Arboreal containment

Susi Wurmbrand

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This work has been supported by the Austrian Science Fund (FWF) Project Implicational hierarchies in clausal complementation (P34012-G).

NYI Universe, November 2022

The hard questions about clause structure

- What parts of clause structure, if any, are universal?
- Is there a universal set of categories/features/meanings that make up clause structure?
- What evidence can we use to determine clause structure and the order of projections?
 - \hookrightarrow Containment, implicational hierarchies, truncation

Three broad clausal domains Complementation hierarchy Structure withing broad domains

Basic clause structure

- Abstracting away from labels and specific instantiations, a three-way split is widely assumed.
 - Extended V-projection, labels: Voice, v, I, Mod, Asp, C...
 - Clausal domain with specific functions: operator (A'), A-properties, argument structure (Grohmann, 2003)
 - Semantic/conceptional sorts (Ramchand and Svenonius, 2014)



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Containment

- Ramchand and Svenonius, 2014: Three sortal domains which are in a containment configuration
 - Events: argument structure, subevents, Aktionsart
 - Situations: include and elaborate Events (combine time/world parameters with existentially closed Event)
 - Propositions: include and elaborate Situations (combine speaker-oriented/discourse-linking parameters with existentially closed Situation).



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Complementation

- The typological and theoretical works have shown that different types of complements are more or less dependent, transparent, integrated into the matrix clause.
- At least broadly, the conclusions converge on a hierarchy like the one below (see Wurmbrand and Lohninger, 2019).



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Transparency in German

- Transparency properties are typically blocked in propositional infinitives.
- (2) Sie hat {*einen Frosch} behauptet / geglaubt, {einen Frosch} geküsst She has {*a frog} claimed / believed {a frog} kissed zu haben. to have 'She claimed/believed herself to have kissed a frog.'
- (3) Sie hat {einen Frosch} beschlossen / versucht, {einen Frosch} zu She has {a frog} decided / tried {a frog} to küssen.
 kiss
 'She decided / tried to kics a frog '

'She decided/tried to kiss a frog.'

Implicational transparency hierarchy

Transparency	Proposition	Situation	Event
Romance	*	*	\checkmark
Germanic, Slavic	*	\checkmark	\checkmark
Not found	\checkmark	*	
Not found		\checkmark	*

• This hierarchy can be explained by containment and truncation:

- Since Propositions contain a Situation and an Event, they are necessarily the most complex and the most difficult to establish dependencies across.
- Certain operations require less complex complements—truncation.
- Situation complements may lack the highest domain; Event complements may lack the higher two domains.
- Proposition complements cannot lack the (entire) highest domain (see below).

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Finer grained structure

- Can/should the detailed structures of the broad clausal domains also be defined via containment?
 - Maybe/yes: for structures that are stable across languages.
 - No: for structures that can vary within or across languages.
 - \hookrightarrow Event domain: some containment configurations
 - \hookrightarrow Situation domain: no containment configurations??
 - \hookrightarrow Proposition domain: some containment configurations

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Events

- Decomposition of verbs (verb phrase) in sub-events (Hale and Keyser, 1993; Kratzer, 1996)
- Syntactically spread-out argument structure (Agent, Caus, Result)
- Converging evidence: modification differences, e.g., *again* (Stechow, 1996)



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Truncation

- Truncation of Agent-layer, yields predictable syntax (unaccusativity) and semantics (no agentivity, UTAH).
- See, among others, Bowers, 2002; Pylkkänen, 2002, 2008; Folli and Harley, 2005; Alexiadou et al., 2006; Marantz, 2008; Schäfer, 2008; Harley, 2009, 2017; Pitteroff and Alexiadou, 2012; Pitteroff, 2014.



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Situations

- TMA projections: not clear whether there are containment relations.
- Some orders may be stable across languages (e.g, tense » aspect)
- But others can vary, even within single languages.
- No containment: free ordering within and variation across languages may be possible.
- (6) Sie hat essen müssen.
 she has essen must
 'She had to eat.' perfect » modal
- (7) Sie muss bis 12 Uhr gegessen haben.
 she must by 12 o'clcok eaten have
 'She must have eaten by 12 o'clock.' modal » perfect

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Cartography: #1

• Information structure based cartography (Rizzi, 1997): no containment, except perhaps Topic–Comment mapping.



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Cartography: #2

- Functional hierarchy of clause structure (adverbs, auxiliaries, affixes; Cinque, 1999, 2001/2004/2006): semantic, but no containment.
- (9) speech act (frankly, honestly) >> evaluative ((un)fortunately, luckily) >> evidential (allegedly, reportedly) >> epistemic (probably, presumably) >> past (yesterday) >> future (tomorrow) >> irrealis (perhaps) >> alethic (necessariamente) >> habitual (usually, generally) >> repetitive(I) (repeatedly, again) >> frequentative(I) (often) >> volitional >> celerative(I) (quickly) >> anterior (already) >> terminative (no longer) >> continuative (still) >> retrospective (just) >> proximative (soon) >> durative (long, briefly) >> generic/progressive (usually) >> prospective (almost) >> obligation (necessarily) >> permission/ability (possibly) >> completive (completely) >> VoiceP (well) >> celerative(II) (quickly, fast) >> repetitive(II) (again) >> frequentative(II) (often)

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Cartography: #3

• Speech act information integration (Krifka, 2018)



- Propositions (*Situations* in the Ramchand and Svenonius, 2014 terminology): locate the event time/world with respect to the speech time/world.
- Judgments (JP): express a private judgement about a proposition; JP makes a judge parameter available; evidential, epistemic (e.g., *probably*)
- Commitments (ComP): express a public commitment to a judgement (*I REALLY did* not steal the chocolate; *I swear...*; honestly)
- Speech act (ActP): expresses common ground update; identifies the judge with the speaker (typically) (*I hereby declare...; Again, ...*).

Can the different versions be unified?

- Cinque's and Krifka's semantic hierarchies are similar, except in details and motivation.
- Krifka's hierarchy is defined via containment: ActP is built on ComP; ComP is built on JP.
- Are these semantic hierarchies separate from Rizzi's more syntactic hierarchy (e.g, part of different domains of grammar), or are they interwoven in some way?
 - \hookrightarrow Hypotheses:
 - The syntactic General Sherman combines syntactic and semantic properties.
 - Projections defined via containment yield rigid orders.
 - Other projections may be ordered rigidly or flexibly—still largely an empirical issue.

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Truncation to detect implicational hierarchies

- If syntactic projections, even if not in a semantic containment relation, show implicational hierarchy effects, conclusions about syntactic order can be drawn.
- Tool: truncation—if X is missing, all higher Ys are necessarily missing as well.

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Towards General Sherman



- Based on Satık, 2022
- Prop: Proposition (e.g., Krifka's ComP and JP)
- C2: obligatorily absent in infinitives (cf. Pesetsky, 2019, *exfoliation*)
- C1: low complementizer (infinitives, subjunctives)

[Satik, 2022: 17, (49)]

(10) Infinitive Size Generalization [Satık, No infinitive projects CP2. No infinitive can co-occur with a high complementizer.
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Implicational infinitive hierarchies (preliminary)

(11) Wh-Infinitive Generalization [Sabel, 2020: 146, (37)]
 If a language has wh-movement to Spec CP in infinitives, then this language has the option of filling the C-system of this (type of) infinitive with an overt complementizer.



 \Rightarrow Infinitival complementizer does not entail the option of *wh*-infinitives, but *wh*-infinitives entail the option of a complementizer.

 \Rightarrow Impossible: OP in Spec, CP (infinitive) and no infinitival complementizer.

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Language variation in infinitival truncation

• Italian (also Irish, Catalan; Satık, 2022)



Gli sembra, il tappeto, di averlo To.him seems, the carpet, to have-it venduto. sold 'It seems to him that the carpet has sold.' Gli ho detto [dove andare]. Him I told [where go.INF] 'I told him where to go.'
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Language variation in infinitival truncation

• English (also Dutch, French, Spanish; Satık, 2022)

d.



- a. *I decided, [your book], to read.
- b. I wonder where to find good cheese.
- c. I decided for Grey to get flying lessons.
 - I claimed to be the Queen of Catan.

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Language variation in infinitival truncation



- Icelandic, Swedish: infinitives are maximally CP1.
- German: infinitives are maximally PropPs.
- Turkish, Hindi: infinitives are maximally TPs—propositional complements are obligatorily finite.
- But: Slavic languages do not fully fit into this picture.
- Propositional infinitives are impossible (Wurmbrand et al., 2020; Wurmbrand and Lohninger, 2019), but higher projections, e.g., wh-infinitives, are (with different cut-off points).
 - $\bullet\,$ German: propositional infinitives, but no $wh\mathchar`-infinitives$
 - Slavic: *wh*-infinitives, but no propositional infinitivesw

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Flexibility due to lack of containment



- The ordering of PropP with respect to other CP-domain projections is not necessitated by semantic containment. Why should it be below CP1?
- Given that there is no universal implicational relation between e.g., *wh*-infinitives and propositional infinitives, no fixed cartographic mapping should be assumed.
- Slavic: ProP above TopicP; Infinitives project at most up to TopicP.

Anything goes?



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- No. Certain orderings are rigid (see above).
- Fixed order of same color projections, but not necessarily between different color projections.
- The decomposed syntactic structure of ProP is observable in inindexical shift and ECM hierarchies.
- Universally flexible orders still make predictions for implicational
 relations of elements within single languages.

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General Sherman—Take-home messages

- It is highly unlikely (both empirically and theoretically) that there is a fine-grained fixed universal clause structure.
- General Sherman: combines syntactic and semantic clause structure elements (here only given for the CP-domain).
- Evidence for structure and order of projections:
 - Containment: higher layers contain lower ones
 - Truncation: higher layers may be missing
 - Implicational hierarchies
- If no semantic containment relations and no universal implicational hierarchy effects arise, ordering may be variable (within and/or across languages).



From Wikipedia.org: height 84m

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Thank you!

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References I

Alexiadou, Artemis, Elena Anagnostopoulou, and Florian Schäfer. 2006. The properties of anticausatives cross-linguistically. In *Phases of interpretation*, ed. Mara Frascarelli, 187–211. Berlin, Germany: Mouton de Gruyter.

Bowers, John. 2002. Transitivity. Linguistic Inquiry 33:183-224.

- Cinque, Guglielmo. 1999. Adverbs and functional heads: A cross-linguistic perspective. Oxford/New York: Oxford University Press.
- Cinque, Guglielmo. 2001. "Restructuring" and functional structure. In University of Venice Working Papers in Linguistics, ed. Laura Brugè, volume 11, 45–127. University of Venice.
- Cinque, Guglielmo. 2004. "Restructuring" and functional structure. In Structures and beyond: The cartography of syntactic structures, ed. Adriana Belletti, volume 3, 132–191. Oxford/New York: Oxford University Press.
- Cinque, Guglielmo. 2006. "Restructuring" and functional structure. In Restructuring and functional heads: The cartography of syntactic structures, ed. Guglielmo Cinque, volume 4, 11–63. Oxford/New York: Oxford University Press.
- Folli, Raffaella, and Heidi Harley. 2005. Flavours of v: consuming results in Italian and English. In Aspectual inquiries, ed. Paula Kempchinsky and Roumyana Slabakova, 95–120. Dordrecht: Springer.

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References II

- Grohmann, Kleanthes K. 2003. Prolific domains: On the anti-locality of movement dependencies, volume 66 of Linguistik Aktuell/Linguistics Today. Amsterdam/Philadelphia: John Benjamins.
- Hale, Kenneth, and Samuel Jay Keyser. 1993. On Argument Structure and the Lexical Expression of Syntactic Relations. In *The view from Building 20: Essays in Linguistics* in honour of Sylvain Bromberger, ed. Ken Hale and Samuel Jay Keyser, 53–109. Cambridge, MA: MIT Press.
- Harley, Heidi. 2009. The morphology of nominalizations and the syntax of vP. In Quantification, definiteness and nominalization, ed. Anastasia Giannakidou and Monika Rathert, 320–342. Oxford: Oxford University Press.
- Harley, Heidi. 2017. The "bundling" hypothesis and the disparate functions of little v. In *The verbal domain*, ed. Roberta D'Alessandro, Irene Franco, and Ángel Gallego, 3–28. Oxford: Oxford University Press.
- Kratzer, Angelika. 1996. Severing the external argument from its verb. In *Phrase structure* and the lexicon, ed. Johan Rooryck and Laurie Zaring, volume 33 of *Studies in Natural Language & Linguistic Theory*, 109–137. Dordrecht: Kluwer Academic Publishers.
- Krifka, Manfred. 2018. Semantic types of complement clauses: Propositions, Judgements, and Commitments. Talk given at Ars Grammatica: Theorie und Empirie im Sprachvergleich: Schwerpunktthema Sachverhalts-/propositionale Argumente, Mannheim, Germany.

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References III

- Marantz, Alec. 2008. Phases and words. In *Phases in the theory of grammar*, ed. Sook-Hee Choe, Yang-Soon Kim, Sung-Hun Kim, and Alec Marantz, 191–220. Seoul: Dong In Publisher.
- Pesetsky, David. 2019. Exfoliation: towards a derivational theory of clause size. Ms. MIT.
- Pitteroff, Marcel. 2014. Non-canonical *lassen* middles. Doctoral Dissertation, University of Stuttgart.
- Pitteroff, Marcel, and Artemis Alexiadou. 2012. On the properties of german sich-lassen middles. In Proceedings of the 29th West Coast Conference on Formal Linguistics (WCCFL 29), ed. Jaehoon Choi, Alan E. Hogue, Jeffrey Punske, Deniz Tat, Jessamyn Schertz, and Alex Trueman, 214–222. Tucson: Coyote Working Papers.
- Pylkkänen, Liina. 2002. Introducing arguments. Thesis, MIT, Cambridge, MA.
- Pylkkänen, Liina. 2008. Introducing arguments. Cambridge, MA: MIT Press.
- Ramchand, Gillian, and Peter Svenonius. 2014. Deriving the functional hierarchy. Language Sciences 46:152–174.
- Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of grammar:* Handbook of generative syntax, ed. Liliane Haegeman, 281–337. Dordrecht: Kluwer Academic Publishers.

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References IV

- Sabel, Joachim. 2020. P and the Emergence of the Infinitival Left Periphery. In Variation in P—Comparative approaches to adpositional phrases, ed. Jacopo Garzonio and Silvia Rossi, 135–163. Oxford: Oxford University Press.
- Satık, Deniz. 2022. The fine structure of the left periphery of infinitives. In *Proceedings of the North East Linguistic Society 52*. University of Massachusetts, GLSA.
- Schäfer, Florian. 2008. The syntax of (anti-)causatives: External arguments in change-of-state contexts, volume 126. Amsterdam: John Benjamins.
- Stechow, Arnim von. 1996. The different readings of wieder 'again': a structural account. Journal of Semantics 13:87–138.
- Wurmbrand, Susanne, Iva Kovač, Magdalena Lohninger, Caroline Pajančič, and Neda Todorović. 2020. Finiteness in South Slavic Complement Clauses: Evidence for an Implicational Finiteness Universal. *Linguistica* 60:119–137.
- Wurmbrand, Susi, and Magdalena Lohninger. 2019. An implicational universal in complementation—Theoretical insights and empirical progress. In Propositional Arguments in Cross-Linguistic Research: Theoretical and Empirical Issues, ed. Jutta M. Hartmann and Angelika Wöllstein. Tübingen: Gunter Narr Verlag.