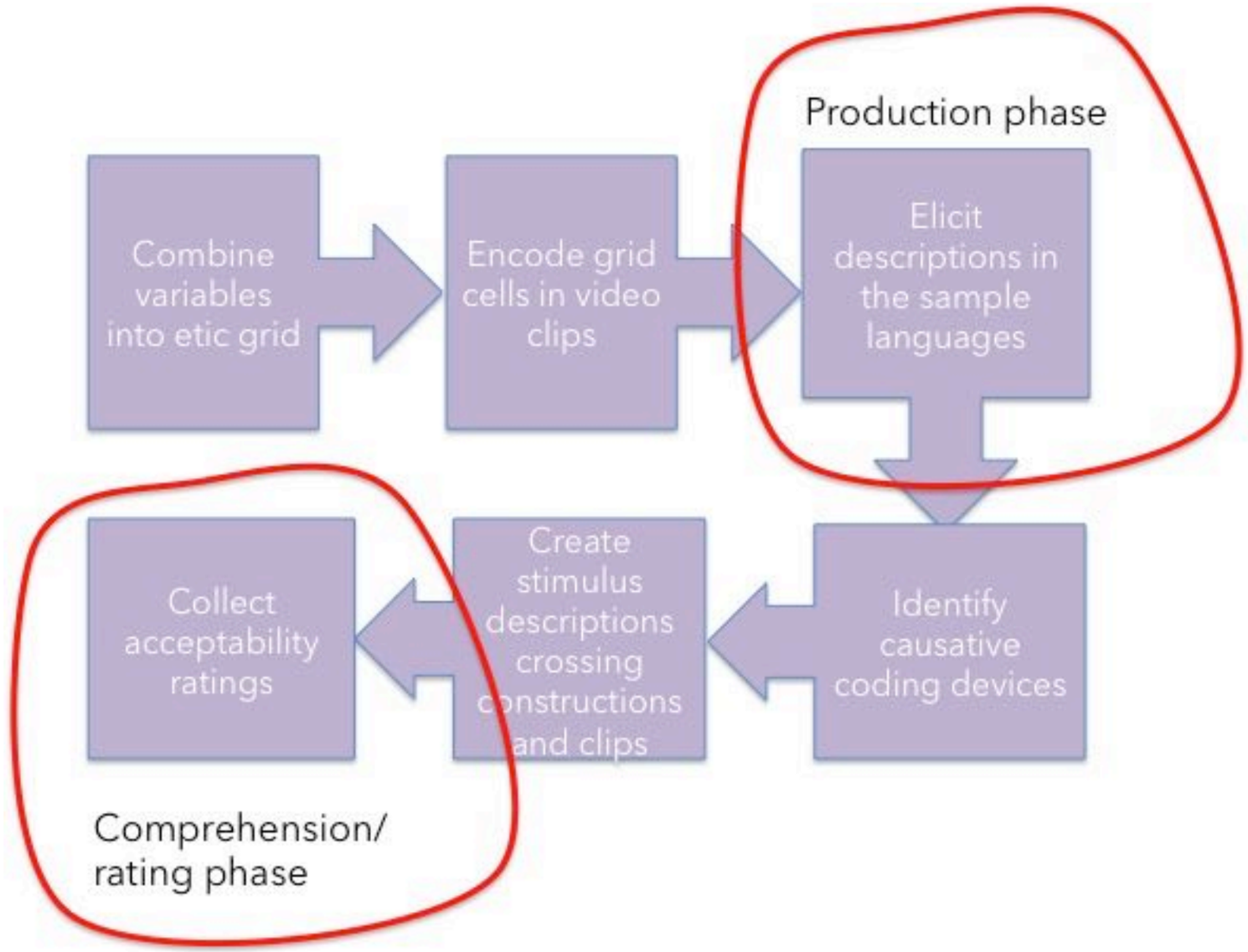


**Figure 2.4.** *A hybrid study design for semantic typology*

- 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

- we used the **Layered Structure of the Clause** (LSC) model of Role and Reference Grammar (Van Valin 2005)
  - to assign a complexity level to each construction type

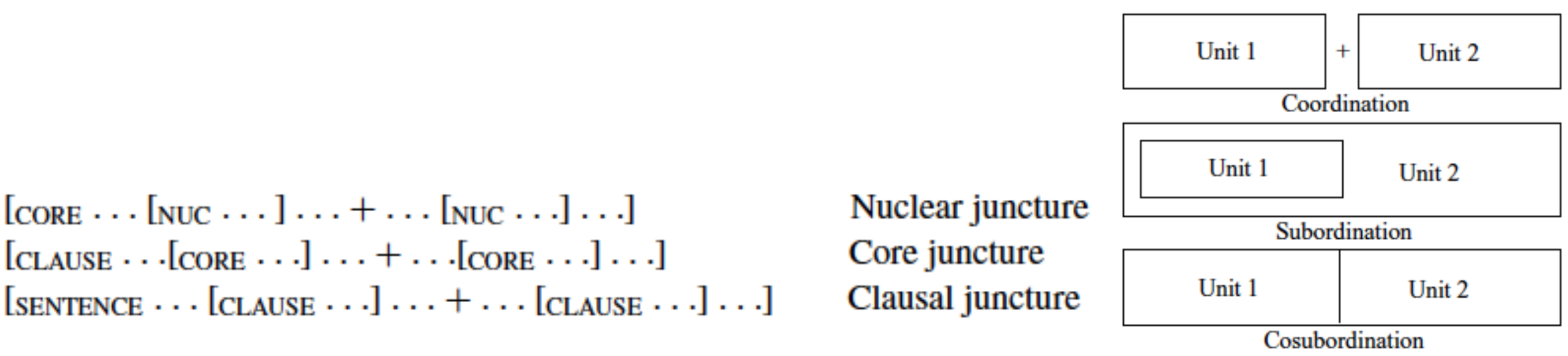


**Figure 2.5.** *Juncture (left) and nexus types in the Layered Structure of the Clause model (Van Valin 2005: 188)*

- why the LSC model?
  - because it gives us a single scale
    - on which to rank the relative complexity level of any causative coding device
      - namely, the morphosyntactic side of the Interclausal Relations Hierarchy
- in contrast, in phrase structure grammars, one would have to assess separately
  - the complexity of the causing event representation
  - the complexity of the resulting event representation
  - the complexity of the construction that relates the two

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# VARIABLES AND STIMULI: THE CAL CLIPS


- design: E. Bellingham; J. Bohnemeyer
- 58 short video clips featuring everyday causal chains
  - most staged/enacted, a few found on the internet
- variables manipulated
  - **causer** (**CR**) type: volitional vs. accidental vs. force
  - **causee** (**CE**; = intermediate participant in the chain) type
    - volitional/controlled
    - vs. involuntary response to psychological impact
    - vs. involuntary response to mechanical impact
    - vs. no CE

- **affectee** (**AF**) type
  - volitional/controlled
  - vs. involuntary response to psychological impact
  - vs. involuntary response to mechanical impact
    - vs. physical object
- **resulting event type**
  physical state change vs. location change vs. process
- **force dynamics**
  - causation (43 core + 10 sup.) vs. letting (5 sup. scenes)

- stimuli: the CAL Clips (cont.)
  - examples
    - CR = force; CE = none; AF = mechanically impacted; resultant event = location change; FD = causation


**Figure 3.1.** *NM2_reporter*

- stimuli: the CAL Clips (cont.)
  - examples (cont.)
    - CR = accidental; CE = volitional/controlled; AF = object; resultant event = location change; FD = letting

**Figure 3.2.** *UCO1_ball*

- stimuli: the CAL Clips (cont.)
  - examples (cont.)
    - CR = volitional; CE = psychologically impacted; AF = object; resultant event = physical change; FD = letting

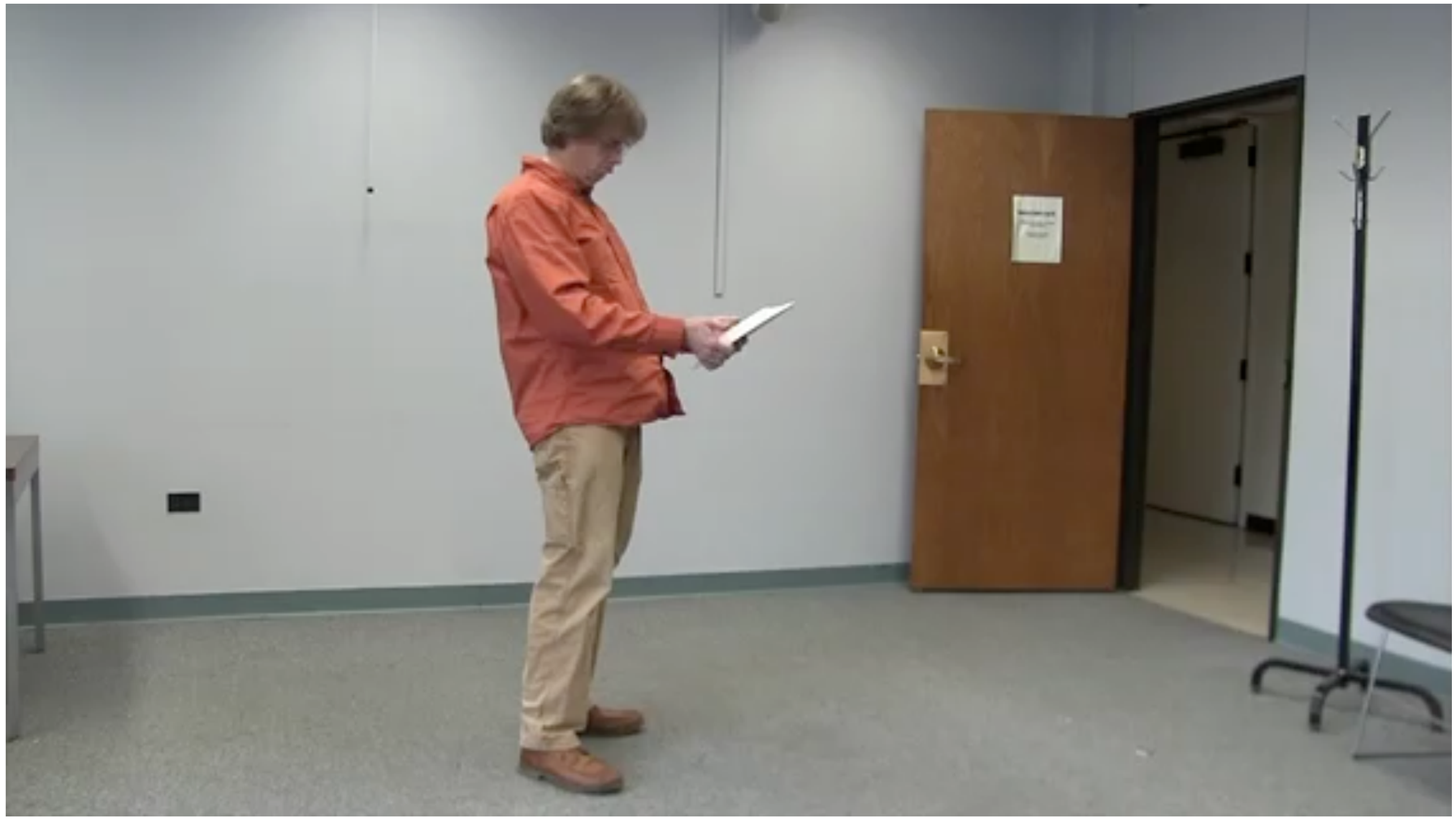

**Figure 3.3.** *HUO1_plate*

- stimuli: the CAL Clips (cont.)
  - examples (cont.)
    - CR = volitional; CE = volitional/controlled; AF = object; resultant event = process; FD = causation

**Figure 3.4.** *HCOproc1_swing*

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# PRELIMINARY FINDINGS

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


**Figure 4.1.** *The current sample of the CAL Semantic Typology subproject*

- populations included in the analysis so far and researchers

**Table 4.1.** *The current sample of the CAL Semantic Typology subproject*

| Language | Genus | Field site | Participants | Researcher | Affiliation |
|---|---|---|---|---|---|
| Datooga | Nilotic | Tanzania | 12 | A. Mitchell | U of Bristol |
| English | Germanic | U.S.A. | 13 | E. Bellingham, S. Evers | UB |
| Japanese | Japonic | Japan | 14 | K. Kawachi | National Defense Academy of Japan |
| Korean | Isolate | R.O.K. | 12 | S. Park | UB |
| Russian | Slavic | Russia | 12 | A. Stepanova | UB |
| Sidaama | Cushitic | Ethiopia | 12 | K. Kawachi | National Defense Academy of Japan |
| Swedish | Germanic | Sweden | 12 | P. Järnelelt, G. Montero-Melis, F. Rylund | Stockholm U |
| Yucatec | Mayan | Mexico | 12 | J. Bohnemeyer | UB |
| Zauzou | Lolo-Burmese | P.R.C. | 12 | Y. Li | UB |

- waiting in the wings:
  Ewe (J. Essegbey, UFL); Mandarin (J. Du, F. Li, Beihang U)

- causative coding devices included in the analysis

**Table 4.2.** *Causative coding devices in the sample languages that were included in the analysis*

| Construction | Datooga | English | Swedish | Japanese | Korean | Russian | Sidaama | Yucatec | Zauzou |
|---|---|---|---|---|---|---|---|---|---|
| Transitive causative verbs | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | No |
| Morphological causatives | ✓ | No | No | ✓ | ✓ | No | ✓ | ✓ | No |
| Resultative constructions | No | ✓ | ✓ | No | ✓ | No | No | No | ✓ |
| Periphrastic causatives | ✓ | ✓ | ✓ | No | ✓ | ✓ | No | ✓ | ✓ |
| Single-core constructions augmented by an oblique causer PP/NP | ✓ | ✓ | No | ✓ | ✓ | No | ✓ | No | No |
| Event nominalizations used as causer arguments | No | No | No | No | ✓ | ✓ | ✓ | No | No |
| Causal converb constructions | No | No | No | ✓ | ✓ | No | ✓ | No | No |
| Causal connective constructions | ✓ | ✓ | ✓ | ✓ | No | ✓ | ✓ | ✓ | ✓ |
| 'So X that Y'-type constructions | No | ✓ | ✓ | No | No | ✓ | No | No | No |

- distribution of construction types over LSC juncture levels

**Table 4.3.** *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)*

| Juncture level<br>Language | Field site | Simplex or nuclear-layer | Core-layer | Clause-layer |
|---|---|---|---|---|
| Datooga (Nilotic) | Tanzania | MC, TC | AC, PC, SC | CC |
| English (Germanic) | United States | RV, TC | PC | AC, CC, SC |
| Japanese (Japonic) | Japan | MC, TC | AC | CC |
| Korean (isolate) | South Korea | MC, RV, TC | PC | CC, CV |
| Russian (Slavic) | Russia | TC | PC | AC, CC, SC |
| Sidaama (Cushitic) | Ethiopia | MC, TC | AC, PC | CC |
| Swedish (Germanic) | Sweden | RV, TC | PC | CC, SC |
| Yucatec (Mayan) | Mexico | MC, TC | PC | CC |
| Zauzou (Loloish) | China | RV | CC, CV, PC | CC |