Hyperraising and semantics of clausal embedding

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Crossing boundaries:
Empirical and theoretical aspects of A-dependencies in complementation
December 11-12

Massachusetts Institute of Technology

Introduction

Introduction

- **Hyperraising to object** is movement of an argument of an embedded finite CP into the matrix object position (cf. (1) and (2)).

(1) *Barguzin Buryat*
     Bair **Badm-i:jə**$_1$ [$_{CP}$ **t**$_1$ Sajani:jə zura-xa   gə-žə]   hana:
     Bair **Badma-acc**   Sajana   draw-FUT say-ADV thought
     'Bair thought that Badma will draw Sajana.'

(2) *English*
     *Bair thought **Badma**$_1$ [$_{CP}$ that **t**$_1$ will draw Sajana].

- Only one subtype of a number of cross-clausal 𝔄-dependencies (Wurmbrand et al. 2021).

**Why do languages vary in whether they allow cross-clausal
𝔄-dependencies?**
(And how do children learn is?)

Common answer: syntactic features of the complementizer/clause

- ...together with the nature of the EPP (Halpert 2016, 2019);
- ...together with differences in inventory of syntactic heads and in
  how probing is established (Wurmbrand et al. 2021).

Why do languages vary in whether they allow cross-clausal 𝔄-dependencies?
(And how do children learn is?)

Alternative: availability (of at least some) cross-clausal 𝔄-dependencies is dependent on the compositional semantics of clausal embedding.

- Precedent: Moulton 2016, 2019.
- Cf. meaning-driven accounts of clausal selection (Theiler et al. 2019, Roelofsen & Uegaki 2020, a.o.).

Today's talk: Hyperraising to Object
(most of the data will be from Barguzin Buryat)

★ **Main Proposal:** Hyperraising to object requires an embedded CP
that combines as a modifier of the verb's event argument.

Disclaimers:

- This condition might be necessary, but probably not sufficient.
- Hyperraising to Object ⇒ Accusative Subjects, but:
  Accusative Subjects ⇏ Hyperraising to Object.

Roadmap:

1. Hyperraising as raising into a θ-position.
2. Different ways to embed a clause.
3. Proposal: CPs need to be verbal modifiers to be hyperraised out of.
4. Summing up.
5. Further predictions.

Hyperraising as raising into a θ-position

Hallmarks of an embedded DP Hyperraising to Object:

1. There is evidence for movement of the DP from embedded clause.
2. The moved DP starts behaving as the Theme of the matrix verb.
3. The DP has to be interpreted at the landing site or higher at LF.

To be shown: accusative subjects of finite clauses with the complementizer *gəžə* in Barguzin Buryat exhibit this behavior.

The embedded DP moves:

- obeys island constraints;
- passes the idiom test;
- observes Proper Binding Condition (Fiengo 1974);
- agreement differs from control structures.

Hyperraising as raising into a θ-position

Accusative DPs cannot occur inside islands

- Buryat observes Complex NP Constraint:

(3)   Daba: [[Dugar-ai ala-han] xübü-jə] mədə-xə
      Dabaa Dugar-GEN kill-PFCT boy-ACC know-FUT
      'Dabaa will know the boy that Dugar killed.'

(4)   *Daba: [[**xən-əi** ala-han] xübü-jə] mədə-xə-b
      Dabaa **who-GEN** kill-PFCT boy-ACC know-FUT-Q
      'Who is x such that Daaba will know the boy who x killed?'

(5)   *$\textbf{xən-əi}_1$ Daba: [[t_1 ala-han] xübü-jə] mədə-xə-b
      who-GEN Dabaa   kill-PFCT boy-ACC know-FUT-Q
      'Who is x such that Daaba will know the boy who x killed?'

Hyperraising as raising into a θ-position

Accusative DPs cannot occur inside islands

- Accusative subjects cannot occur inside relatives clauses as well:

(6) *Darima [[**Dugar-i:jə** xara-han bagša] šülə bəš-ə: gəžə]
Darima **Dugar-ACC** see-PFCT teacher poem write-PST COMP
han-a:
think-PST
'Darima thinks that the teacher that Dugar saw wrote a poem.'

★ Accusative subjects move, and hence cannot occur inside islands.

Hyperraising as raising into a θ-position

Accusative DPs can be parts of idioms:

(7) Sajana   [Badm-iːn **zürx-iːjə** am-aːr-aː
     Sajana.NOM Badma-GEN **heart-ACC** mouth-INSTR-REFL
     gara-na   gəžə] xar-aː
     go.out-PRS COMP see-PST
     Lit. 'Sajana saw that Badma's heart went out of his mouth.'
     Idiomatic: 'Sajana saw that Badma is very frightened'.

★ Accusative subjects are generated inside of the embedded clause,
   and hence can form idioms with the embedded predicate.

Proper Binding Condition (PBC) as a diagnostic for a trace:

- PBC requires traces to be bound.
- While both CPs and embedded objects can scramble, the two movements can't be combined (8); cf. (9) with a control structure.

(8) *[Badma **t**$_1$ ab-a: gəžə]$_2$ **mor-i:jə**$_1$ Sajana t$_2$ xəl-ə:
     Badma   buy-PST COMP **horse-ACC** Sajana   say-PST
     'Sajana said that Badma bought a horse.'

(9) [**PRO**$_1$ mor-i:jə ab-a:-**b**   gəžə]$_2$ **Sajana**$_1$ t$_2$ xəl-ə:
          horse-ACC buy-PST-**1SG** COMP **Sajana**   say-PST
     'Sajana$_1$ said that she$_1$ bought a horse.'

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Hyperraising as raising into a θ-position

Proper Binding Condition (PBC) with accusative subjects:

(10) *[t_1 mor-i:jə   ab-a: gəžə]$_2$ Sajana **Badm-i:jə**$_1$ t_2 xəl-ə:
        horse-ACC buy-PST COMP Sajana **Badma-ACC**   say-PST
      'Sajana said that Badma bought a horse.'

★ Accusative subjects are generated inside of the embedded clause,
   and so the scrambled clause contains a trace, violating PBC.

Control configuration shows agreement, but ACC subjects do not:

(11)   Sajana$_1$ [PRO$_1$ mor-i:jə   ab-a:-*(b)   gəžə] xəl-ə:
         Sajana   horse-ACC buy-PST-(1SG) COMP say-PST
         'Sajana$_1$ said that she$_1$ bought a horse.'

(12)   Sajana [namajə$_1$ mor-i:jə   ab-a:-(*b)   gəžə] xəl-ə:
         Sajana 1SG.ACC horse-ACC buy-PST-(1SG) COMP say-PST
         'Sajana said that I bought a horse.'

★ If there was a PRO in the embedded clause, we would expect
   agreement on the embedded verb occurring with it.
   There is no agreement ⇒ not a control structure.

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Hyperraising as raising into a θ-position

The moving DP becomes the Theme of the matrix verb:

Passivization in Buryat:

- Long-distance passivization is impossible.[1]

- Only internal arguments can be promoted when verbs are passivized.

★ The accusative subjects of *gəžə*-clauses can be promoted into the matrix subject position when the matrix verb is passivized.

⇒ They must have become Theme arguments.

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[1]Exception: restructuring verbs.

No long-distance passivization from gəžə-clauses

- It is not possible even when the embedded subject is null:

(13) Badma$_2$ [PRO$_2$ namajə   zura-xa-b gəžə] xəl-ə:
       Badma 1SG.ACC draw-FUT-1SG COMP   say-PST
       'Badma said that he will draw me.'

(14) ***Bi$_1$**   Badm-a:r$_2$ [PRO$_2$ t$_1$ zura-xa-(b)   gəžə]
       1SG.NOM Badma-INSTR   draw-FUT-(1SG) COMP
       xələ-**gd**-ə:-**b**
       say-**PASS**-PST-**1SG**
       'Badma said that he will draw me.'
       (lit. 'I was said by Badma that he will draw')

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Hyperraising as raising into a θ-position

Only internal arguments can be arguments of passivized predicates

- For example, it's impossible to promote an indirect object into the matrix subject position (2), cf. (1).

(15) ✓ *Internal Argument is promoted*
      ənə bəšəg Dugar-aːr əl'gə:-**gd**-ə:
      this letter.NOM Dugar-INSTR send-**PASS**-PST
      'This letter was sent by Dugar.'

(16) ✗ *Indirect Object cannot be promoted*
      *****Darima** Dugar-aːr bəšəg əl'gə:-**gd**-ə:
      Darima.NOM Dugar-INSTR letter send-**PASS**-PST
      Intended: 'Darima was sent a letter by Dugar.'

Hyperraising as raising into a θ-position

Accusative subjects can be promoted when the verb is passivized:

(17)   Badma [**namajə** Sajan-i:jə   zura-xa   gəžə] xəl-ə:
        Badma **1sg.acc** Sajana-acc draw-fut comp say-pst
        'Badma said that I will draw Sajana.'

(18)   **bi**$_1$ Badma-da [**t**$_1$ Sajan-i:jə   zura-xa   gəžə]
        1sg.nom Badma-dat   Sajana-acc draw-fut comp
        xələ-**gd**-ə:-**b**
        say-**pass**-pst-**1sg**
        'Badma said that I will draw Sajana.'
        (lit. 'I was said by Badma that (I) will draw Sajana')

- The absence of agreement on the embedded verb tells us that this is
  not a control structure; the subject raised from the embedded clause.

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Hyperraising as raising into a θ-position

Additional support from the idiom test

- Embedded subject that has been promoted to the matrix subject position can form an idiom with the embedded clause, but only if there is **no agreement** on the embedded predicate.

(19)   Badm-iːn **zürxə-n**$_1$ Sajan-aːr   [t$_1$ am-aːr-aː
       Badma-GEN **heart-NOM** Sajana-INSTR   mouth-INSTR-REFL
       gar-aː-**(b)**   gəžə] mədə-**gd**-əː
       go.out-PST-**(1SG)** COMP know-**PASS**-PST
       Lit. 'Sajana knew that Badma's heart went out of his mouth.'
       Idiomatic: 'Sajana knew that Badma got very frightened.'
       ✓ without agreement, ✗ with agreement

★ With agreement we have a control configuration, without agreement we have a raising configuration.

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The embedded DP cannot reconstruct:

- if it's an NPI, it can only be licensed by matrix negation;
- it is obligatorily interpreted *de re*;
- it cannot undergo indexical shifting.

Hyperraising as raising into a θ-position

Accusative subject NPIs

(20) Badma [xən-šjə   /*xən-**i**ː-šjə   tərgə əmdəl-əː-**güj**
     Badma who.NOM-PTCL /who-ACC-PTCL cart break-PST-NEG
     gəžə] xar-aː
     COMP see-PST
     'Badma saw that noone broke the cart.'

(21) Badma [*xən-šjə   /✓xən-**i**ː-šjə   tərgə əmdəl-əː gəžə]
     Badma who.NOM-PTCL /who-ACC-PTCL cart break-PST COMP
     xar-aː-**güj**
     see-PST-NEG
     'Badma didn't see of any person that they broke the cart.'

★ Accusative subject NPIs cannot be licensed by embedded negation
  ⇒ They must occupy their landing site at LF.

Accusative subjects are obligatorily de re

★ **De Re interpretation =**

▷ **specific:** DP takes scope in the matrix clause.

▷ **transparent:** NP is evaluated with respect to the matrix world (w_a).

(22) a. Helen thinks that a winner is happy.

  b. $\exists x$ winner(x)(w_a) and Helen thinks $\underbrace{[_{CP} \text{...}x \text{ is happy...}]}_{\text{opaque context: } w_H}$

- "There is a winner in the actual world, and in Helen's belief worlds this person is happy".

Hyperraising as raising into a θ-position

- Many of the examples to follow are modeled after (Deal 2018).

- Deal looks at *de re* in Nez Perce, and reaches the same conclusion I reach for Buryat: hyperraising to object is obligatory *de re*.

- What differs in Nez Perce vs. Buryat: **morphosyntactic encoding**

    ▷ hyperraising to object in Nez Perce surfaces as agreement of the matrix verb with the embedded subject;

    ▷ hyperraising to object in Buryat surfaces as accusative case marking on the embedded subject.[2]

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[2]Accusative marking of embedded subjects also exists in Nez Perce, however Deal argues that that strategy corresponds to prolepsis.

Hyperraising as raising into a θ-position

Bird Garudi: a birdlike creature from the legends; seems to be the same as **bird Garuda**, a birdlike creature in Hindu, Buddhist and Jain faith.

Hyperraising as raising into a θ-position

- **Nominative subjects** can be *opaque*: existence of a bird Garudi in (23) is evaluated with respect to Seseg's belief worlds.

(23) sǝsǝg [**xan garudi ʃubu:-n** oi so:-gu:r ni:d-ǝ:
    Seseg.NOM **HON Garudi bird-NOM** forest in-INSTR fly-PST
    gǝžǝ] han-a:, xarin xan garudi ʃubu:-n gazar dǝ:rǝ ügi:
    COMP think-PST but HON Garudi bird-NOM Earth on NEG
    gǝžǝ mǝdǝ-nǝ-b
    COMP know-PRS-1SG
    'Seseg thought that bird Garudi flew through the forest, but I know that there is no bird Garudi on the Earth.'

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Hyperraising as raising into a θ-position

- **Accusative subjects** must be *transparent*: existence of a bird
  Garudi cannot be evaluated with respect to Seseg's belief worlds.

(24) #səsəg [**xan garudi ʃubu:-jə** oi so:-gu:r ni:d-ə:
      Seseg.NOM **HON Garudi bird-ACC** forest in-INSTR fly-PST
      gəžə] han-a:, xarin xan garudi ʃubu:-n gazar də:rə ügi:
      COMP think-PST but HON Garudi bird-NOM Earth on NEG
      gəžə mədə-nə-b
      COMP know-PRS-1SG
      'Seseg thought that bird Garudi flew through the forest, but I
      know that there is no bird Garudi on the Earth.'

- Another illustration of the same contrast: in the context in (25), (26) is felicitous only with a nominative subject.

(25)   *Context for (26):*
      büxi: turla:g-u:d   xara gəžə Darima   məd-ə:-güi
      all   raven-PL.NOM black COMP Darima.NOM know-PST-NEG
      'Darima didn't know that all ravens are black.'

(26)   **saga:n turla:g**   /#**turla:g-i:jə** gər-əi   xažu:-ga:r
      white raven.NOM / **raven-ACC** house-GEN side-INSTR
      ni:də-bə gəžə tərə   üsəgəldər han-a:
      fly-PST2 COMP that.NOM yesterday think-PST
      'She thought that a white raven flew by the house yesterday.'

Hyperraising as raising into a θ-position

- **Nominative subjects** can be *non-specific*: (27) is felicitous without there being any particular mosquito that the man is afraid of.

(27) **Context:** A man considered going outside, and decided not to.

axanad   üsəgəldər **batagana**   zu:-xa   gəžə han-a:
elderly.man yesterday **mosquito.NOM** bite-FUT COMP think-PST

'An elderly man thought yesterday that a mosquito will bite him.'

Hyperraising as raising into a θ-position

- **Accusative subjects** must be *specific*: (28) is "funny", it conveys that the man has a specific mosquito in mind that he's afraid of.

(28)   **Context:** A man considered going outside, and decided not to.

      #axanad   üsəgəldər **batagan-i:jə** zu:-xa   gəžə han-a:
      elderly.man yesterday **mosquito-**ACC bite-FUT COMP think-PST

      'An elderly man thought yesterday that a mosquito will bite him.'

      Comment from a speaker:
      "You can say this, but it's a bit funny — why would a man be afraid of some particular mosquito?"

Hyperraising as raising into a θ-position

- Another illustration in (29): accusative subject conveys that the speaker suspects some particular cat of eating their food.

(29) **Context:** In the morning I left some cat food near my house. In the evening I saw that the food is gone.

bi   üdəʃə   **mi:sgəi** /**mi:sgəj-ə** ədjə:-jə: ədj-ə:
1SG.NOM evening **cat.NOM** /**cat-ACC** food-ACC.REFL eat-PST
gə-žə han-a:
COMP think-PST

'In the evening I thought that a cat ate the food.'

Deduction Scenario (no cat in mind): ✓ NOM, ✗ ACC
Suspicion Scenario (some cat in mind): ✓ NOM, ✓ ACC

★ Accusative subjects must be interpreted *de re* ⇒ They must occupy a position above the source of intensionality at LF.

Hyperraising as raising into a θ-position

Indexical shifting

- Indexical expressions in *gǝžǝ*-clauses can **shift** and be evaluated with respect to the arguments of the matrix clause, or can **not shift** and be interpreted with respect to the speech act participants.

(30)   Nataša, Ojuna Bair-ta   ši   namajǝ gasa:l-a:-š
          Natasha Ojuna Bair-DAT you.NOM I.ACC   offend-PST-2SG
          gǝžǝ   xǝl-ǝ:
          COMP say-PST
          'Natasha, Ojuna told Bair that...'
          a. **he (Bair = 2sg) her (Ojuna = 1sg)** offended.'
          b. **he (Bair = 2sg) me (the speaker = 1sg)** offended. '
          c. **you (Natasha = 2sg) me (the speaker = 1sg)** offended.'
          d. *__you (Natasha = 2sg) her (Ojuna = 1sg)__ offended.'
          (data from a handout by Sasha Podobryaev)

Hyperraising as raising into a θ-position

Indexical shifting

- Accusative subjects **never shift**: they must refer to speech act participants and cannot refer to the arguments of the matrix clause.

(31) badma **namajə** sajan-i:jə zura-xa gəžə han-a:
      Badma **1SG.ACC** Sajana-ACC draw-FUT COMP think-PST
      'Badma thought that I_{speaker}/*_{Badma} will draw Sajana.'

(32) badma **bi** sajan-i:jə zura-xa-**b** gəžə han-a:
      Badma **1SG.NOM** Sajana-ACC draw-FUT-**1SG** COMP think-PST
      'Badma thought that I_{speaker}/_{Badma} will draw Sajana.'

★ Accusative subject NPIs cannot be shifted ⇒ They must occupy a position above the source of shifting at LF.

Interim summary

We observe the following constellation of properties in Buryat:

1. There is evidence for movement of the DP from embedded clause.
2. The moved DP starts behaving as the Theme of the matrix verb.
3. The DP has to be interpreted at the landing site or higher at LF.

Hyperraising as raising into a θ-position

Lack of reconstruction is surprising:

- A-movement can usually reconstructs either for binding and scope (English), or at least for scope (German, Japanese), A-bar movement reconstructs for both binding and scope (Wurmbrand 2010).

- What kind of movement is this, and why does the DP have to be interpreted at the landing site or higher at LF?

Different ways to embed a clause

Different ways to embed a clause

Common view:

- CPs are syntactic arguments (of a special kind), (3);
- CPs are semantic arguments (of a special kind)—sets of worlds (4).

(33)   *think*   [NP$_{AGENT}$ --- CP$_{THEME?}$]

(34) $\llbracket think \rrbracket^w =$
        $\lambda p_{st}.\lambda x_e. \forall w'[w'$ is compatible with x's beliefs in $w \Rightarrow p(w')=1]$

★ This view has difficulties capturing differences between
   complementation patterns cross-linguistically.

Alternative view: there are at least two structures involved in clausal embedding, which also differ in semantic composition (Özyıldız 2020, Roberts 2020, Bochnak & Hanink to appear, Bondarenko to appear).

- *Argument selection:* CP is part of the internal argument of the verb.
- *Modification:* CP is a modifier of the verb.

★ If this is on the right, verbs never take CPs directly as arguments.

Different ways to embed a clause

- Many possible implementations of the alternative view with slight differences among them, here I will discuss only one.

- Following (Kratzer 2006, Kratzer 2013, Moulton 2009, Moulton 2015, Bogal-Allbritten 2016, Elliott 2017, a.o.), I assume that embedded CPs denote predicates of individuals with content (37).

(35) $[\![_{TP} \text{ Badma draws Sajana}]\!]^w = \{w': \text{Badma draws Sajana in w'}\}$

(36) $[\![C]\!]^w = \lambda p_{st}.\lambda x_e. \text{CONT}(x)(w) = p$

(37) $[\![_{CP} \text{ Badma draws Sajana}]\!]^w = $
$\lambda x_e. \text{CONT}(x)(w) = \{w': \text{Badma draws Sajana in w'}\}$

Different ways to embed a clause

- An ontological assumption: $D_v \subset D_e$.
- The CP's meaning (predicate of any individuals with propositional content (37)) is compatible with it being a predicate of events or a predicate of non-event individuals, but there might be morphemes that restrict that interpretation.
- E.g.: CONV(erb) (38) makes a predicate of any individuals into a predicate of events only; PART(iciple) (39) makes a predicate of any individuals into a predicate of individuals that are not events only.

(38)　$[\![\text{CONV}]\!]^w = \lambda f_{et}.\lambda x_e\colon x \in D_v.\ f(x) = 1.$

(39)　$[\![\text{PART}]\!]^w = \lambda f_{et}.\lambda x_e\colon x \in D_e \wedge x \notin D_v.\ f(x) = 1.$
　　　$=_{ABBR} \lambda f_{et}.\lambda x_e\colon x \in D_{e \neq v}.\ f(x) = 1.$

Different ways to embed a clause

- If a CP combines with morphemes CONV and PART, we will get meanings like in (40) and (41) respectively.

(40) **CP as a predicate of events**
$[\![_{CP} \text{ Badma draws Sajana}]\!]^w =$
$\lambda \mathbf{e}_v.\ \text{CONT}(\mathbf{e})(w) = \{w': \text{Badma draws Sajana in } w'\}$

(41) **CP as a predicate of non-eventive individuals**
$[\![_{CP} \text{ Badma draws Sajana}]\!]^w =$
$\lambda \mathbf{x}_{e \neq v}.\ \text{CONT}(\mathbf{x})(w) = \{w': \text{Badma draws Sajana in } w'\}$

Embedding as argument selection (via FA)

VP

V
$\lambda\mathbf{x}.\lambda e.\text{think}(e) \wedge \text{Theme}(e) = \mathbf{x}$

DP
$\iota\mathbf{x}_{e \neq v}(\text{CONT}(\mathbf{x})(w) = \{w': \text{B. draws S. in } w'\})$

V Θ_{Theme}
think

D   (NP)

(N)   **CP**
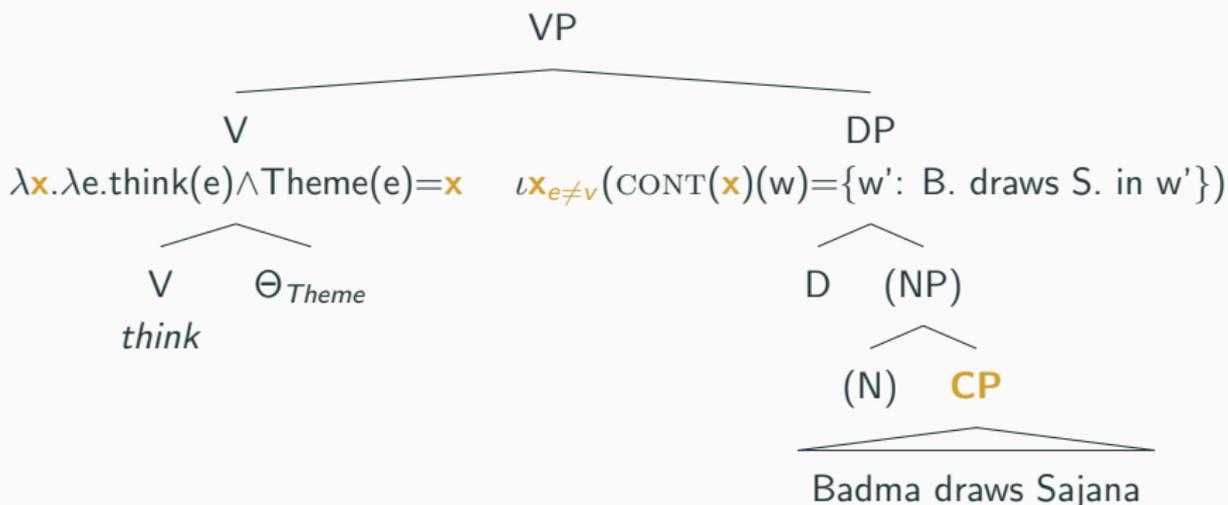
Badma draws Sajana

(42) $\llbracket \text{VP} \rrbracket^w = \lambda e_v.\ \text{think}(e) \wedge \text{Theme}(e) = \iota\mathbf{x}_{e \neq v}(\text{CONT}(\mathbf{x})(w) = \{w': \text{Badma draws Sajana in } w'\})$
"the object of thoughts is (an idea) that Badma draws Sajana"

Embedding as modification
(via Predicate Modification /Generalized Conjunction)

VP

V
think
$\lambda e.\text{think}(e)$

CP

Badma draws Sajana
$\lambda e_v.\text{CONT}(e)(w) = \{w': \text{Badma draws Sajana in } w'\}$
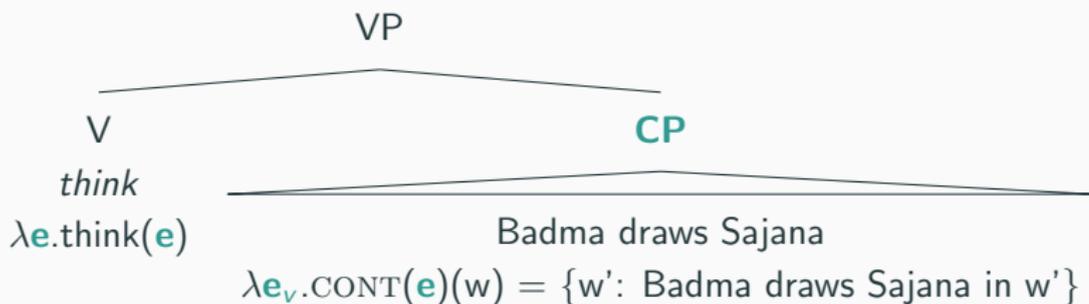
(43) $\llbracket \text{VP} \rrbracket^w =$
$\lambda e_v.\ \text{think}(e) \wedge \text{CONT}(e)(w) = \{w': \text{Badma draws Sajana in } w'\}$
"the content of thoughts is "Badma draws Sajana""

Different ways to embed a clause

If there are these two strategies of clausal embedding, we have new research questions about cross-clausal 𝔄-dependencies:

★ Are cross-clausal 𝔄-dependencies possible with both strategies of clausal embedding?

★ Do different kinds of cross-clausal 𝔄-dependencies differ in the strategies of embedding that they can occur in?

★ Could cross-linguistic variation in clausal embedding influence whether certain cross-clausal 𝔄-dependencies are possible in them?

# Proposal

Proposal

(44) **Main proposal:**
Hyperraising to object requires an embedded CP to denote **a predicate of events with propositional content** and to combine as a modifier of the verb's event argument.

where **hyperraising to object =** movement with properties in (a)-(c):

(a) There is evidence for movement of the DP from embedded clause.

(b) The moved DP starts behaving as the Theme of the matrix verb.

(c) The DP has to be interpreted at the landing site or higher at LF.

LF for hyperraising to object

Cf. Heim's *res*-movement (1994) and (Deal 2018).

VoiceP

DP
Bair

Voice VP

DP
Badma

$\lambda x.\lambda e.\text{think}(e) \wedge \text{Theme}(e)=x$

θ_{Th} V
thought

$\lambda x.\lambda e.\text{CONT}(e)(w)=\{w': x \text{ will draw S. in } w'\}$

λ_1 CP

that t_1 will draw Sajana

## Proposal
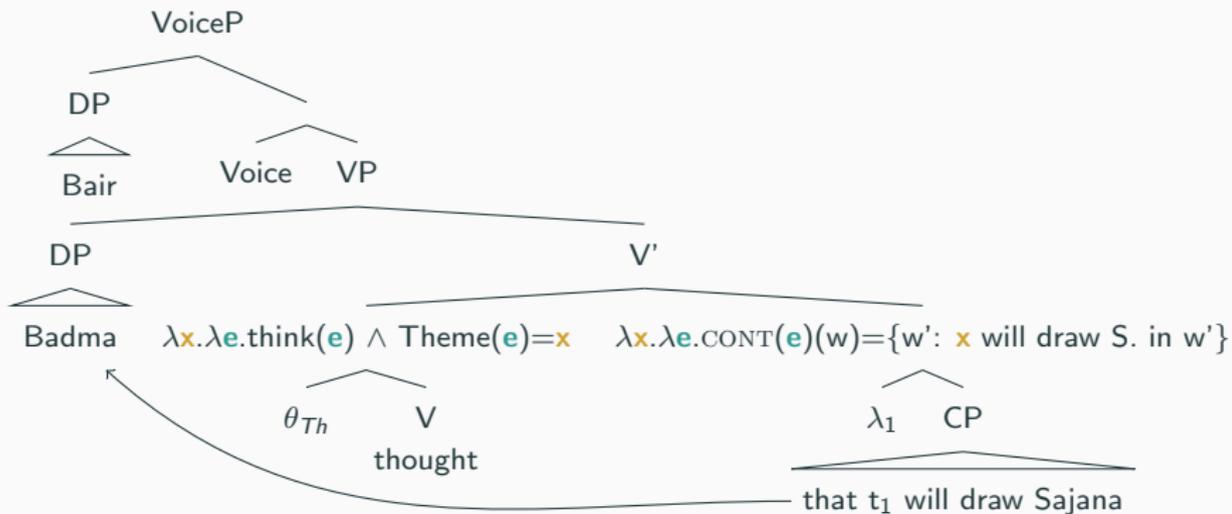
What is special about this movement:

- The λ-abstractor at the edge of CP and the DP that corresponds to it are not directly adjacent: the verb intervenes.
- This should be restricted: we don't want moving material to be arbitrary far away from their λ-abstractors.

Precedent in the literature:

- Analysis of parasitic gaps (Nissenbaum 2000, a.o.), where the VP that has been vacated by a DP undergoes λ-abstraction, then combines with an adjunct clause, and only then with a DP.
- This is another case of composing-by-modification.

(45) Who$_2$ did you forget about t$_2$ [after talking to $_{PG}$]?

CP
who$_2$ C'
C   TP
did
T   vP
t$_2$ v' <et>
v' <et>   AdvP <et>
λ_2 you forget about t$_2$ Op$_1$ λ_1 after talking to t$_1$
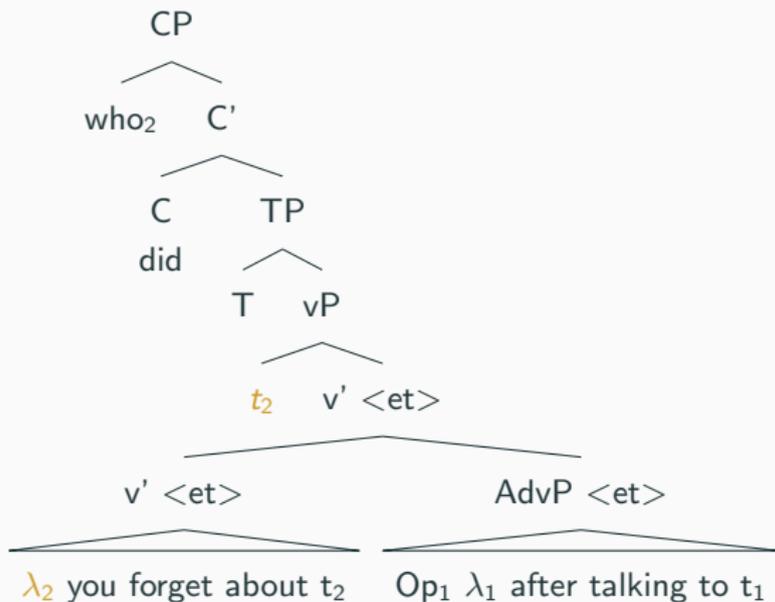
Proposal

- CP with an abstraction at its edge (46) is of the same type as the verb that has combined with a Theme-introducing Θ head (48), so they are of the same type and can combine by Generalized Conjunction/Predicate Modification (49).

(46) $[\![\lambda_1 \text{ that } t_1 \text{ will draw Sajana}]\!]^w =$
$\lambda x.\lambda e.\text{CONT}(e)(w) = \{w': x \text{ will draw Sajana in } w'\}$

(47) $[\![\Theta_{Theme}]\!]^w = \lambda f_{vt}.\lambda x_e.\lambda e_v. \, f(e) \wedge \text{Theme}(e) = x$

(48) $[\![\Theta_{Theme} \text{ think}]\!]^w = \lambda x.\lambda e.\text{think}(e) \wedge \text{Theme}(e) = x$

(49) $[\![V']\!]^w = \lambda x.\lambda e. \, \text{think}(e) \wedge \text{Theme}(e) = x \wedge \text{CONT}(e)(w) = \{w': x \text{ will draw Sajana in } w'\}$

Proposal

- When DP "Badma" saturates the resulting predicate, it "fills in" two variables at the same time: one corresponding to the Theme argument of the matrix verb, and one corresponding to the subject of the embedded clause (50).

(50) $[\![V']\!]^w = [\lambda x.\lambda e.\ \text{think}(e) \wedge \text{Theme}(e)=x \wedge \text{CONT}(e)(w) = \{w':$ x will draw Sajana in w'$\}]$ **(Badma)** $=$

$\lambda e.\ \text{think}(e) \wedge \text{Theme}(e)=$**Badma** $\wedge$
$\text{CONT}(e)(w) = \{w':$ **Badma** will draw Sajana in w'$\}$

Proposal

After the verb combines with the external argument, and existential closure applies to the event variable, we get the truth-conditions in (51):

(51) $[\![$Bair thinks that Badma will draw Sajana$]\!]^w = 1$ iff
      $\exists e[\text{think}(e) \wedge \text{Exp}(e)=\text{Bair} \wedge \text{Theme}(e)=\textbf{Badma} \wedge$
      $\text{CONT}(e)(w) = \{w': \textbf{Badma} \text{ will draw Sajana in w'}\}]$

How does this proposal account for the properties of movement?

On this proposal, the embedded DP moves and leaves a trace in the CP.

⇒ we observe island constraints;

⇒ passes the idiom test *(but this one is tricky! see appendix)*;

⇒ observes Proper Binding Condition (Fiengo 1974);

⇒ agreement differs from control structures.

Proposal

On this proposal, the embedded DP moves into a θ-position: it becomes the Theme argument of the matrix verb.

⇒ promotion to the matrix subject position when the verb is passivized is expected.

Proposal

On this proposal, the moved DP should not be able to reconstruct: if we "undo" the movement, the CP will not be able to compose with the verb.

$$\lambda x.\lambda e.\text{think}(e) \wedge \text{Theme}(e)=x \qquad \lambda e.\text{CONT}(e)(w)=\{w': \textbf{Badma} \text{ will draw S. in } w'\}$$
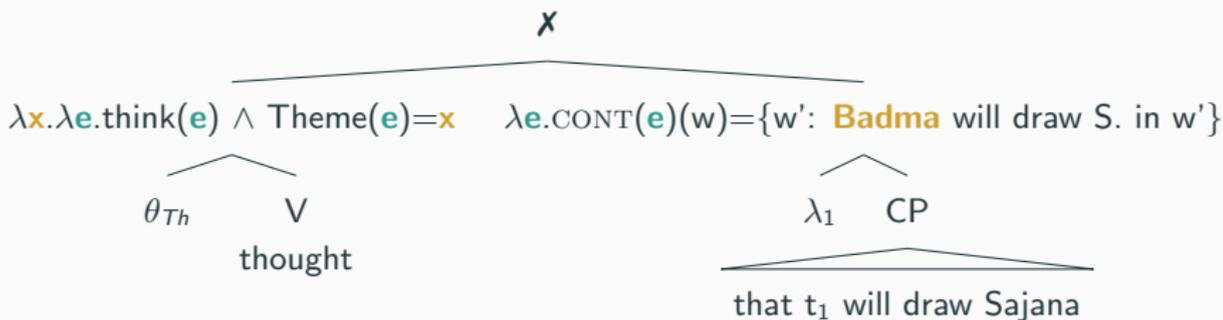
- Assuming θ_{Th} is the source of the accusative case that the embedded subject receives, it must be present when we see an ACC, and then something must move out of the CP for the verb to combine with it.

51

On this proposal, the moved DP should not be able to reconstruct:

⇒ if the embedded subject is an NPI, it should only be licensed by matrix negation;

⇒ the hyperraised subject should obligatorily be interpreted *de re*;

⇒ the hyperraised subject should not be able to undergo indexical shifting (because DP would need to be below the source of intensionalization/monster operator to shift).

CPs that are predicates of events without hyperraising

- When there is no hyperraising, the verb doesn't combine with θ_{Th}.
- The verb and the CP combine by Predicate Modification.

```
                          VP
          ┌───────────────┴───────────────┐
          V                               CP
        think            ┌─────────────────┴─────────────────┐
    λe.think(e)              that Badma will draw Sajana
                   λe.CONT(e)(w)={w': Badma will draw S. in w'}
```
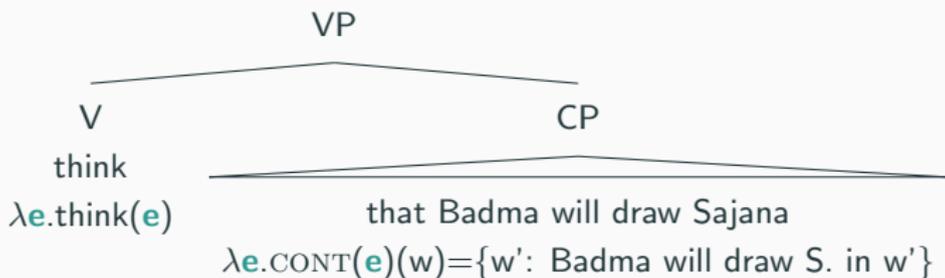
(52) $[\![\text{VP}]\!]^w = \lambda e.\text{think}(e) \wedge \text{CONT}(e)(w)=\{w': \text{Badma will draw S. in w'}\}$

Proposal

Why the other strategy/(ies) of embedding CP would fail:

If CP combines "via the internal argument" path, movement to the θ-position will not be possible, because it will create a type mismatch.

Two options to consider:

- If CP combines with the verb by first combining with N and/or D.
- If CP combines with the verb by restricting its individual argument (e.g., by *Restrict* (Chung & Ladusaw 2003)).

CP first combines with N and/or D

- CP with a λ-abstractor at the edge (corresponding to a moved DP) becomes non-composable with Ns or Ds:
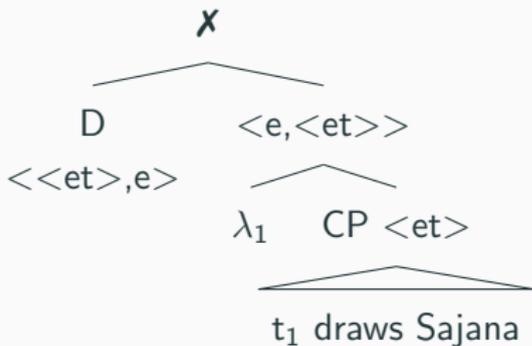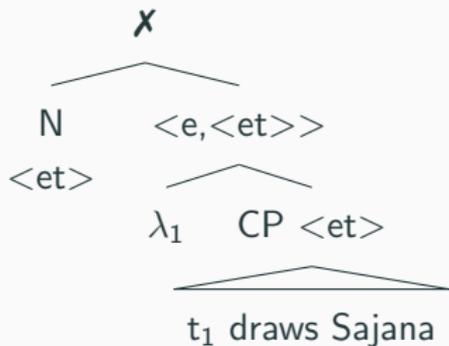
CP first combines with N and/or D

- Abstracting at the edge of DP does not help either:

$\boldsymbol{X}$

V $<e,<vt>>$ $\qquad$ $<e,e>$
$\lambda x.\lambda e.\text{think}(e)\wedge\text{Theme}(e)=x$

V $\quad$ Θ_{Theme} $\qquad$ λ_1 $\quad$ DP e

think

D $\quad$ (NP)

(N) $\quad$ CP $<et>$

t_1 draws Sajana
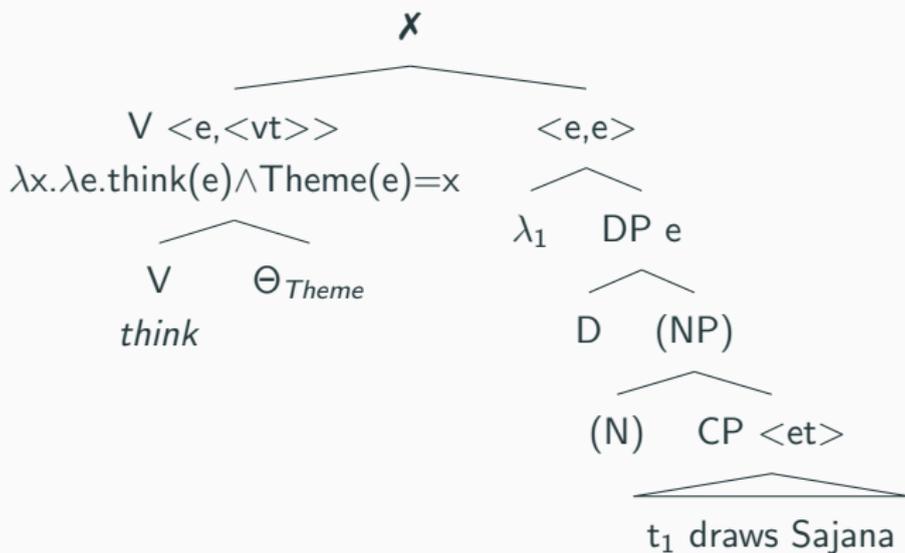
Proposal

CP restricts the Theme argument

- **Idea:** CPs can restrict individual arguments of verbs without saturating them (Kratzer 2006).

$$\text{VP} <e,<vt>>$$

```
                    VP <e,<vt>>
         _____/          _____
        /                                   \
   V <e,<vt>>                              CP <et>
λx.λe.think(e)∧Theme(e)=x        _____/        _____
      /\                          Badma draws Sajana
     /  \                   λx. CONT(x)(w)={w': B. draws S. in w'}
    V   Θ_Theme
  think
```
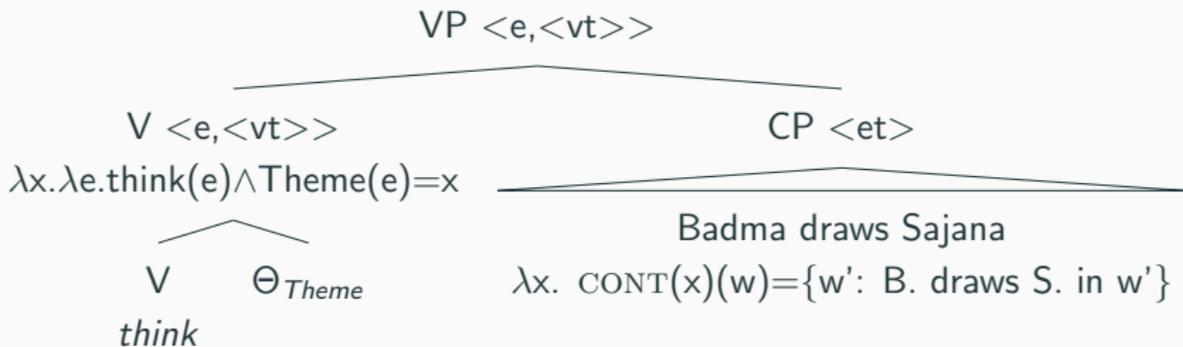
(53) $\llbracket VP \rrbracket^w = \lambda x.\lambda e.$ think(e) $\wedge$ Theme(e)=x $\wedge$
       $\text{CONT}(x)(w) = \{w': \text{Badma draws Sajana in } w'\}$

Proposal

- If we abstract at the edge of an $\langle et \rangle$-type CP, we will not be able to combine that CP via Restrict anymore.

$$X$$

$$V \langle e, \langle vt \rangle \rangle \qquad \langle e, \langle et \rangle \rangle$$
$$\lambda x.\lambda e.\text{think}(e) \wedge \text{Theme}(e) = x$$

$$V \qquad \Theta_{Theme} \qquad \qquad \lambda_1 \quad \text{CP} \langle et \rangle$$

$$\textit{think} \qquad \qquad \qquad t_1 \text{ draws Sajana}$$
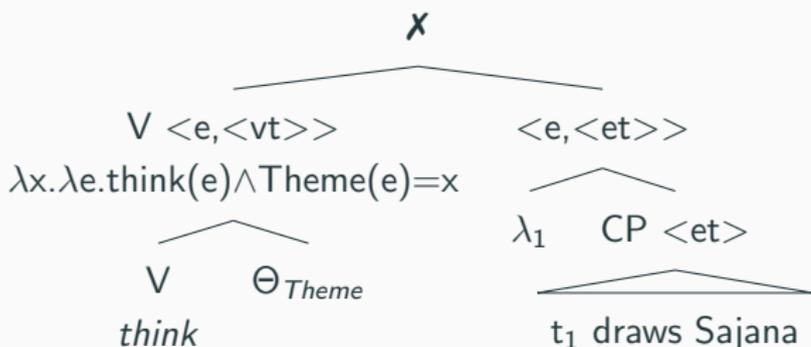
- And given that Generalized Conjunction/Predicate Modification require the two functions that they combine to be **of the same type**, we won't be able to use them for combining V with CP either.

(54) $[\![\lambda_1 \text{ CP}]\!]^w = \lambda x_e.\lambda y_{e \neq v}.\ \text{CONT}(y)(w) = \{w': x \text{ draws S. in w'}\}$

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How do we know that Buryat CPs combine by modification?

Evidence:

- converbial morphology;
- proform substitution;
- syntactic distribution;
- co-occurence with DPs.

Proposal

Converbial morphology

- The complementizer we have seen consists of two morphemes: the root of the verb gǝ 'say' and **the suffix** -žǝ (CONV).
- This converbial suffix is found in sentential adjuncts, with restructuring verbs, in analytical verb forms, cf. (55)-(56).

(55)   dugar [*CP* mi:sgǝi zagaha ǝdj-ǝ: gǝ-**žǝ**]   han-a:
       Dugar   cat.NOM fish   eat-PST say-CONV think-PST
       'Dugar thought that a cat ate fish.'

(56)   [ojuna üxibü: türǝ-**žǝ**],   badma ǝsǝgǝ bolo-bo
       Ojuna child   give.birth.to-CONV Badma father become-PST
       'By Ojuna giving birth to a child, Badma became a father.'

Proposal

Converbial morphology

- What potentially unites these forms: these are predicates of events.
- *žǝ* could have the type-specifying contribution: making a predicate of any individuals into a predicate that is true of events only.

(57) $[\![žǝ]\!]^w = \lambda f_{et}.\lambda x_e \colon x \in D_v.\ f(x) = 1.$

Proposal

Proform Substitution

- Buryat has a verb *ti:xə* 'do.so', different forms of which can serve as proforms for verbal constituents of different types.
- The form *ti:-žə* (do.so-CONV) is used for substitution of verbal adjuncts and restructuring clauses:

(58) **ti:-žə substituting for a restructuring clause**
      üsəgəldər badma   [bəʃəg bəʃə-**žə**]   əxil-ə:,   ba
      yesterday Badma.NOM letter write-**CONV** begin-PST CONJ
      münö:dər (badma)   baha **ti:-žə**   əxil-ə:
      today   (Badma.NOM) also **do.so-CONV** begin-PST
      'Yesterday Badma began to write a letter, and today (Badma) also began to do so.'

Proform Substitution

- CPs with the complementizer *gəžə* can only be substituted by *ti:-žə:*

(59)   **ti:-žə substituting a CP clause**
       badma sajana   bulj-a: gə-**žə**   han-a:,   ojuna baha
       Badma Sajana.NOM win-PST say-CONV think-PST Ojuna also
       ti:-žə   / *ti:-mə   / *tərən-i:jə han-a:
       do.so-CONV   do.so-ADJ that-ACC think-PST
       'Badma thought that Sajana won, Ojuna also thought so.'

- The nominal proform *tərə* 'that' and the adjectival proform *ti:mə* 'such' are not possible proforms for these CPs.

Syntactic distribution

- CPs with the complementizer *gəžə* cannot occupy argument positions, e.g. they cannot be subjects (60).

(60)   *[$_{CP}$ Badma tərgə əmdəl-hən gəžə] Sajan-i:jə ga:ru:l-a:
          Badma cart break-PFCT COMP Sajana-ACC angry-PST
     Intended: 'That Badma broke the cart angried Sajana.'

Proposal

Syntactic distribution

- Distribution of these CPs is very similar to adverbial distribution:
  they can appear in any position to the left of the verb.[3]

(61) Sajana   [_CP_ Badma   jǝr-ǝ: gǝ-žǝ] hana-na
      Sajana.NOM   Badma.NOM come-PST COMP think-PRS
      'Sajana thinks that Badma came.'

(62) [_CP_ Badma   jǝr-ǝ: gǝ-žǝ] Sajana   hana-na
           Badma.NOM come-PST COMP Sajana.NOM think-PRS
      'Sajana think that Badma came.'

---

[3]There is one difference between them: when the verbal predicate contains only the
lexical verb, CPs can occur to the right of it, but adverbs cannot. In constructions
with complex predicates however CPs must occur before all verbal heads.

Syntactic distribution

- Cf. placement of adverbs:

(63)   Žargalma **za:bol** müri:sö:n-də   ila-xa
       Zhargalma **certainly** competition-DAT win-FUT
       'Zhargalma will certainly win the competition.'

(64)   **za:bol**   Rinčin ajaga uga:-xa
       certainly Rinchin dishes wash-FUT
       'Rinchin will certainly wash the dishes.'

- So it seems that CPs with the complementizer *gəžə* can appear in
  positions in which other verbal modifiers can appear.

Proposal

Co-occurence with DPs

- CPs with the complementizer *gəžə* can co-occur with nominal internal arguments, e.g. with nominalized clauses (65).

(65)   Sajana [_DP_ Badmi:n Zurumxa:n-ha: jər-ə:d   bai-ga:ʃ-i:jə-n']
       Sajana   Badma Kurumkan-ABL come-CNV be-PART-ACC-3
       [_CP_ gər-tə   xulgaiʃan or-o: gə-žə]   han-a:
          house-DAT burglar   go.in-PST say-CONV think-PST
       'S. remembered ("thought of") of the event of Badma returning
       from Kurumkan, (thinking) that a burglar entered the house.'

- This is expected if they are predicates of events and combine by modification, but not if they combined as internal arguments.

Summing up

Q: Could cross-linguistic variation in clausal embedding influence whether certain cross-clausal $\mathfrak{A}$-dependencies are possible in them?

Tentative conjecture: Yes.

- CPs combine as modifiers of the embedding verb
  $\Rightarrow$ Hyperraising to object should be (in principle) possible;

- CPs combine as modifiers of the internal argument
  $\Rightarrow$ Hyperraising to object should not be possible.
  (see prediction #2 in the next section)

Summing up

The pattern that Buryat illustrated:

- CPs combine as modifiers of the embedding verb.
- Hyperraising to object (= movement from the embedded clause into the Theme θ-position) is possible.

Buryat is not alone: it seems like there might be a correlation between having a derviation like hyperraising to object and the type of the CP.

Morphology	Syntax	Semantics	Hyperraising	Languages
nominal	nominal-like	$<et>$ type	no	English, Russian
adverbial	adverbial-like	$<vt>$ type	yes	Buryat, Tatar

Table 1: Correlations between the type of CP and its morphosyntax

(66)   **Moulton's observation (2016, 2019):**
       Cross-linguistically, CPs that are transparent for A-movement
       seem to be CPs that cannot modify nouns.

       Examples: English ECM complements, Bangla *bole*-clauses,
       Korean *ko*-clauses, Japanese *to*-clauses, Zulu *ukuthi*-clauses.

- This correlation is predicted if these CPs are predicates of events
  and thus cannot modify nouns (predicates of individuals).

Summing up

- Buryat seems to violate this generalization: in (67) we see that CP with the complementizer *gəžə* is modifying a noun.

(67)   Sajana [Badma tərgə əmdəl-ə: **gəžə**] zuga:-jə   han-a:
       Sajana Badma cart break-PST **COMP** rumor-ACC think-PST
       'Sajana remembered the rumor that Badma broke the cart.'

- But most (all?) content nouns in Buryat seem to be derived from verbs, in which case CP could combine prior to nominalization:

zuga:l- 'to talk, chat'   *zuga:* 'rumor'
hana- 'to think'   *hana:n* 'thought, opinion'
mədə- 'to know, find out'   *mədə:n* 'news'
urja:l- 'to call, invite'   *urja:lga* 'invitation, call to action'

Summing up

Next Question: Do all languages that have movement with the properties I discussed have CPs that are predicates of events?

NB: Being a verbal modifier might be a necessary condition, but not a sufficient one (cf. case-matching restrictions on PG licensing).

The pattern that would falsify this proposal:

- CPs combine as modifiers of the internal argument.
- Hyperraising to object ($=$ non-reconstructable movement to the object θ-position) is possible.

Summing up

Broader takeaway:

★ Investigating for how/whether compositional syntax/semantics of clausal embedding affects cross-clausal 𝔄-dependencies seems like a promising research question.

Further predictions

Further predictions

Prediction #1: If a language has a CP denoting a predicate of events, we might expect to find prolepsis strategy co-existing with the hyperraising, as the difference is just internal Merge vs external Merge:

VoiceP

DP

Bair

Voice VP

DP

Badma $\lambda x.\lambda e.\text{think}(e) \wedge \text{Theme}(e)=x$ $\lambda x.\lambda e.\text{CONT}(e)(w)=\{w': x \text{ will draw S. in w'}\}$

θ_{Th} V

thought

Op_1 f

λ_1 CP

that t_1 will draw Sajana

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Further predictions

This will be quite difficult to test:

- *island sensitivity:* might be observed if the operator actually moves from the position in the embedded clause;

- *idiom test:* the externally merged DP will be interpreted "inside" the clause too, so not clear that it should fail (see also appendix).

- *PBC & agreement:* what if a structure with an operator patterns with the one that has true movement, and not with the one that has a null pronoun in the structure?

Ideas on how to better probe this? I.e., how to determine whether such a structure exists *in addition to* the hyperraising one?

- Reason to think hyperraising one is definitely possible: ACC DP can linearly precede material of the embedded clause at PF, which other elements of the matrix clause cannot do.

Prediction #2: If we see a CP that combines via-argument path, it should not have hyperraising to object.

- This can be tested in Buryat, and seems to be borne out.
- Buryat has a different CP, made of the same root *gә* 'say', but bearing participial morphology (e.g. *-ә:šә* in (68)) and case.

(68)   Darima [bagša   /bagš-**i:n**   /$^?$bagš-**i:jә**   šüləg
       Darima teacher.NOM /teacher-GEN /teacher-ACC poem
       bәš-ә: g-ә:š-i:jә]   du:l-a:
       write-PST say-PART-ACC   hear-PST
       'Darima heard that the teacher wrote a poem.'

- Subjects of these clauses can be nominative, genitive or accusative.

Further predictions

- Given the nominal distribution of these clauses (e.g., they can be subjects (69)), we expect them not to involve hyperraising to object.

- **Question:** do accusative subjects of *gə:šə* clauses hyperraise?

(69) [Badm-iːn   tərgə əmdəl-ə: g-ə:šə-nʼ]   buru:
      Badma-GEN cart   break-PST say-PART.NOM-3 incorrect
      'That Badma broke the cart is incorrect.'

Further predictions

Accusative subjects of gǝ:šǝ-clauses do not hyperraise:

- Accusative case of these subjects is not dependent on the matrix verb ⇒ no cross-clausal case dependency;

- These accusative subjects cannot appear in the matrix clause (unlike those of *gǝžǝ*-clauses);

- These accusative subjects cannot become objects of the matrix verb and then be promoted into the subject position under passivization.

Further predictions

The source of accusative case is within a clause

- The possibility of accusative case is not dependent on the matrix verb, as is the case with participical nominalizations (71) ⇒ there has to be some source of accusative within the *gǝ:šǝ*-clause.

(70) [Badm-**i:jǝ** tǝrgǝ ǝmdǝl-ǝ: g-ǝ:šǝ-n']   buru:
      Badma-ACC cart break-PST say-PART.NOM-3 incorrect
      'That Badma broke the cart is incorrect.'

(71) xübün-**ǝi** /*xübün-**i:jǝ** xoto ošo-hon-i:n'   hain
      boy-GEN /boy-ACC   city go-PART.NOM-3 good
      'That the boy went to the city is good.'

Could the source of accusative be the complementizer gə- itself?

- Unlikely: there are cases where there is *gə-*, but no ACC subjects.

(72) Sajana [Səsəg   /??Səsəg-**i:jə** xada   də:rə gar-a:
      Sajana Seseg.NOM /Seseg-**ACC** mountain on   go.up-PST
      gə-žə]   ai-na
      say-CONV be.afraid-PRS
      'Sajana is afraid that Seseg went up the mountain.'

- More research on the structure of *gə:šə*-clauses needed, but here's a potentially relevant fact: complements of nouns allow accusative subjects even when these NPs are subjects (73).

(73) [Badm-**i:jə** tərgə əmdəl-ə: gə-žə]   zuga: buru:
      Badma-**ACC** cart break-PST say-CONV rumor incorrect
      'That Badma broke the cart is incorrect.'

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Accusative subjects cannot overtly move into the matrix clause

- Unlike ACC subjects of *gəžə*-clauses, ACC subjects of *gəːšə*-clauses cannot precede matrix adverbs:

(74) Tumən əmšən-**iːjə üsəgəldər** əbdəhən   xün-də   komnata
      Tumen doctor-**ACC yesterday** break-PART person-DAT room
      soː or-oː   g-əːš-iːjə   han-aː:
      in come-PST say-PART-ACC think-PST
      'Tumen remembered that the doctor came into the patient's
      room yesterday.'
      ✓ coming in was yesterday, ✗ remembering was yesterday

Further predictions

- Cf. ACC subjects of *gəžə*-clauses:

(75) bi Badm-**i:jə**   **üsəgəldər** tərgə əmdəl-ə: gə-žə
      I Badma-ACC **yesterday** cart break-PST say-CONV
      məd-ə:-b
      know-PST-1SG
      'I fount out that Badma broke the cart yesterday.'
      ✓ breaking was yesterday, ✓ finding out was yesterday

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Further predictions

Accusative subjects cannot be promoted to matrix subjects

- Passivizing matrix predicates does not enable embedded subjects to be promoted into the matrix subject position:

(76)   *$\mathbf{Bi_1}$ Badma-da   [t_1 Sajan-i:jə   zura-xa   g-ə:š-i:jə]
       I   Badma-DAT   Sajana-ACC draw-FUT say-PART-ACC
       du:la-**gd**-a:-**b**
       hear-**PASS**-PST-**1SG**
       Intended 'Badma heard that I will draw Sajana.'
       (lit. 'I was heard by Badma that (I) will draw Sajana.')

★ **Takeaway:** internal structure of *gə:šə*-clauses needs to be investigated further, but there is no A-dependency between the matrix clause and the embedded subjects of such CPs.

Appendix

Is the idiom test in conflict with the obligatorines of de re?

- The hyperraising DP is able to be interpreted as part of the idiom.
- But we also saw that it must be interpreted in the matrix clause.
- How can these two things be correct at the same time?

Appendix

- Consider what semantics we will get for the idiom used:

(77) $[\![$Sajana thinks Badma's heart went out of his mouth$]\!]^w = 1$ iff
        $\exists e[\text{think}(e) \wedge \text{Exp}(e)=\text{Sajana} \wedge \text{Theme}(e)=$**Badma's heart** $\wedge$
        $\text{CONT}(e)(w) = \{w': $ **Badma's heart** went out of mouth in w'$\}]$
        $=$ "Sajana thinks of Badma's heart that Badma is frigtened."

- Given that feelings are often associated with people's hearts, this
  might not be an unreasonable meaning.

Appendix

- *Badma's heart* is thus interpreted twice: once as the *de re* argument, and once as part of the idiom.
- **De re is obligatory** because DP saturates the Theme argument of the verb, which is evaluated with respect to the matrix world.
- **The idiom test is passed** because DP also saturates an argument of the embedded clause, and thus is interpreted together with it.

Prediction: If we find an idiom in which the subject DP cannot be read *de re*, it should be impossible to use it in this construction.

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