Implicational hierarchies in syntax

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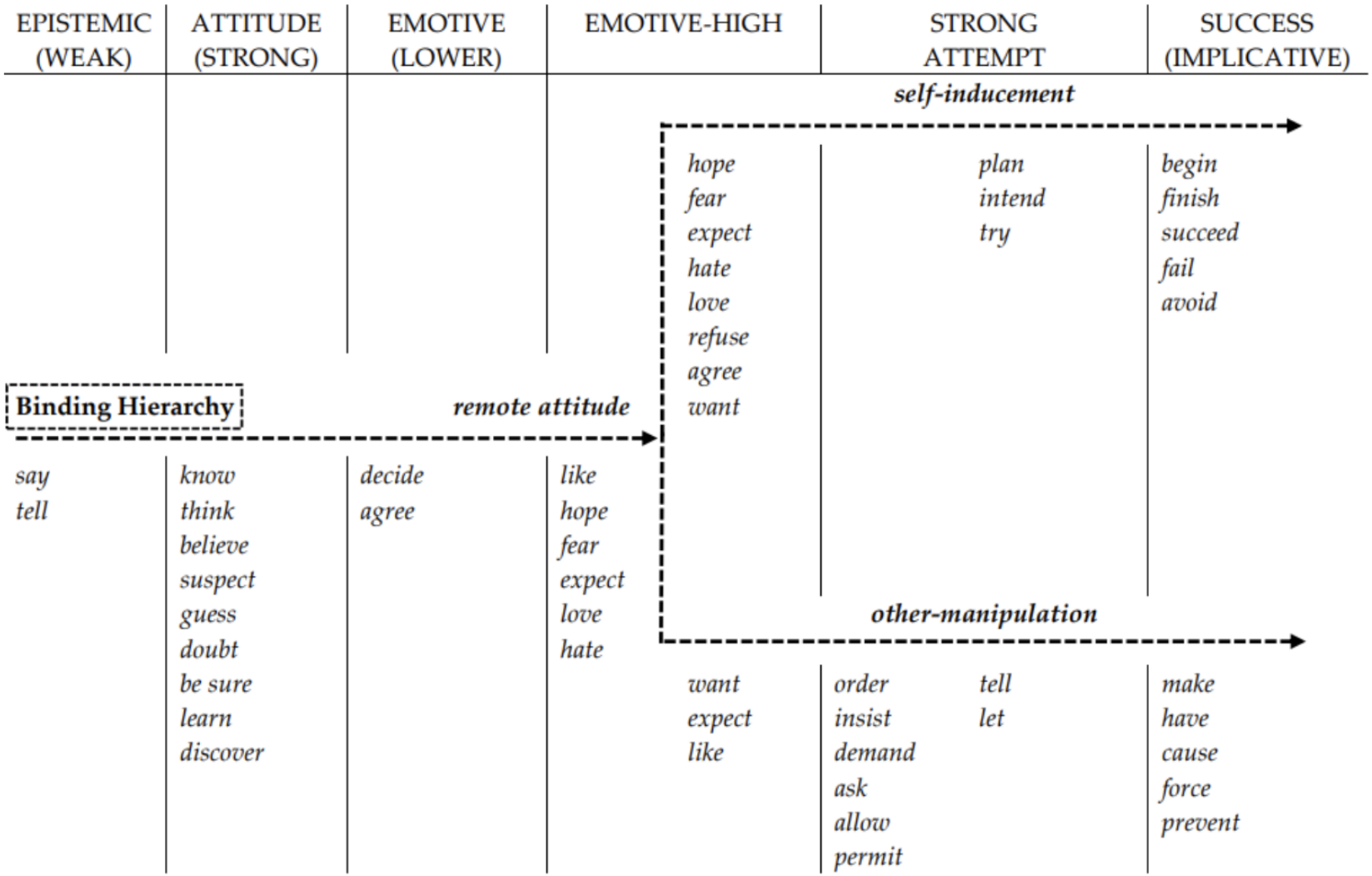
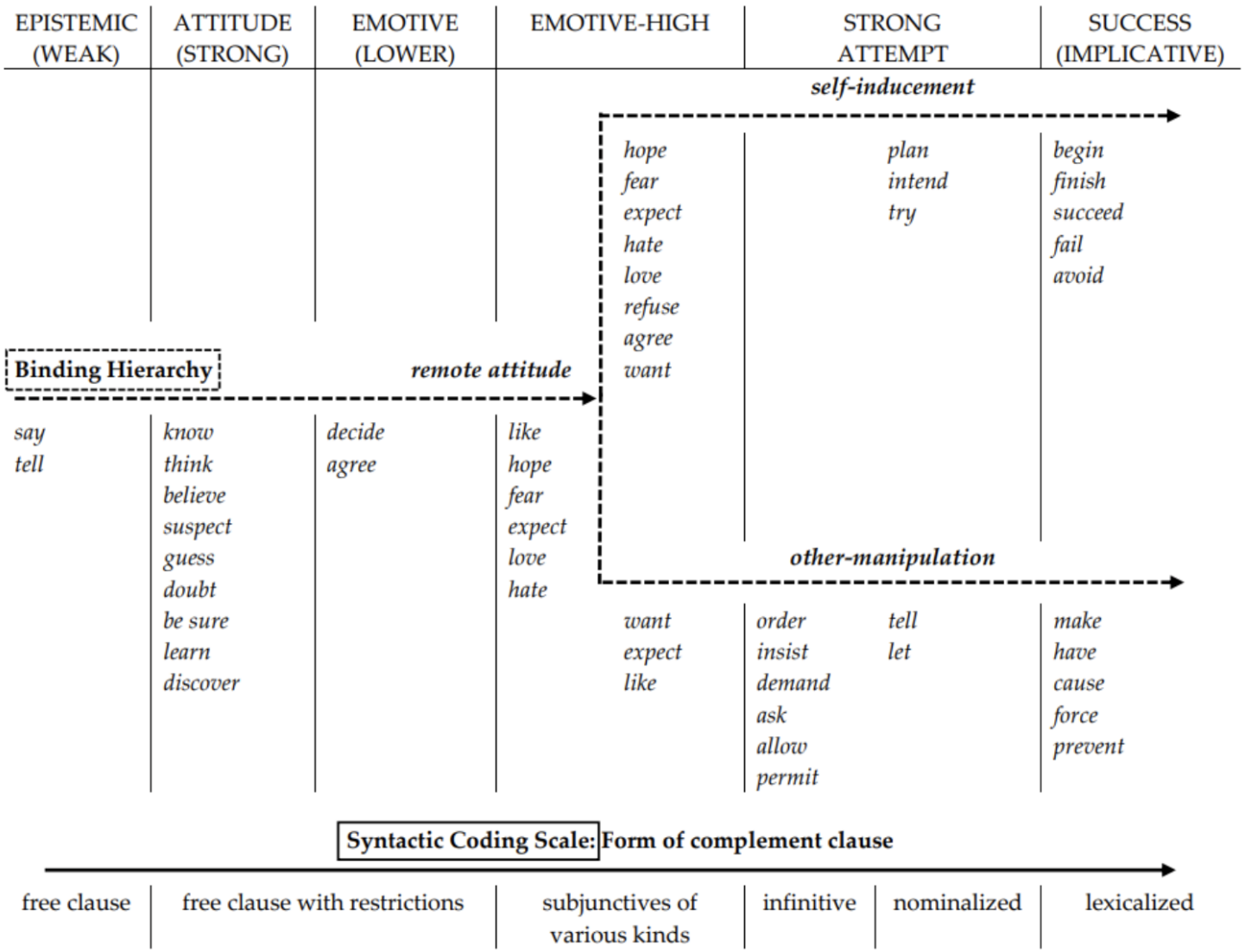
This talk

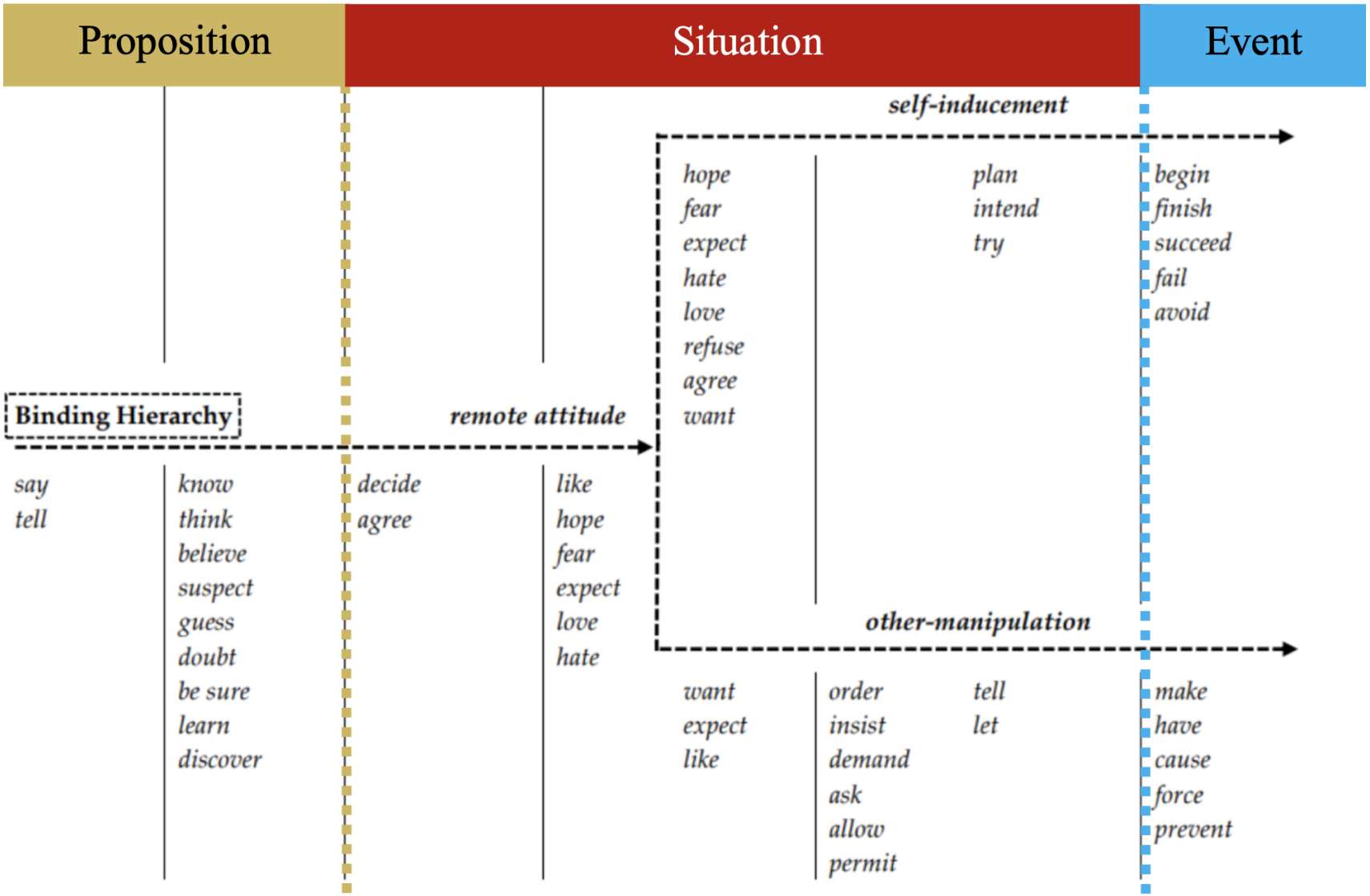
- Are there universal properties of complementation?
  ↪ Yes, an implicational semantic hierarchy.
- Are there predictable mappings between (morpho-)syntax and semantics?
  ↪ To some degree, but syntax is also partially autonomous.
- Along the way...
  ↪ the extent of cartography
  ↪ facts and myths about restructuring
  ↪ a speculative view on a non-clause-reduction view of ECM.



Semantic scale of (in)dependence



Implicational mapping



Wurmbrand and Lohninger 2019

(In)dependence properties

- Morphosyntactic coding: finiteness, subjunctive, infinitive, converbs, incorporation...
- Subject interpretation: free, partially dependent, fully dependent; possibly obviation
- TMA interpretation: free value, pre-specified value, absent (note: all embedded tenses in complement clauses are dependent)
- Transparency, restructuring, integration:
  - Upwards: topicalization to matrix (dependence), embedded topicalization (independence), scrambling, clitic placement, A-movement (raising, passive)
  - Downwards: case, agreement, control, binding, NPI-licensing, SOT, tense copying
- Presence/absence of clausal material: indexical shift, operators, tense, agreement, case...

Illustration: Polish (Łukasz Jędrzejowski, p.c.)

(1) a. *Nova twierdzi, że zjadła surówkę.*
Nova claims that eat.*l*-PTCP.F.SG salad.ACC
'Nova claimed that she ate salad.'

b. **Nova twierdzi, mieć zjedzoną surówkę.*
Nova claim have.INF eaten salad.ACC
'Nova claimed to have eaten salad.'

(2) a. **Nova próbowała, że zje surówkę.*
Nova try.*l*-PTCP.F.SG that eat.3.SG salad.ACC
'Nova tried that she eats salad.'

b. *Nova próbowała, zjeść surówkę.*
Nova try.*l*-PTCP.F.SG eat.INF salad.ACC
'Nova tried to eat salad.'

(3) a. *Nova zdecydowała, że zje surówkę.*
Nova decide.*l*-PTCP.F.SG that eat.3.SG salad.ACC
'Nova decided that she would eat salad.'

b. *Nova zdecydowała zjeść surówkę.*
Nova decide.*l*-PTCP.F.SG eat.INF salad.ACC
'Nova decided to eat salad.'

(4) a. ?*Nova twierdzi, żeby zjadła surówkę.*
Nova claims that eat.*l*-PTCP.F.SG salad.ACC
'Nova claimed that she ate salad.' only if volitional

b. *Nova zdecydowała, żeby zjeść surówkę.*
Nova decide.*l*-PTCP.F.SG that eat.INF salad.ACC
'Nova decided to eat salad.'

c. **Nova próbowała, żeby zjeść surówkę.*
Nova try.*l*-PTCP.F.SG that eat.INF salad.ACC
'Nova tried to eat salad.'

Construction	Proposition	Situation	Event	I/D
finite	✓	✓	*	I
non-finite	*	✓	✓	D
żeby + non-finite	*	✓	*	I + D

I = Independence property | D = Dependence property

- Another illustration (Wurmbrand et al., 2020)
- Hypothetical Finiteness Universal:
  If a language {allows/requires} finiteness in a type of complement, all types of complements further to the left on ICH also {allow/require} finiteness.

Language	Proposition	Situation	Event
Bulgarian, Macedonian	finite	finite	finite
Serbian, Bosnian?	finite	(non-)finite	(non-)finite
Slovenian, Bosnian?	finite	(non-)finite	non-finite
Croatian	finite	non-finite	non-finite

Universal	**Variation**
I/D operate along the ICH.	I/D may be neutralized.
I/D cannot go against the hierarchy.	I/D can have different cut-off points on the hierarchy.
Classes are defined by the meaning of the complementation configuration.	Verbs may change meaning based on the morphosyntax of the complement.

I = Independence property | D = Dependence property

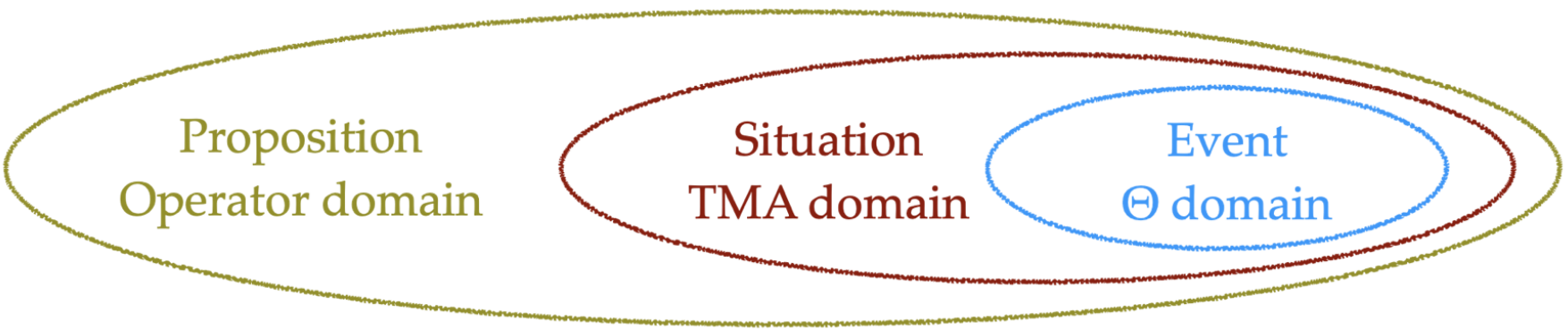
Universal	**Variation**
Certain degree of vagueness of the categories.	"Fuzzy" edges (e.g., Bryant 2021 for strong epistemic verbs in Oromo) Multiple class membership: *promise* (Proposition, Situation); *try* (Situation, Event)
Broad semantic hierarchy	Ordering within these domains No 1:1 syntax–semantics mapping

Clausal domains

- Rochette (1988, 1990); Ramchand and Svenonius (2014): Broad clausal domains correspond to conceptual primitives Events (theta domain), Situations (TMA domain), Propositions (CP domain).
- Wurmbrand and Lohninger (2019): Complement types can be classified in the same way.
- Moltmann (2021): Possible alternative—distinction between the directions-of-fit of the attitudes involved.

Containment

- Ramchand and Svenonius 2014: Situations are elaborations of Events (combine time/world parameters with existentially closed Event); Propositions are elaborations of Situations (combine speaker-oriented/discourse-linking parameters with existentially closed Situation).
- Complement types have different minimal requirements which stand in an implicational relation.



- The mapping between syntax and semantics is not a 1:1 mapping.
- A direct translation of the semantic properties into syntax only yields minimal structures, but syntax is also partially autonomous and can lead an independent life, as long as it is compatible with the semantic requirements.
- This will derive the implicational relation and the attested variation, without prescribing specific syntactic configurations.

- Translating the semantic sorts into syntactic structure yields three clausal domains (see also Grohmann, 2003).
- Direct translation:

Proposition	Situation	Event
CP		
TP (or similar)	TP (or similar)	
Voice domain	Voice domain	Voice domain

- The same containment configuration holds between the minimal structures necessary to express the different complement types.
- Containment again derives the implicational relation.

- But syntax is partially autonomous.
- In contrast to cartography (see below), a 1:1 syntax–semantics mapping seems to be difficult to maintain.
- Possible complementation configurations (languages vary in the availability of these options, in particular CP Events are often excluded):

Proposition	Situation	Event
CP	CP	CP
TP (or similar)	TP (or similar)	TP (or similar)
Voice domain	Voice domain	Voice domain

- This flexibility is in part the reason for ongoing debates about to implementation of size differences.
- "Small" theories: Clause-building can stop when the minimal structure is reached (Wurmbrand, 2001 et seq.).
- "Big" theories: Full clauses (CP domains) are built, followed by structure removal/exfoliation (Müller, 2020).
- Hybrid: Only the minimal contentful structure is built, followed by adding deficient or semantically vacuous structure up to CP (possibly all approaches have a version of this).

Proposition	Situation	Event
CP	CP	CP
TP (or similar)	TP (or similar)	TP (or similar)
Voice domain	Voice domain	Voice domain

- All: How is the implicational nature of the ICH derived?
- "Big" theories:
  - What regulates the amount of structure removal?
  - What is the motivation for the initial building of full clausal structures (in particular when they are vacuous)?
- "Small" theories:
  - What determines when the clause building can stop?
  - What is the motivation for building additional structure?

- How is the implicational nature of the ICH derived?
  ↪ Containment: CP contains TP, which contains Voice domain.
- What determines when the clause building can stop?
  ↪ Synthesis (below)
- What is the motivation for building additional structure?
  ↪ Independence properties used to diagnose larger structures may provide the motivation for building larger (usually vacuous) structure.

- Syntax computes structure (relatively) freely.
- There is no (very little) selection.
- But: the output has to be interpretable and meet the restrictions of the parts at the interfaces.
- Meaning of a complementation configuration is determined conjointly be the matrix predicate and embedded clause (cf. Kratzer, 2006; Moulton, 2009a,b; Wurmbrand and Lohninger, 2019).

- Motivation: matrix predicate and embedded clause can affect each other.
- Example: Factive complements can, in principle, be finite or non-finite.

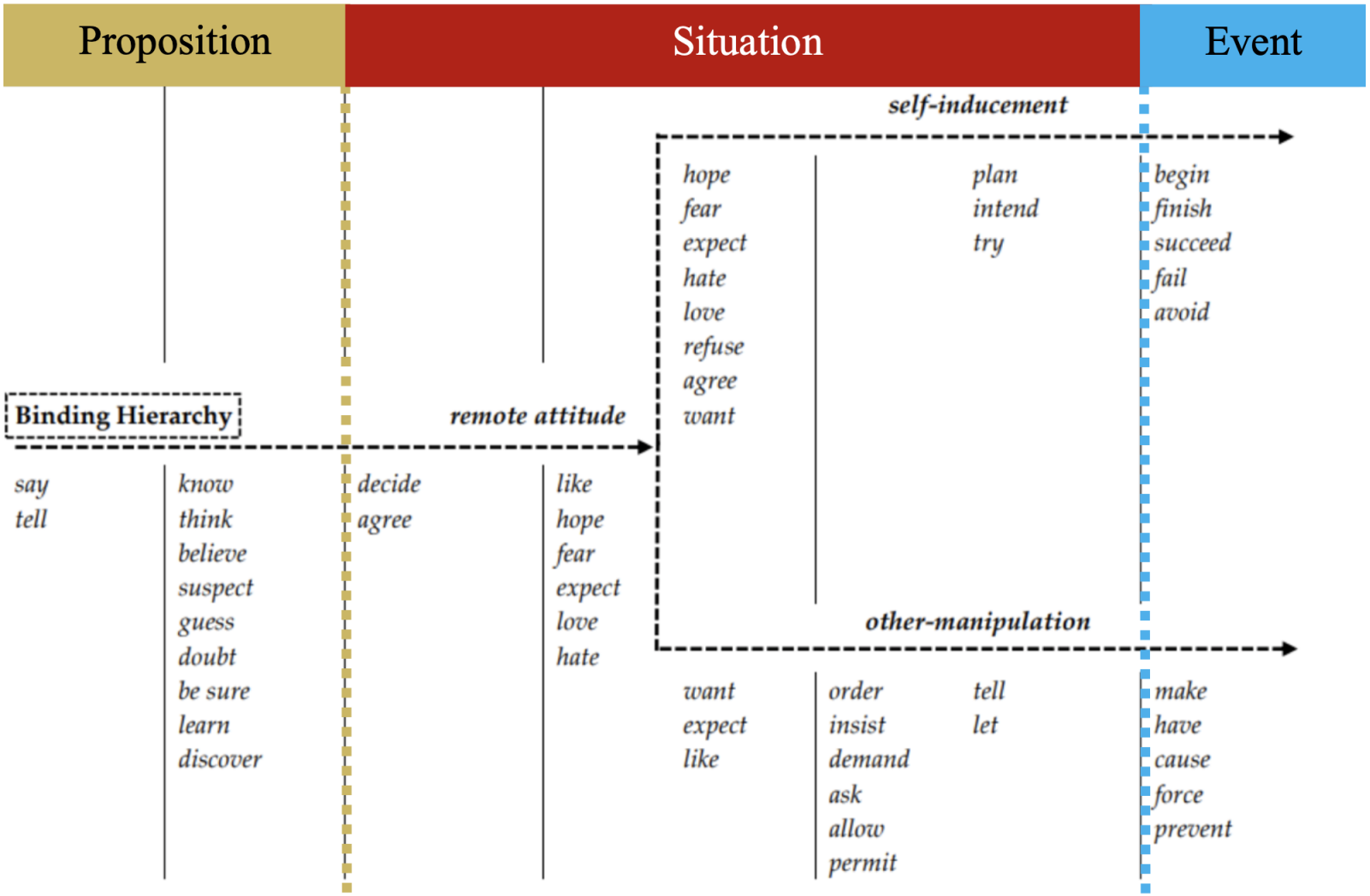
(5)

a.	I am glad that I am presenting at Olinco.	Factive
b.	I am glad to be presenting at Olinco.	Factive

- But when the matrix verb alternates between a factive and an implicative meaning, the form of the complement restricts the matrix meaning.

(6)

a.	Lída forgot to water the plant.	Implicative
b.	Joe forgot that he watered the plant.	Factive
c.	*Joe forgot to have watered the plant.	*Factive


Proposition
Situation
Event
self-inducement
hope
fear
expect
hate
love
refuse
agree
want
plan
intend
try
begin
finish
succeed
fail
avoid
Binding Hierarchy
remote attitude
say
tell
know
think
believe
suspect
guess
doubt
be sure
learn
discover
decide
agree
like
hope
fear
expect
love
hate
other-manipulation
want
expect
like
order
insist
demand
ask
allow
permit
tell
let
make
have
cause
force
prevent

- Goals of cartography:
  - Clause structure is uniform across languages.
  - Clause structure is templatically determined by meaning.
  - Cartographic enterprise as "an attempt to "syntacticize" as much as possible the interpretive domains" (Cinque and Rizzi, 2010 p. 63)

(7) Cinque hierarchy (Cinque, 1999, 2004)
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)

Cartography (strongest view)	**ICH**
1:1 syntax–semantics mapping	No 1:1 syntax–semantics mapping
Elements with particular semantic functions must occur in designated positions.	Different syntactic configurations can be mapped to the same interpretation.
Fine-grained universal structure and order of projections	3 broad universal conceptual sorts; fine-grained (possibly language-specific) structure and orders possible
All restructuring is functional	Lexical and functional restructuring

German lexical/functional	zu	IPP	fixed order	extraposition
Modals	−	+	+	−
Causative	−	+	+	−
Event complement	+	−	−	+ (marked)
Situation complement	+	−	−	+
Proposition complement	+	−	−	+ (preferred)

(8) a. *dass Nova {versuchte} Salat zu essen {versuchte}.*
that Nova {tried} salad to eat {tried}
'that Nova tried to eat salad.' lexical

b. *dass Nova {*muss/*geht} Salat essen {muss/geht}.*
that Nova {*must/*goes} salad eat {must/goes}
'that Nova must/is going to eat salad.' functional

Transparency grades	finite compl.	LOM	SCR	structure
Modals	–	+	+	functional
Causative	–	+	+	functional
Event complement	%	+	+	VP/*v*P
Situation complement	+	–	+/?	TP
Proposition complement	+	–	–	CP

(9) a. *Nova hat ihn versucht/vergessen zu stehlen.*
Nova has it tried/forgotten to steal
'Nova tried/forgot to steal it.'

b. ?*Nova hat ihn beschlossen/geplant zu stehlen.*
Nova has it decided/planned to steal
'Nova decided/planned to steal it.' variation

c. **Nova hat ihn behauptet/geglaubt, gestohlen zu haben.*
Nova has it claimed/believed stolen to have
'Nova claimed/believed herself to have stolen it.'

- (In)dependence properties may have different restrictions cross-linguistically (Wurmbrand, 2014, 2015; Wurmbrand and Lohninger, 2019; Wurmbrand et al., 2020).
- But they nevertheless follow the ICH pattern:
  - If in a language Situation complements lack particular clausehood properties, Event complements lack those properties as well.
  - If in a language Proposition complements lack particular clausehood properties, Situation complements lack those properties as well.

Language type	Proposition	Situation	Event
Type 0	*	*	*
Type 1	✓	*	*
Type 2	✓	✓	*

Clitic climbing cross-linguistically

- Restructuring/Non-restructuring is not a binary distinction.
  ↪ There are different types (lexical vs. functional) and degrees of restructuring.
- Restructuring complements are bare VPs.
  ↪ Reduced complements come in a range of sizes: VP, *v*P, TP.
- Restructuring complements lack a structural case position.
  ↪ Some do, some don't.
- Restructuring is only found with infinitival complements.
  ↪ ICH effects, including certain restructuring properties, are also observed in finite contexts (Stjepanović, 2004; Todorović and Wurmbrand, 2020).
- "Restructuring" is not language-specific.
  ↪ Size effects are a general phenomenon of complementation.

- Distribution of ECM in Germanic (Christopoulos and Wurmbrand, 2020)

	say	*believe*	*consider*
Icelandic	✓	✓	✓
English	*	✓	✓
Swedish	*	*	✓
German, Dutch	*	*	*

(10) a. *Jónas sagði Garp hafa farið í bíó.*
Jonas said Garpur.ACC have gone to cinema
'Jonas said that Garpur has gone to the cinema.'
[Icelandic]

b. *He said/claimed her to have gone to the movies.
[English]

(Cases where the embedded subject undergoes movement are set aside. It is the contrast which is important here.)

(11) a. *Pétur taliði Maríu ekki hafa vaskað upp*
Peter believed Maria.ACC not have washed up
diskana
dishes.the
'Peter believed Mary not to have washed up the dishes.' [Icelandic]
[Christensen, 2007: 156, (25a)]

b. I believe her to have won the triathlon. [English]

c. **Jag tror henne* (*att*) *vara begåvad*
I believe her (to) be gifted
'I believe her to be gifted.' [Swedish]

(12) a. *Eg tel hann vera heimskan.*
I consider him be stupid
'I consider him stupid.' [Icelandic, Holmberg, 1986: 159, (60b)]

b. I consider her to have won.

c. *Jag anser henne* ?(*att*) *ha svikt sina*
I consider her ?(to) have let.down her.own
vänner.
friends
'I consider her to have let her friends down.' [Swedish]

	say	*believe*	*consider*
Icelandic	✓	✓	✓
English	*	✓	✓
Swedish	*	*	✓
German, Dutch	*	*	*

- This distribution of ECM raises two issues:
  - What kind of hierarchy do we see here?
  - How does ECM relate to theories of clause size?

- Clause-reduction view:
  - Common view (GB et seq.): ECM involves clause-reduction
  - ECM complements lack the CP layer (in contrast to control).
  - Reason: locality of A-dependencies (such as Case)—cannot cross a CP.
- But comparing ECM and other clause reduction phenomena, we run into a dilemma.
  - Although there are different approaches to restructuring, one shared core observation: CPs block restructuring
  - See, among others, Bondaruk, 2004, Marušič, 2005, Dotlačil, 2007, Wurmbrand, 2001, 2014, 2015).

- No correlation between ECM and other transparency (restructuring) effects
- In fact, the two phenomena are sometimes even in complementary distribution.
- German and Dutch: extensive clause reduction effects (verb clusters, pronoun fronting, scrambling, or long passive), but clausal ECM (*believe* or *expect*) is entirely excluded in the language (only AcI is possible).

(13) *weil ihn Leo [~~ihn~~ zu treffen] beschlossen hat.*
since him.ACC Leo [him to meet] decided has
'since Leo decided to meet him' TP-complement

(14) *weil ich (*den Leo) zu verreisen beschlossen habe.*
since I (*the.ACC Leo) to travel decided have
'since I decided (*Leo) to travel'

(15) ?*weil ihn Leo [~~ihn~~ zu treffen] erwartet hat.*
since him.ACC Leo [him to meet] expected has
'since Leo expected to meet him' TP-complement

(16) *weil ich (*den Leo) rechtzeitig anzukommen*
since I (*the.ACC Leo) on.time to.arrive
erwartet habe.
expected have
'since I expected (Leo) to arrive on time'

- General distribution
  - The contexts that resist restructuring involve propositional attitude and speech predicates.
  - These predicates form the core of ECM verbs in English and Icelandic (*say*-type verbs only in Icelandic).
  - ECM is not possible with verbs that allow restructuring).
  - The only overlap could be *expect*, which has been argued to involve non-ECM structures, either an object control configuration or an empty complementizer configuration, see Pesetsky, 1992.

  ↪ CP-reduction cannot be the major tool to derive both ECM and restructuring.

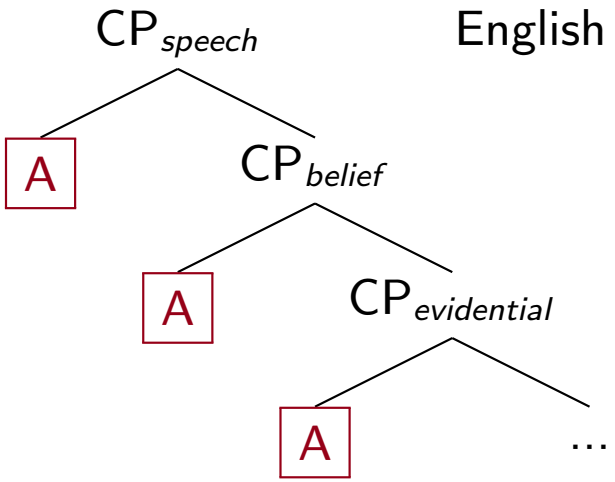
Clause reduction	Type	Proposition	Situation	Event
Restructuring	Romance	*	*	✓
Restructuring	Germanic/Slavic	*	✓	✓
ECM	English/Icelandic	✓	*	*

- Possible direction (Wurmbrand, 2019):
  - ECM is restricted to CPs (or in case of AcI, non-EC *v*Ps).
  - CPs may be A-domains (see van Urk, 2015)
  - Evidence: in many languages finite ECM, across clear cases of CPs, is possible.
  - Thus, grammar provides the option of CP-ECM.

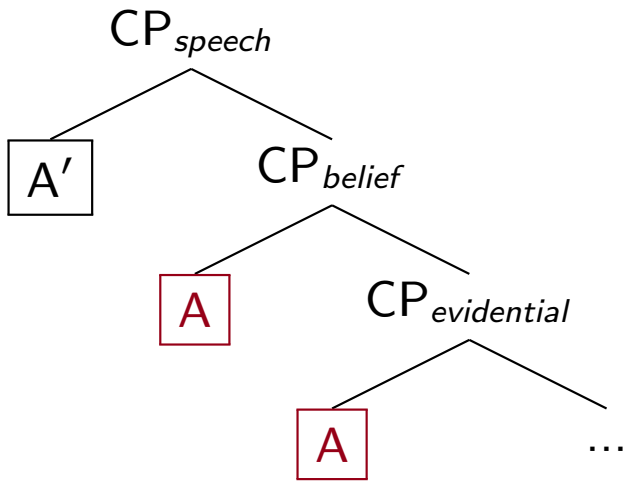
- This brings us back to the hierarchy of ECM and the place where ICH and cartography meet.

	say	*believe*	*consider*
Icelandic	✓	✓	✓
English	*	✓	✓
Swedish	*	*	✓
German, Dutch	*	*	*

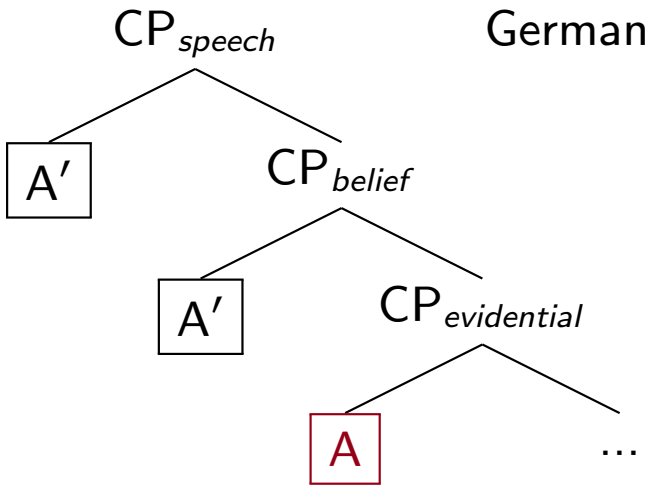
(17) Icelandic



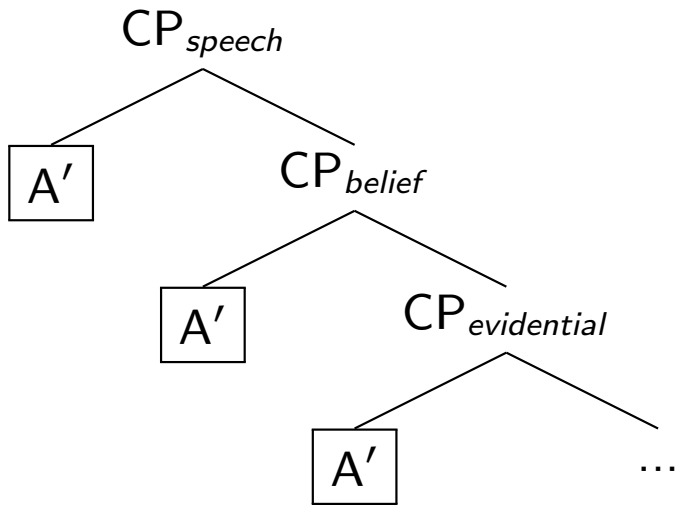
English



(18) Swedish



German



- ECM:
  - ↪ Speculatively, ECM always occurs across a CP.
  - ↪ Cross-linguistic differences in the availability of ECM arise via a fine-grained, possibly cartographic, organization of the CP, plus language-specific domain extensions of the A-domain of a clause.
- General:
  - ↪ There is a universal semantic hierarchy of complementation.
  - ↪ Morpho-syntax tracks the hierarchy, but is not defined by it.
  - ↪ Syntax is partially autonomous, and feeds into semantics (which may filter out certain configurations).
  - ↪ Clausal domains are defined via containment, which yields an implicational hierarchy.

Thank you!

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