Ingredients of Embedding: (Hyper-)Raising and Saturation

Keir Moulton

Simon Fraser University

Göttingen Summer School August 2016

▲□▶ ▲□▶ ▲三▶ ▲三▶ 三三 のへで

1/54

The Story so far

Finite clausal complements — but not CPs in general — are predicates of propositional content.

They combine nicely with Ns but cause trouble with Vs, forcing them to move out (+ some other complicated remnant movement)

• side-note: B. Bruening gives a serious critique of the approach l've tried to sell you:

 $http://udel.edu/\ bruening/Downloads/CPsMoveRight1.pdf$

Are there clauses that are *in situ* saturators?

Are there clauses that are *in situ* saturators? Raising/ECM complements

◆□ > ◆□ > ◆三 > ◆三 > ・ 三 = ・ のへの

3 / 54

No ECM with content nouns/nominalizations (Kayne 1984):

- (1) a. John believed Mary to be capable.b. *John's belief (of) Mary to be capable.
- (2) a. John believed Mary capable.
 - b. *John's belief (of) Mary capable.

No ECM with content nouns/nominalizations (Kayne 1984):

- (1) a. John believed Mary to be capable.b. *John's belief (of) Mary to be capable.
- (2) a. John believed Mary capable.b. *John's belief (of) Mary capable.

Not just about case: some nouns *can* take ECM (small clauses):

- (3) a. John saw Mary happy.
 - b. The sight of Mary happy.

Argument-taking differences between *sight* and *belief*:

• belief is an non-argument-taking nominalization

イロト 不得下 イヨト イヨト 二日

5/54

- sight is an argument-taking nominalization
- (4) The belief was that Mary was capable.
- (5) *The sight was (of) Mary happy. cf. What I saw was Mary happy.

Proposal ECM complements are TPs not CP, so they don't denote predicates of content, so they can't combine with *belief*:

(6) belief that Mary is capable



ECM complements:

- can't combine with (non-argument taking) content nouns
- are transparent for A-like operations like raising (ECM as raising to Object (Johnson 1991, Runner and Moulton 2015)

Are these two things connected?

Well, this cluster of properties show up in other languages....

Korean ko-Clauses

Ko-clauses 'raising to object':

(8) Mary-nun John-uli cen-pwuthe [ti 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 is interpolated with matrix material (e.g. subject and matrix adverbial *cen-pwuthe*).

イロト イポト イヨト イヨト 三日

Korean ko-Clauses

CPs headed by ko can't combine with nominals:

(10) 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

- can't combine with (non-argument taking) content nouns
- are transparent for A-like operations, such as raising to object.

Japanese to-Clauses

Argument-taking nouns take to-no:

(11) 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,b))

Non-argument taking nouns (*fact*) cannot combine with *to-(no)* but only with *toiu*

- (12)?*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))
- (13) John-ga kinou kokoni ita toiu zizitu John-NOM yesterday here was C fact 'the fact that John was here yesterday'
 - to-(no) is a saturator

To-clauses are transparent for A-operations: RtO/ECM

(14) 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))

Zulu has hyper-raising (A-movement out of finite clauses) from CPs headed by the element *ukuthi*, but not from nominalized clause (*uku*-V) (c). All data from Halpert 2015.

- (15) a. ku-bonakla [ukuthi uZinhle u- zo- xova ujeqe] 17S-seems that AUGS.1Zinhle 1S- FUT- knead AUG.1steamed.bread
 - b. **uZinhle**; u-bonakla [ukuthi t; u- zo- xova ujeqe] AUGS.1Zinhle 1S-seems that 1S- FUT- knead AUG.1steamed.bread
 - c. ***uZinhle**_i u-bonakla [uku zo- xova ujeqe] AUGS.1Zinhle 18-seems that FUT- knead AUG.1steamed.bread 'It seems that Zinhle will make bread.'

The same holds with RtO: possible from *ukuthi* clauses, but not from nominalized *uku*- clauses.

- (16) a. ngi-funa [ukuthi uZinhle a- xov-e ujeqe] 1SG-want that AUG.1Zinhle 1SJC- knead-SJC AUG.1steamed.bread
 - b. ngi-funa **uZinhle**_i [ukuthi t_i **a-** xov-e ujeqe] 1SG-want AUG.1Zinhle that 1SJC- knead-SJC AUG.1steamed.bread
 - c. *ngi-funa uZinhle; [uku-xova ujeqe]
 1SG-want AUG.1Zinhle AUG.15-knead AUG.1steamed.bread
 'I want Zinhle to make steamed bread'

In terms of the *in situ* saturating status of CPs i Zulu, they act like DPs in the sense that:

- Verbal predicates that require prepositions on nominals require the same marking on CPs.
- There are no nouns that take CP complements directly: CPs combine with nouns via the same process that DPs modify nouns. (Halpert 2015)

A 'bare' CP cannot combine with content nouns:

(17) *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)

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

So, this fits the pattern: *ukuthi* CPs are in-situ saturators and are transparent for A-movement.

But! Things are much more complicated! As Halpert says... "*ukuthi*-CPs can be surprisingly picky about where they surface.

- They generally like post-vP positions—and can appear there more freely than DPs.
- They dislike preverbal positions—and can't appear in Spec, TP. If these CPs are in situ saturators, it's unclear what would drive this behaviour."

...and there are complicated agreement issues I have glossed over. Highly recommended: Halpert's handout and her work on Zulu generally.

CPs and Saturation

English ECM complements, Korean ko-clauses, Japanese to-clauses...

- can't combine with (non-argument taking) content nouns
- are transparent for A-like operations (raising, case)

CPs and Saturation

So it's not about tense. (As everyone knew already but it's worth going over...)

(20) John believed him/*she to be happy

 \ast because infinitival T is not a Case licensor, so *believe* assigns case exceptionally

- either via ECM (Chomsky 1981, Bresnan 1980, Massam 1985)
- or via raising to object (Postal 1974, Johnson 1991, Runner 1994)

CPs and Saturation

But since the Tense story doesn't work (for Korean, Japanese), the saturation story provides a neat alternative.

CPs and saturation

Non in-situ saturating clauses must undergo movement:



Why should CP movement prevent A-movement from the CP?

Raising from non-saturators

Why should CP movement prevent A-movement from the CP?

• ECM is raising to object (Johnson 1991; Runner 1994)



 remnant movement can't involve movements of the 'same type' (Müller 1996)

(my) CP movement is A-movement

Wh-Extraction is possible from clausal complements (even though they appear to extrapose):

(21) Who did you tell John that you had met __?

FCC 'extraposition' is clause bound (Baltin 1978) (22a), but HNPS is not (22b) (Nissenbaum 2000: 89(3a))

- (22) a. *John was [[believed to be certain ____] by everybody] [that the Mets would lose].
 - b. I claimed that I liked ____, in order to get you to rent, that movie with Fred Astaire and Audrey Hepburn.

FCC movement is A-like.

Raising from non-saturators

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

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

A-bar is not.

(24) *Oscar_{DP} is known [wh how likely t_{DP} to win] it was t_{wh} (Abels 2008)

A-movements can't 'surf' on A'-movements

(25) a. A-mvmt \succ A'-mvmt b. *A'-mvmt \succ A-mvmt

Müller (1996): the two movements in remnant movement cannot be of the same 'type' (see refinements in Abels 2008)

Scrambling \succ Topicalization:

(26) [vp t₁ gelesen]₂ hat das Buch₁ keiner t₂
 'No one has read that book' (Müller 1996: (9a))

*Scrambling ≻ Scrambling:

(27) *das [VP t1 gelesen]2 das Buch1 keiner t2 hat
 'that No one has read that book' (Müller 1996: (9a))

イロト イポト イヨト イヨト 二日





The clausal argument (be it a CP or TP must stay *in situ* in RtO)—or at least not move the way I've said FCCs move....



Korean *ko*, Japanee *to*, etc. are **in situ staurators**: they don't move to compose with verbs but can't compose with nouns (they're not predicates).

Transparent for A-movement.

• FCCs in English disallow raising not because of Case/Tense/syntax, but because raising would lead to a violation of Müller's generalization b/c FCCs involve remnant movement. But what then is the semantics type of saturating CPs?

- propositions, as we always thought for all complements?
- individual type?

This proposal suggests that ECM-*believe* takes propositions *directly* (the type of TP), not type *e* things. There is some evidence that ECM complements have a different flavour of belief than the same verb when it takes FCCs.

(Borkin 1984):

(28) The doctor has told Sam that his cat has an illness
... but Sam won't believe that she is sick.
... but Sam won't believe her to be sick. (adapted from Borkin 1984:83)

(29) Sam thoroughly examined the cat,... but he doesn't believe that she is sick....but he doesn't believe her to be sick.

Borkin (1984:83): "[ECM] describe a self-initiated, original perception or opinion rather than the recognition of the truth of a proposition formed by someone else."

Here's how the CP-taking *believe* is define on the present account: the attitude holder is recovered via the eventuality argument (Anand and Hacquard 2009).

- (30) $\llbracket \text{ believe } \rrbracket = \lambda x_c \lambda e \lambda w. \text{ Dox}(\iota x[\text{Holder}(x)(e)(w)])(w) \subseteq CONT(x_c)(w)$
- (31) Dox(\u03c4x[Holder(x)(e)(w)])(w)={w':w' compatible with what x believes in w}

In the present framework, the finite CPs would spell out a contentful individual:

- (32) John believes that Fred left (evaluated at w_0)
 - (i) $\exists e \exists x_c [Holder(John)(e)(w_0) \& believes(x_c)(e)(w_0) \& CONT(x_c)(w_0) = Fred left]$
 - (ii) $\mathsf{Dox}(\iota x[\mathsf{Holder}(x)(e)(w_0)])(w_0) \subseteq \operatorname{cont}(x_c)(w_0)$
- $\therefore \quad \mathsf{Dox}(\mathsf{John})(\mathsf{w}_0) \subseteq \{\mathsf{w'}: \mathsf{Fred left in } \mathsf{w'}\}$

Pure speculation x_c can somehow be a piece of information that someone can 'take-up' or be 'on the table' in the discourse. But existential? What about a midde-field German case?

A thought: the ECM version of *believe* does not describe a relation between individuals and things with content, but perhaps has the more standard semantics: belief p

(33) $\llbracket believe_{ECM} \rrbracket = \lambda p \lambda e \lambda w. \forall w' \in Dox(\iota x[Holder(x)(e)(w)])(w): p(w').$

- Lots more work to be done to see if this would do anything. (See Moulton 2009 for a proposal that ECM involves a different sort of *belief*.
- Are we comfortable with a different lexical entry for ECM vs. CP-taking *believe*?

A revealing paradigm

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

- OV language
- CP with a Final complementizer **bole**
- [_{CP} ... C] V / *V [_{CP} ... C]
- (34) Bengali 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'

bole-clauses can also prepose (maybe preferred spot)

A revealing paradigm in mixed languages

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

- OV language
- Initial complementizer je

(35) Bengali 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

	<i>je</i> -clause	<i>bole</i> -clause	English FCC	ECM
N-CP	√	X	√	X
Extrapose rightward	1	×	1	X
Factive interp.	\checkmark	X	1	X
Small clause	X	\checkmark	X	1
Transparent for Wh-	X	√	 Image: A set of the set of the	√
movement				

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

(Classic references: (Bayer 1995, 1999; Singh 1980)) *Bole*-clauses don't combine with N, unlike *je*-clauses:

(36) 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.' (T. Battacharya, p.c.)

Just like ECM.

Bole-clauses don't have DP correlates:

- (37)**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.'
- (38) chele-TA eTa; Suneche [je or baba aS-be];
 boy-CF this heard Comp his father come-will
 'The boy heard that his father will come.'

Same as ECM:

(39) a. I believe it that he's worried.b. *I believe it him to be worried.

(ok, ok, that's not surprising!)

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

(40) janlam [je Ram kolkata-y jacche] knew-I Comp Rman Calcultta-LOC goes 'I knew that Ram is going to Cacutta'

(also: think, hear, see, is unlikely)

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

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

Compare to ECM:

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

(see can ECM in English though: I saw him to be a real winner).

It appears that *bole*-clauses can be Small Clauses (with perhaps dative or object marking on embedded subject).

- (43) 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. We expect this behavior for saturators, like *bole*-clauses.

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

- (44) 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*)

(This could be related to the lack of correlates—massive lit. on indirect dependency in *wh*-questions....Dayal 1996).)

A revealing paradigm in mixed languages

Je & FCC vs. Bole & ECM

	<i>je</i> -clause	<i>bole</i> -clause	English FCC	ECM
N-CP	√	X	\checkmark	X
Extrapose rightward	\checkmark	X	\checkmark	X
Factive interp.	\checkmark	X	\checkmark	X
Small clause	X	\checkmark	X	\checkmark
Transparent for Wh-	X	√	1	√
movement				

A connection then?

$\mathsf{C} < \mathsf{verba} \ \mathsf{dicendi}$

Language	final C		initial C	
Bengali	bole	pst part <i>bol-</i> , 'say'	je	relativizer
Oriya	boli	pst part <i>bol-</i> , 'say'	je	relativizer
Assamese	buli	pst part <i>bol-</i> , 'say'	je	relativizer
Marathi	mhanun	from 'say'	ki	originally 'what'
(Bayer 1999)	: 3(4))		1	

・ロト ・ 日 ト ・ ヨ ト ・ ヨ ト ・ ヨ

46 / 54

Korean ko (< ha-ko 'say+and' (Ahn & Yap)) Zulu ukuthi (< thi 'say' (Halpert 2015))

C < relativizer

Language	Complement complementizer	Relativizer
Brabant Dutch	dat	dat
English	that	that
Serbo-Croatian	što	<i>š</i> to
French	que	que
Italian	che	che
:	:	:

Summary

The 'relative-like' argument clauses (*je, that, dass, che, que*) are predicates (just like standard relative clauses)

- They are not 'in situ' saturators.
- This captures their distribution (vs. DPs, CP proforms).

Non-Relative like clauses (including those derived from verba dicendi (Bangla, Korean, etc.)) and English ECM are 'in situ' saturators.

The program

Analyze raising in a new way:

- No reference to TP vs. CP distinction
- No reference to Case
- Maybe an ingredient to handle possible A-movement from finite clauses (hyper-raising)
 - ► As Claire Halpert says, that can't be the *whole* story, at least for Zulu, but it might be a *prerequisite* for hyper-raising.
 - EPP satisfaction might play a role maybe even some saturating CPs cannot satisfy EPP (maybe none can...see later)

Strong (too strong?) cross-linguistic prediction:

• If a clause cannot combine with a non-argument taking noun, it should be more transparent for syntactic operations than the clause that can combine with such a noun.

Meanings for C

Why are in-situ saturating CPs predominantly from verba dicendi?

- Another way to recover content (Hacqaurd 2006, Kratzer 2013): from events
- Kratzer (unpublished lectures) has proposed a SAY complementizer.
- (45) $[[SAY/?BOLE]] = \lambda p \lambda e \lambda w. \forall w' \in fCONT(e)(w): p(w').$ $fCONT(e)(w) = \{ w' : w' \text{ is compatible with what the holder of e believes in w } \}$

(Not exactly how Kratzer does it. And for good reason, 'cause (45) would let us put SAY together with really any verb with a Holder!)

What kind of head is this? It looks like a Verb!!

Meanings for C

(46) $\llbracket \text{ SAY}/?\text{BOLE} \rrbracket = \lambda p \lambda e \lambda w. \forall w' \in fcont(e)(w): p(w').$

What kind of head is this? It looks like a Verb!!

Part of the verbal projection (like the way v, Appl, and other argument introducing heads combine in the vP).



v and VP combine by Event Identification (Kratzer 1996)

The CP composes 'in situ'



The matrix verb would be semantically *light*, and the embedded material provides the quantification over possible worlds. Read Bogal-Allbritten 2015 for a sustained argument for this view from Navajo.

Next time:

Next time: Nouny CPs

◆□ > ◆□ > ◆臣 > ◆臣 > ─ 臣 ─ のへ⊙

53 / 54

References

- Abels, Klaus. 2008. Towards a restrictive thory of remant movement. Linguistic Variation Yearbook 7.
- Anand, Pranav, and Valentine Hacquard. 2009. Epistemics with attitude. In Proceedings of SALT 18.
- Baltin, Mark. 1978. Toward a theory of movement rules. Doctoral Dissertation, Massachusetts Institute of Technology.
- Bayer, Josef. 1995. On the origin of sentential arguments in German and Bengali. In *Studies in comparative Germanic syntax*, ed. Hubert Haider, Susan Olsen, and Sten Vikner, 47–76. Dordrecth: The Netherlands: Kluwer Academic Publishers.
- Bayer, Josef. 1999. Final complementizers in hybrid languages. Journal of Linguistics 35:233-271.
- Borkin, Ann. 1984. Problems in form and function. Norwood, NJ: Ablex.
- Hong, Sungshim, and Howard Lasnik. 2010. A Note on Raising to Object in small and full clauses. Journal of East Asian Linguistics 19:275–289.
- Johnson, Kyle. 1991. Object positions. Natural Language and Linguistic Theory 9:577-636.
- Kratzer, Angelika. 1996. Severing the external argument from its verb. In *Phrase structure and the lexicon*, ed. Johan Rooryck and Laurie Zaring, 109–137. Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Müller, Gereon. 1996. A constraint on remnant movement. Natural Language and Linguistic Theory 14:355-407.
- Nissenbaum, Jon. 2000. Investigations of covert phrase movement. Doctoral Dissertation, Massachusetts Institute of Technology, Cambridge, Massachusetts.
- Ogawa, Yoshiki. 2001. A unified theory of verbal and nominal projections. Oxford: Oxford University Press.
- Runner, Jeffrey. 1994. A specific role for AGR. In Functional projections, 153–178. Amherst: GRADUATE LINGUISTIC STUDENT ASSOCIATION.
- Singh, Uday N. 1980. An Unresolved Problem in Bengali Syntax. Indian Linguistics 41:188-195.