(Non)-Complement Clauses and In-situ Saturation:

Consequences for cross-clausal A-dependencies

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Why **(Non)**-Complementation?

A old intuition: clausal complements, especially finite ones, are not *quite* canonical complements, like DPs:

Classic CP non-complement-like behaviour:

- CPs combine with categories, like Adjectives, that DPs do not.

(1) a. I was aware (*of) that John left. — A CP
b. I was aware of that. — *A DP

- CPs combine with nouns in a non-argument like way.

(2) a. rumours (*of) that John disappeared. — N CP
b. rumours *(of) John's disappearance. — *N DP

Why **(Non)**-Complementation?

Classic CP non-complement-like behaviour:

- CPs sit in VP peripheral (adjunct-like) positions in many OV languages (German, Hindi, Bangla)

(3) Bangla (Bayer 1995)

a. *chele-Ta [$_{CP}$ je or baba AS-be] Sune-che
boy-CL COMP his father come-FUT hear-PAST
'The boy has heard that his father will come.'

b. chele-Ta Sune-che [$_{CP}$ je or baba AS-be]
boy-CL hear-PAST COMP his father come-FUT
'The boy has heard that his father will come.'

Why **(Non)**-Complementation?

Some older, common accounts

- CPs have different Case properties or grammatical function (Stowell 1981), OBJ vs. COMP (LFG)
- CPs have different features (Pesetsky and Torrego 2001)
- CPs have different prosodic requirements (Féry 2015)

Another approach: **The CP Predicate Hypothesis**

- CPs are predicates that do not saturate like typical arguments (Kratzer 2006; Moulton 2009, 2015; Elliott 2018)

Today's claims

Natural languages also have Saturating CPs:

Non-saturating CPs	Saturating CPs
Germanic *that/dass* CPs	English ECM complements
Indo-Aryan *je/ki* clauses	Bangla *bole*-clauses
⋮	Korean *ko*-clauses
	Japanese *to*-clauses
	Zulu *ukuthi*-clauses
	⋮

Today's claims

Saturating CPs exhibit a cluster of properties distinct from Non-saturating CPs.

	Non-saturating CPs	Saturating CPs
Can modify Ns	✓	✗
Must extrapose	✓	✗
Transparent for A-movement even if finite ($\rightsquigarrow$Hyper-raising)	✗	✓

Today's claims

Deriving the cluster of properties:

- Non-saturating CPs are ⟨e,t⟩ predicates, properties of contentful indiviudals (Moulton 2009, 2015)
- Saturating CPs are properties of eventualities ⟨v,t⟩ (Hacquard 2006; Moulton 2008; Kratzer 2013; Özyildiz 2019)
  - the clause is integrated like any other severed argument, e.g. like those via *v, Voice, Appl*)

Outline

1. Background on Non-saturating CPs
2. Saturating CP properties: a N+CP/Hyper-raising correlation in Korean, Japanese, Zulu, English ECM
3. A proposal for eventuality-based propositional embedding
4. Saturating vs. Non-saturating CPs in Bangla: *je* vs. *bole*

Non-saturating CPs

The CP Predicate Hypothesis:
CPs are predicates, not saturating arguments

Argument 1: CPs can combine with nouns, while DPs need rescuing by Case-assigning *of*.

(4) a. The destruction *(of) the city. [N *(P) DP]
b. The idea (*of) that Fred would leave. [N CP]

CP complements to N cannot be arguments—these Ns don't take proposition-denoting arguments at all:

(5) a. He claimed that./*his claim of that
b. I believe the story./*the belief of the story (Zucchi 1989)
cf. lexical P *belief in the story*

A predicate analysis of CPs

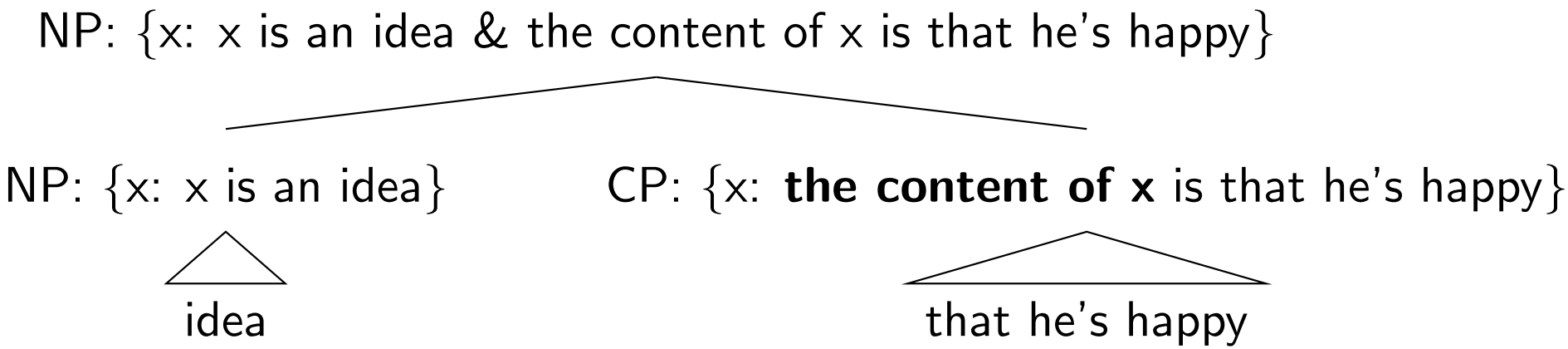
Argument 2: CP 'complements' of nouns behave like Modifiers in obviating condition C violations, unlike arguments (Lasnik 1998; Moulton 2013 *contra* Freidin 1986 and Lebeaux 1988):

(6) a. *Which depiction [of John's$_1$ face] does he$_1$ hate most? *argument*
b. Which book [from John's$_1$ library] did he$_1$ read? *modifier*
c. Which book [that John$_1$ hated most] did he$_1$ read? *modifier*

(7) a. The fact that [John$_1$ has been arrested] he$_1$ generally fails to mention.
b. Whose allegation [that Lee$_1$ was less than truthful] did he$_1$ refute vehemently?
(Kuno 2004: 335(72))

The CP predicate analysis

- CPs describe sets of individuals with content.
- They combine with a noun through predicate modification.



The CP predicate analysis, more formally

- x_c : things with propositional content

(8) $[\![$ **that John is a liar** $]\!] = \lambda x_c \lambda w[\textsc{cont}(x_c)(w) = \lambda w'.$ John a liar w']

(9) $\textsc{cont}(x_c)(w) = \{w'$: w' is compatible with the intentional content of determined by x_c in $w\}$ (after Kratzer 2013, 195(25))

- Content nouns like *rumor*, *idea*, *story* also describe individuals with propositional content, x_c.
- CP combines with content nouns by predicate modification

(10) $[\![$ **the story that John is a liar** $]\!] =$

$\iota x_c \lambda w$ [story$(x_c)(w)$ & $[\textsc{cont}(x_c)(w) = \lambda w'.$ John is a liar w']]

$\rightsquigarrow$ 'the story **the content of which is** that John is a liar'

A predicate analysis of CPs

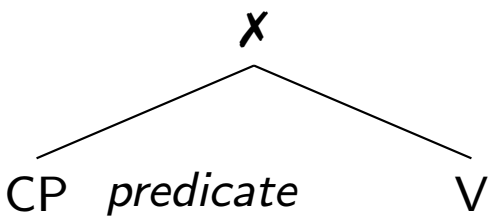
A predicate analysis explains:

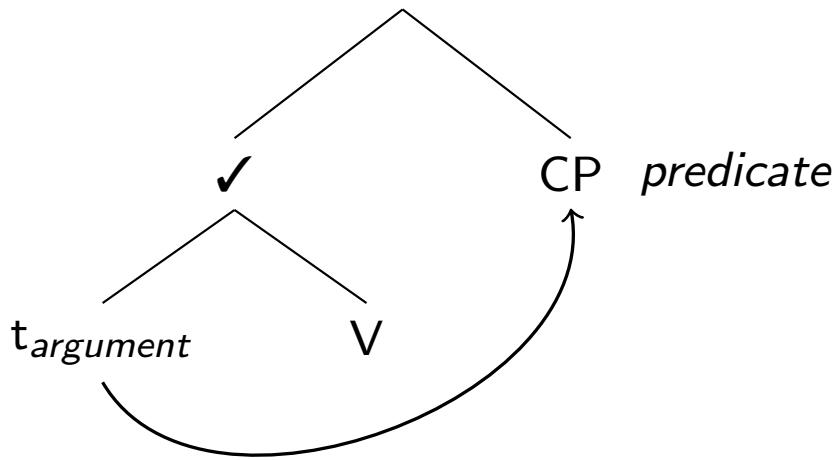
- why CPs can combine with Ns that do not take arguments: the CP restricts; it does not saturate
- why CPs complements to nouns bleed Condition C: phrases that semantically modify, but do no saturate, can be late merged (Fox 1999)

CP complement of verbs

In Moulton (2015) I extended the predicate view of CPs to verbal complements.

- As a predicate, the CP cannot saturate the verb:
- Movement of the CP leaves a trace/copy that can saturate the verb:





- Captures the peripheral position of CPs (esp. in OV lgs)

But not all CPs are Non-saturating predicates!

- I am going to show you some Saturating CPs
  - using their inability to combine with Ns like English-style predicate CPs.
- These CPs stay *in situ* and they are more transparent for movement, even allowing A-movement from them.
- I argue this following from constraints on movement from moved phrases (Müller's Generalization).

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Korean *ko*-Clauses

CPs headed by *ko* can't directly combine with nominals:

a. [$_{CP}$ ...-ko] V
b. *[$_{CP}$ ...-ko] N

(11) a. Mina-ka [Swuna-ka ku mwuncey-lul
Mina-NOM Swuna-NOM that problem-ACC
phwul-ess-ta]-**ko** cwucangha-ess-ta
solve-PAST-DECL-C claim-PAST-DECL
'Mina claimed that Swuna solved the problem.'

b. *[Swuna-ka ku mwuncey-lul phwul-ess-ta]-**ko** cwucang
Swuna-NOM that problem-ACC solve-PAST-DECL-C claim
'the claim that Swuna solved the problem' (C.H. Han, p.c.)

Korean *ko*-Clauses

To get a CP to combine with a noun you need the ADNOMINAL marker *-nun* (ADN), also found in relatives.

(12) Mina-ka posek-ul hwumchi-ess-ta-**nun** cwucang.
Mina-NOM jewelry-ACC steal-PAST-DECL-ADN claim
'the claim that Mina stole the jewelry.' (Kim 2011: (4a,b))

Korean *ko*-Clauses

Ko-clauses allow raising to object out fo the finite clause (hyper-raising):

(13) Mary-nun John-ul$_i$ **cen-pwuthe** [t$_i$ taytanha-ta-**ko**]
Mary-NOM John–ACC long-ago since great-DECL-C
sayngkakhay wass-ta.
think have-DECL
'Mary has thought since a long time ago that John is great' (Hong and Lasnik 2010: 282(43))

- We know John-ul is in matrix clause because it precedes a matrix adverbial.
- Hong and Lasnik 2010 rule out a prolepsis possibility—where the DP is always in the matrix clause.

Japanese *to*-Clauses

CPs headed by *to* can't combine with nominals: genitive *-no* is needed

a. [$_{CP}$ ...-to] V
b. *[$_{CP}$ ...-to] N

(14) John-ga [Mary-ga asita kuru to] itta...
John-NOM Mary-NOM tomorrow come C said..
'John said that Mary would come tomorrow' (Ogawa 2001: 52 (86))

(15) John-niyoru Bill-ga yuuzai da to-*(no) syutyou
John-by Bill-NOM guilty is C-GEN claim
'John's claim that Bill is guilty. (Ogawa 2001: 207 (228a))

Japanese *to*-Clauses

A *bona fide* non-argument taking nouns (*zizitu*) 'fact' cannot combine with *to-(no)* at all but only with *toiu*, which is *to* + a bleached verb of saying (H. Saito 2017).

(16) ?*John-ga kinou kokoni ita to-no zizitu
John-NOM yesterday here was C-GEN fact
'the fact that John was here yesterday' (Ogawa 2001: 207 (229a,b))

(17) John-ga kinou kokoni ita toiu zizitu
John-NOM yesterday here was C fact
'the fact that John was here yesterday'

- *to*-clauses are saturators

Japanese *to*-Clauses

to-clauses allow raising to object out fo the finite clause (hyper-raising):

(18) Kanojo-wa sono otoko-o sagishi da **to** shinjiteiru
She-TOP the man-ACC swindler is **to** believes
'She believes the man to be a swindler' (Kawai 2006: 329(1b))

- But, as with Korean, debates exist as to whether this is movement or base-generation and how far the ACC DP moves.

Zulu

A 'bare' CP headed by the element **ukuthi** cannot combine with content nouns (all data from Halpert 2015):

(19) *umcabango [**ukuthi** imikhovu i-fik-ile]
AUG.3thought that AUG.4zombie 4S-arrive-PFV
'the thought that the zombies arrived'

Instead, associative morphology is needed (which is what happens when a noun modifies other nouns)

(20) umcabango [**wokuthi** imikhovu i-fik-ile]
AUG.3thought 3ASSOC.that AUG.4zombie 4S-arrive-PFV
'the thought that the zombies arrived'

(21) umcabango **wemikhovu**
AUG.3thought 3ASSOC.AUG.4zombie
'the thought of zombies'

Zulu

Zulu has hyper-raising (to object and subject) from finite CPs headed by the C element ukuthi (Halpert 2015)

(22) a. ku-bonakla [ukuthi uZinhle u- zo- xova ujeqe]
17S-seems that AUGS.1Zinhle 1S- FUT- knead AUG.1steamed.bread

b. uZinhle$_i$ u-bonakla [ukuthi t$_i$ u- zo- xova ujeqe]
AUGS.1Zinhle 1S-seems that 1S- FUT- knead AUG.1steamed.bread

So CPs that appear to be saturators are also transparent, even for A-movement.

And English fits this pattern too, although we don't normally think of it this way.

So CPs that appear to be saturators are also transparent, even for A-movement.

And English fits this pattern too, although we don't normally think of it this way.

English

The clauses we can A-move from—think raising-to-object analyses of ECM—cannot combine with Ns (Kayne 1984):

(23) a. We believed Mia to be the best.
b. *Our belief (of) Mia to be the best.

(24) a. Mary appeared to be happy.
b.?*Mary's appearance to be happy.

Longstanding puzzle: why can't *of* or *'s* rescue these in providing Case?

English

The same pattern shows up with small clause complements of attitude verbs.

(25) a. We believed her the best.
b. *Our belief of her the best.

In other contexts, as with perception predicates, *of* does rescue case, allowing a small clause to complement a noun:

(26) a. We saw Mia happy.
b. The sight of Mia happy.
cf. *the belief of Mia happy.

What's different about *sight* vs. *belief*?

English

What's different about *sight* vs. *belief*?

(27) a. (i) We believe that Mary was happy.
(ii) The belief was that Mary was happy.
b. (i) We saw that Mary was happy.
(ii) *The sight was that Mary was happy.

(28) a. ?*The belief of that idea.
b. The sight of that event.

- *sight* takes arguments, and English small clauses that denote events can saturate it.
- *belief* does not take arguments, but English small clauses (and infinitives) can't predicate modify them

Takeaway: English 'ECM' clauses are saturators: can't combine with non-argument-taking Ns but are open for cross-clausal A-dependencies and movement.

Summary

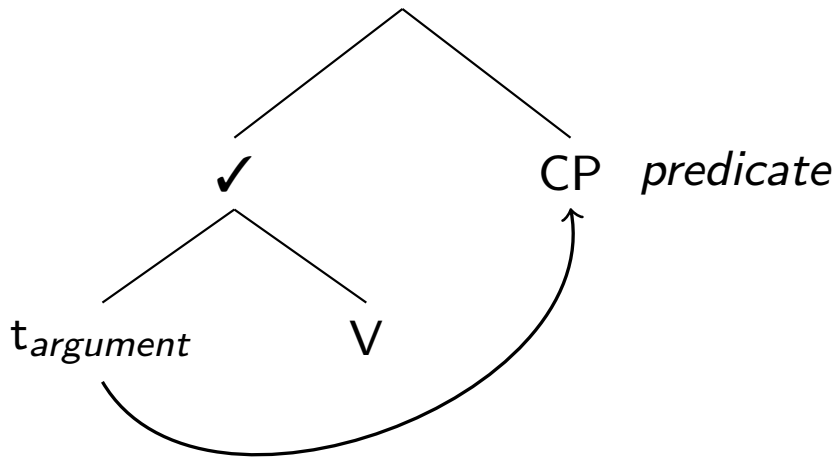
(Hyper-)Raising has nothing to do with the tense of the clause (see also Wurmbrand 2018) but whether the clause is a saturator or not.

No raising from Non-saturators

Proposal:

- You can A-move from Saturating clauses becuase they compose *in situ*
- You cannot A-movement from a finite CP in English it would violate constraints on remnant movement.

Recall, Non-saturating CPs in English must move to be interpreted:



No raising from Non-saturators

ECM is raising to object (Postal 1974; Johnson 1991)

- For ECM to proceed from a Non-saturating CP, the ECM'd element would need to move from the CP then the CP would have to **remnant move**:

(29) We believed him_1 t_2 $[_{CP}$ that t_1 was happy$]_2$

No raising from Non-saturators

Remnant movement does not allow this.

- Müller (1996): the two movements in remnant movement cannot be of the same 'type'.

Scrambling $\succ$ Topicalization:

(30) $[_{VP}$ t_1 gelesen$]_2$ hat das Buch_1 keiner t_2
'No one has read that book' (Müller 1996: (9a))

*Scrambling $\succ$ Scrambling:

(31) *das $[_{VP}$ t_1 gelesen$]_2$ das Buch_1 keiner t_2 hat
'that No one has read that book' (Müller 1996: (9a))

No raising from Non-saturators

The movement that CPs undergo is clause bound (Baltin 1978), therefore also A-movement (32).

(32) *John was [[believed to be certain ____] by everybody] [that the Mets would lose].

- CP movement is A-movement.
- ECM is A movement.
- Therefore, by Müller's Generalization these movements cannot co-occur in a remnant movement configuration.

No raising from Non-saturators

But A-moved phrases are transparent for *wh*-extraction:

(33) ?Which movie do you think that $[_{DP}$ the first part of t_{wh}] is likely t_{DP} to create a big scandal? (Abels 2008)

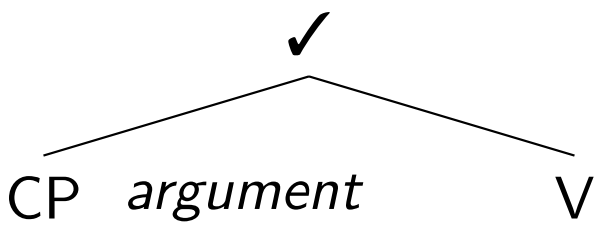
This is why *wh*-movement can proceed from Non-saturating CPs:

(34) Who did you say [that Mary saw __]?

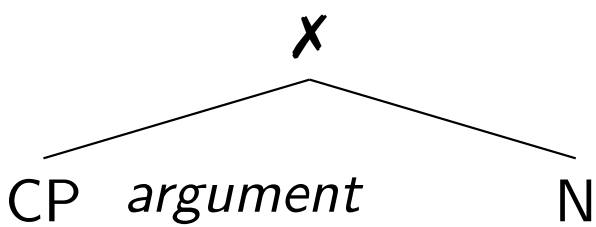
Raising from Saturating CPs

Since Korean *ko*-clauses, Japanese *to*-clauses and English ECM clauses are saturators and stay *in situ* (allowing A-movement from them), but do not have the right type to predicate modify nouns:

- CPs are saturating Arguments: compose *in-situ* and do not prevent A-movement (becuase they haven't themselvesA-moved)



- Can't combine with non-argument-taking Ns



Raising from CPs

But what then *is* the semantic type of *saturating* CPs like *to-*/*ko*-clauses and ECM complements?

A proposal:

- Saturating CPs are predicates of eventualities
- This will predict why Saturating CPs can combine with verbs but not nouns.

Eventuality-based propositional embedding

Kratzer (2013) suggest that in addition to embedding built on contentful individuals (x_c), there are embedders that are built on contentful eventualities (type v). (Hacquard 2006; Moulton 2008; Elliott 2018)

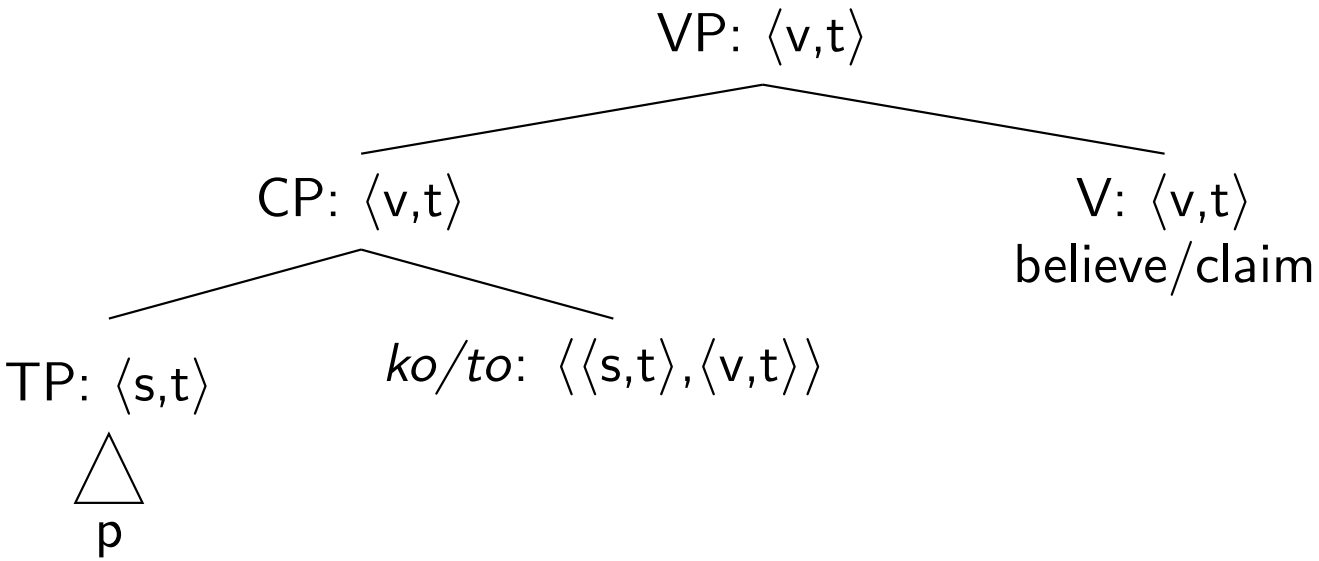
(35) $[\![\textbf{to-/ko-}]\!] = \lambda p \lambda e \lambda w. \forall w' \in f_{\textsc{cont}}(e_v)(w)\colon\ p(w')$.

$f_{\textsc{cont}}(e_v)(w) = \{\ w' : w'$ is compatible with the informational content of e in w $\}$

Events described by *claim* and states like *believe*, for instance, have informational content.

Eventuality-based propositional embedding

to-/ko-clauses are type ⟨v,t⟩ which compose in situ with an intransitive V via Event Identification (ignoring world arguments):



See Bogal-Allbritten 2016, on Navajo, for the view that the embedding verb is a simple eventuality description.

Eventuality-based propositional embedding

This gives rise to meanings for (36) like (37):

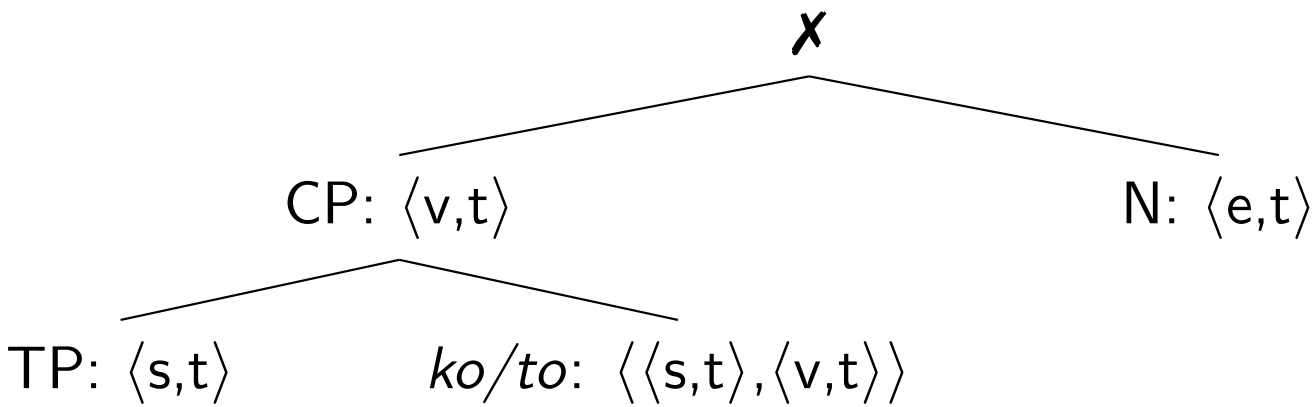
(36) a. Mina-ka [Swuna-ka ku mwuncey-lul
Mina-NOM Swuna-NOM that problem-ACC
phwul-ess-ta]-**ko** cwucangha-ess-ta
solve-PAST-DECL-C claim-PAST-DECL
'Mina claimed that Swuna solved the problem.'

(37) λw.$\exists$e[Agent(e)(Mina)(w) & claim(e)(w) & $\forall$w′ $\in$ fCONT(e_v)(w): Swuna-solved-the-problem(w′).

Eventuality-based propositional embedding

Since a *ko-/to*-clause will denote type $\langle v,t \rangle$ it will not be able to combine with a content noun, assuming these are just type $\langle e,t \rangle$:

(38) Not a $\langle e,t \rangle$-type predicate modifier so does't combine with N

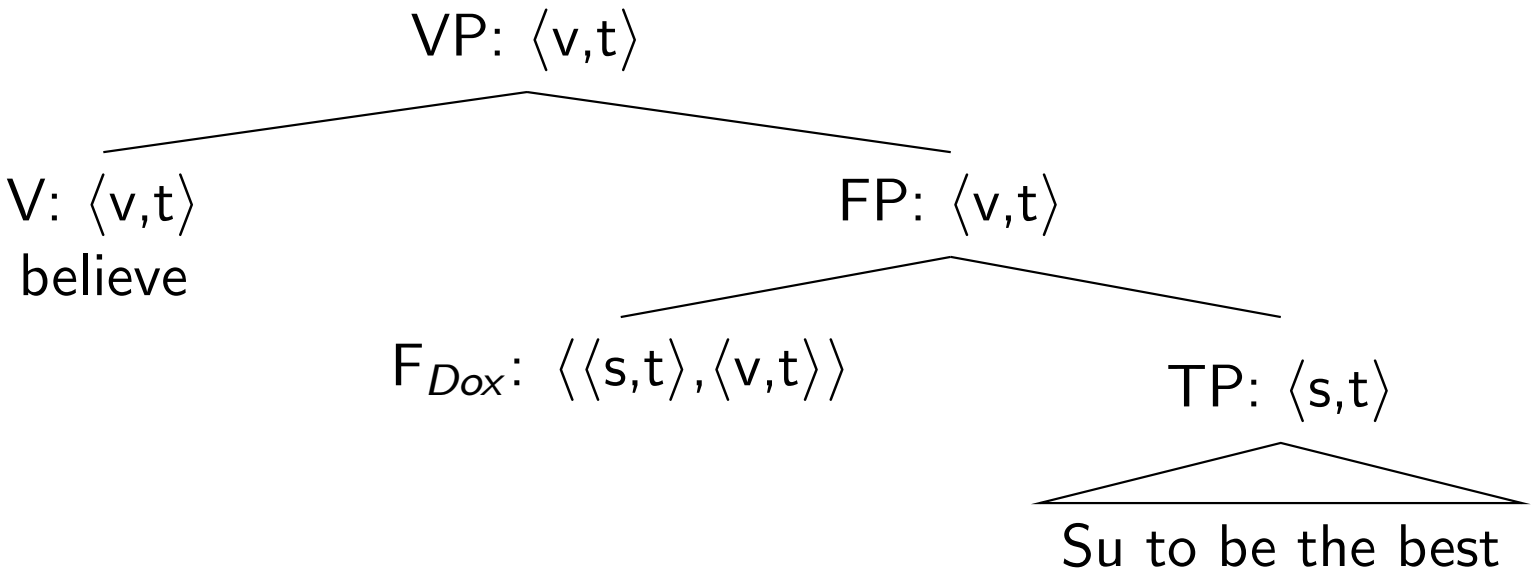


Eventuality-based propositional embedding

English ECM is headed by a null embedder similar to *ko/to*:

- I called this F_{Dox} in Moulton 2009 because English ECM is limited to *belief*-verbs (doxastics).

(39) We believe Su to be the best.



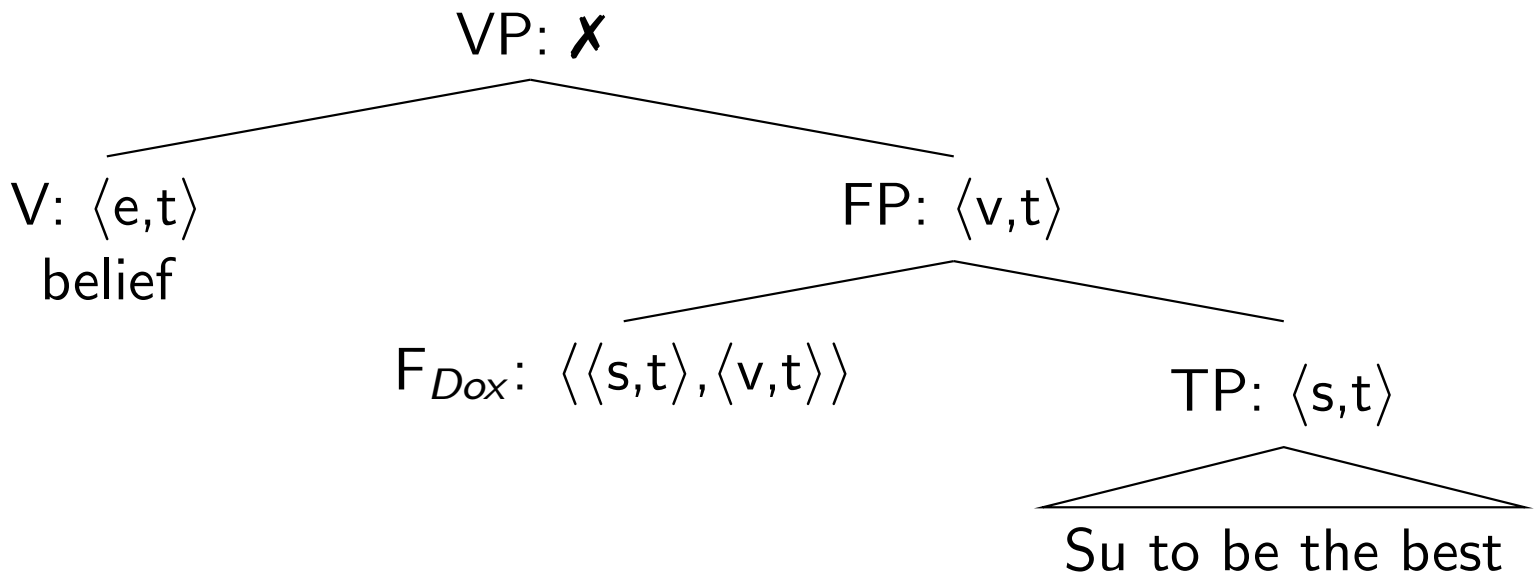
- FP and therefore TP remain *in situ* making it transparent for movements.

Eventuality-based propositional embedding

English ECM or small clauses under *believe* cannot complement Ns due to a type clash just as with *to/ko*-clauses

- Note: a bare TP also cannot intersect with the N.

(40) *the belief of Su (to be) the best.



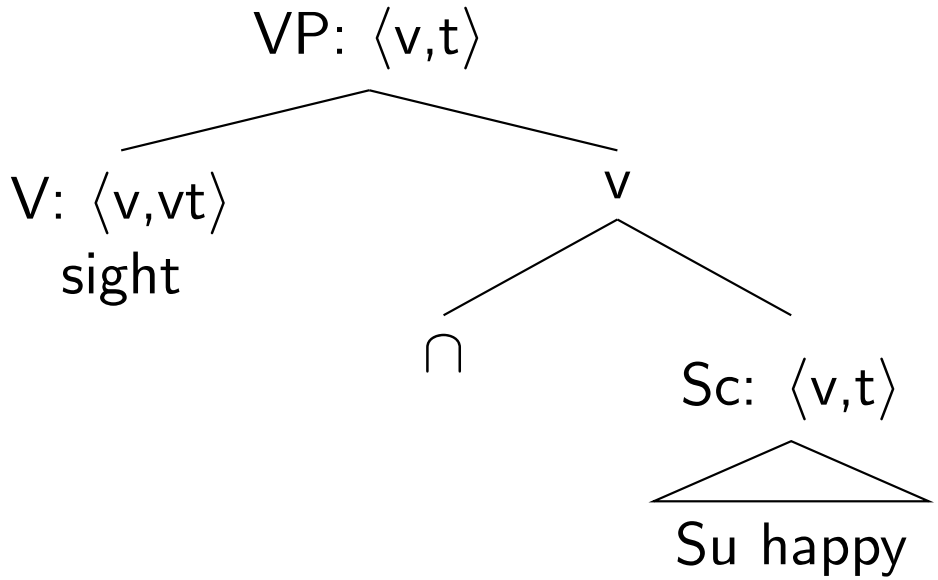
- *of* might rescue case, but the construction is ill-formed type-wise.

Eventuality-based propositional embedding

The nominalization of *sight* is an argument-taker (taking an eventuality)

- the small clause must be nominalized to deliver that eventuality (Nom $\cap$ after Cheirchia 1984).

(41) the sight of Su happy.



- *of* can rescue case!

Eventuality-based propositional embedding

If F_{Dox} is an eventuality-based embedder like *to* and *ko* then it becomes possible to state the restrictions on the kinds of eventualities F_{Dox} combines with:

- ECM is only possible with non-agentive states (Pesetsky 1991).

(42) a. We believed/held/considered/... Su to be upset.
b. *We argued/wagered/said/... Su to be upset.

Eventuality-based propositional embedding

FP will have the semantic type of an eventuality description, hence more like a chunk of the verbal spine than a complement to the verb.

- ECM complements cannot participate in movements that rely on DP correlates (movement to subject, left-dislocation or *it*-extraposition):

(43) a. *Sue to be upset (that) was not believed by anyone.
b. That Sue was upset (that) was not believed by anyone.

(44) a. *I believed it all along Sue to be upset.
b. I believed it all along that Sue was upset.

Eventuality-based propositional embedding

Pseudo-clefts also target complements that can have DP correlates:

(45) a. *What John believed was Su happy.
b. What John saw was Su happy.

- Note this cannot be about Case *per se*.
- It is about the semantic type of the small clause:
  - the SC in (45b) can take a *what*-DP as its correlate (because it's an argument)
  - the SC in (45a) cannot take a *what*-DP as its correlate becuase it's a chunk of the verbal projection.
- *believe*-type ECM behaves like a *bona fide* complex predicate does:

(46) a. John sang his throat hoarse.
b. *What John sang was his throat hoarse.

Intermin Summary

1. I've analyzed the availability of ECM and hyper-raising raising in a new way:
   - No reference to TP vs. CP distinction/size/defectiveness
   - No reference to Case
2. Saturating CPs are transparent for ECM and hyper-raising!
   - There may be additional conditions required for hyper-raising (see Wurmbrand 2018).
3. Saturating CPs involve eventuality-based propositional embedding.
   - Such CPs are integrated into the verbal spine like part of a complex predicate.

A revealing paradigm

Hybrid systems, e.g. Bangla: (Bayer 1995):

- OV language
- CP with a Final complementizer **bole**
- [$_{CP}$ ... C] V / *V [$_{CP}$ ... C]

(47) Bangla final complementizer

a. chele-Ta [or baba aS-be **bole**] Suneche
boy-CF [his father come-will C] heard
'The boy heard that his father will come'

b. %chele-Ta Suneche [or baba aS-be **bole**]
boy-CF heard [his father come-will C]
'The boy heard that his father will come'

A revealing paradigm in mixed languages

Hybrid systems, e.g. Bangla: (Bayer 1995):

- OV language
- Initial complementizer **je**
- *[$_{CP}$ C . . .] V / V [$_{CP}$ C . . .]

(48) Bangla Initial complementizer

a. chele-Ta Suneche [**je** or baba aS-be]
boy-CF heard [C his father come-will]
'The boy heard that his father will come'

b. *chele-Ta [**je** or baba aS-be] Suneche
boy-CF [C his father come-will] heard
'The boy heard that his father will come'

A revealing paradigm in mixed languages

Je & FCC vs. *Bole* & ECM

	je-clause	*bole*-clause	English FCC	ECM
N-CP	✓	✗	✓	✗
DP correlate	✓	✗	✓	✗
Factive interp.	✓	✗	✓	✗
Small clause	✗	✓	✗	✓
Transparent for Wh-movement	✗	✓	✓	✓

(Sources: Singh 1980, Kidwai 2014, Utpal Lahiri (pers. comm.))

Bole details

Bole-clauses don't combine with N, unlike *je*-clauses:

(49) a. *Se e **kOtha**-Ta [Ram kal mara gEche **bole**] janto
s/he this talk-CLA Ram yesterday die gone BOLE knew
'She knew this talk/story/news that Ram had died yesterday'

b. Se e **kOtha**-Ta [**je** Ram mara gEche] janto
s/he this talk-CLA COMP Ram die gone knew
'She knew this talk/story/news that Ram had died.'
(Singh 1980, T. Battacharya, p.c.)

- Just like ECM.

Bole details

Bole-clauses don't have DP correlates:

(50) **chele-TA **eTa**$_i$ Suneche [or baba aS-be **bole**]$_i$
boy-CF this heard his father come-will bole
'The boy heard that his father will come.'

(51) chele-TA **eTa**$_i$ Suneche [je or baba aS-be]$_i$
boy-CF this heard Comp his father come-will
'The boy heard that his father will come.'

- Just like ECM.

Bole details

Bole incompatible with (strong) factives (reported in Kidwai 2014):

(52) *[Ram kolkata-y jacche **bole**] janlam.
Ram Calcutta-LOC goes BOLE knew-I.

also: *think*, *hear*, **see*, **realized*, **forget*

- *Je*-clauses compatible will all of these.

Bole details

- Much like ECM:

(53) a. I knew/believed/thought/heard him to be a winner.
b. *I realized/forgot him to be a winner.

Bole details

It appears that *bole*-clauses might have a small clause-like option (with perhaps dative or object marking on embedded subject).

(54) a. Ram Sita-ke brilliant bole mone korto.
Ram Sita-?DAT/OBJ brilliant BOLE thought
'Ram thought Sita brilliant'

b. Ram Sita-ke brilliant bole janto.
Ram Sita-?DAT/OBJ brilliant BOLE knew
'Ram knew Sita to be brilliant'
(U. Lahiri, p.c.)

Je-clauses don't allow this.

- If the case on the embedded subject comes from the higher clause, we expect this behavior from saturators.

Bole details

In other ways, too, *bole*-clauses are more transparent than *je*-clauses: *wh*-in situ wide scope:

(55) a. chele-Ta [ke aSbe bole] bhablo
boy-CF who come-will BOLE thought
'Who did did boy think will come' (oblig. wide scope for *ke*)

b. chele-Ta bhablo [je ke aSbe]
boy-CF thought COMP who come-will
'The boy thought who will come' (oblig narrow for *ke*)

c. *chele-TA [ke aSbe bole] ki bhablo
boy-CF who come-will BOLE what thought
'Who did the boy think will come?'

d. chele-Ta ki bhablo [je ke aSbe]
boy-CF what thought COMP who come-will
'Who has the boy though/heard will come?' (wide scope for *Q*)

A revealing paradigm in mixed languages

Je & FCC vs. *Bole* & ECM

	je-clause	*bole*-clause	English FCC	ECM
N-CP	✓	✗	✓	✗
Extrapose rightward	✓	✗	✓	✗
Factive interp.	✓	✗	✓	✗
Small clause	✗	✓	✗	✓
Transparent for Wh-movement	✗	✓	✓	✓

A connection then?

Verby Embedders

- *bole*, like Zulu *ukuthi*, is derived from a verb of saying
- Have we discovered other Verby Cs?

	Verby C		Predicate C
Bangla	*bole*	pst part *bol-*, 'say'	*je* (also a relativizer)
Zulu	*ukuthi*	< *thi* 'say'	
English	F_{dox}		*that* (also a relativizer)
Korean	*ko*		
Japanese	*to*		

- Of course, I am not saying *ko*/*to*/F_{dox} are Cs derived from verbs of saying.
- But like verbs they have an eventuality argument, which they use for eventuality-based proposition embedding (Kratzer 2013).
  - Coheres with related ideas in Kim (2018), Özyıldız (2018), Saito (2018), Shimamura (today).

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