In search of phases: LDA and the edge

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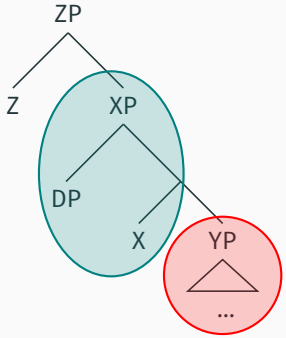
Background

Phase impenetrability

Phases give rise to a characteristic “edge effect”: only elements at the phase edge (= phase head + specifier(s)) are accessible for subsequent operations.

(1) ***Phase Impenetrability Condition*** [Chomsky 2000]
In phase α with head H, the domain of H is not accessible to operations outside of α, only H and its edge are accessible to such operations.

(2) **Accessible vs. inaccessible** (XP = phase)



Where are the phases?

The PIC leads to successive-cyclic movement through phase edges and so successive-cyclic movement has traditionally been the key evidence for phases.

But because arguments necessarily rely on intermediate landing sites, they are also necessarily **indirect**, and they do not clearly converge on a uniform view of the distribution of phases:

- **CP and (transitive) vP are phases.**
  [Chomsky 2000, 2001, Van Urk & Richards 2015]
- **CP is a phase; vP is not.**
  [Grano & Lasnik 2018, Keine 2020b, Mendes & Ranero 2021; also see Keine & Zeijlstra 2025]
- **vP is a phase; CP is not.**
  [Den Dikken 2017]
- **Every phrase is a phase.**
  [Bošković 2002, Boeckx 2003, Müller 2004, 2010, 2011]
- **Phasehood is contextual.**
  [Bošković 2005, 2014]
- **Nothing is a phase.**
  [Halpert & Zeijlstra 2024]

Edge effect

Agreement should offer a more reliable picture because we can utilize an element's final landing site.

Edge effect
If XP is a phase, then a higher ϕ-probe should be able to agree with an XP-internal DP if this DP is moved to XP's edge, but not otherwise.

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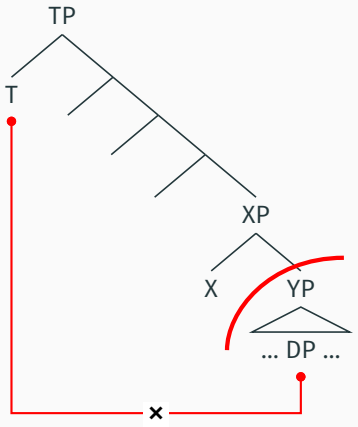

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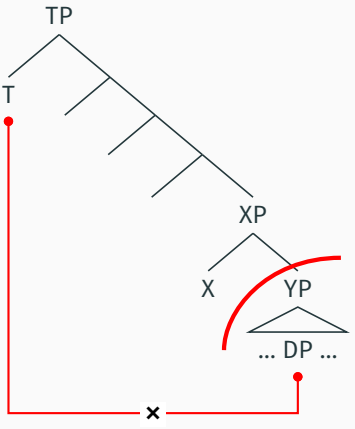

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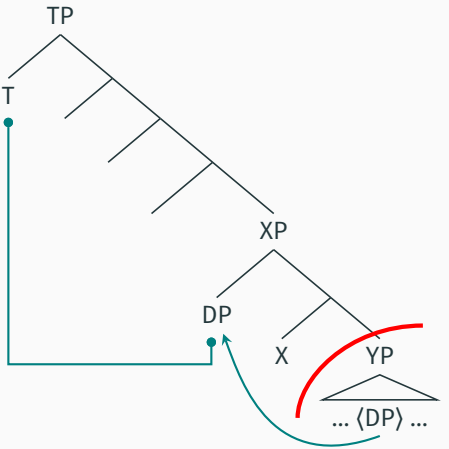


This talk

Question:
Do we find evidence of an edge effect with LDA for (i) vP and/or (ii) CP?

1. **Hindi:**
   - vPs are entirely transparent → **no edge effect**
   - CPs are entirely opaque → **no edge effect**

2. **Tsez/Hinuq:**
   - LDA in Tsez has been taken as evidence for edge effect (Polinsky & Potsdam 2001)
   - but this account relies on covert topicalization and faces various problems → **no clear edge effect**
   - Can we reanalyze Tsez without appeal to an edge effect (and phases)?
     - Yes, using ***horizons*** (Keine 2020b), but without pairing them with phases (contra Keine 2020b)
     - I then extend this account to the closely related language Hinuq

Conclusion:
A principle that renders phrases either totally transparent or totally opaque to agreement is sufficient. Phases and edges might be unnecessary for LDA.

LDA in Hindi

Local agreement

(5) a. If the subject is not overtly case-marked, the main verb and all auxiliaries (if any) agree with the **subject**.

b. Otherwise, if the object is not overtly case-marked, the main verb and all auxiliaries (if any) agree with the **object**.

c. Otherwise, the main verb and all auxiliaries (if any) show **M.SG default agreement**.

[Mahajan 1989, 1990, Butt 1993, Bhatt 2005]

Illustration: Local agreement

(6) a. ***laṛke*** *kitaab* *paṛht-**e*** ***hãĩ*** [*subject agr*]
boys.M book.F read.IPFV-M.PL AUX.3PL
'The boys read a book.'

b. *laṛkõ-ne* ***kitaab*** *paṛh-**ii*** ***hai*** [*object agr*]
boys.M-ERG book.F read.PFV-F.SG AUX.3SG
'The boys have read a book.'

c. *laṛkõ-ne* *kitaab-ko* *paṛh-**aa*** ***hai*** [*default agr*]
boys.M-ERG book.F-ACC read-DFLT AUX.3SG
'The boys have read the book.'

[ex. from Keine & Dash 2022]

Long-distance agreement (LDA)

If the matrix subject is overtly case-marked, the matrix verb may optionally agree with an embedded object, provided the object is not case-marked:

(7) *saare shikṣakõ-ne* [*Ram-ko* ***kitaab*** *paṛh-ne*] *d-**ii***
all teachers.M-ERG Ram-DAT book.F read-INF let.PFV-F.SG
'All the teachers let Ram read a book.'

(8) *saare shikṣakõ-ne* [*Ram-ko kitaab paṛh-ne*] *diy-**aa***
all teachers.M-ERG Ram-DAT book.F read-INF let.PFV-DFLT
'All the teachers let Ram read a book.'

[Mahajan 1989, Butt 1993, Bhatt 2005, Bhatt & Keine 2017, Keine 2020b; examples from Keine & Dash 2022]

Subject agreement bleeds LDA

(9) a. ***saare shikṣak*** [*Ram-ko kitaab paṛh-ne*] *det-**e*** ***hãĩ***
all teachers.M Ram-DAT book.F read-INF let.IPFV-M.PL AUX.3PL
'All the teachers let Ram read a book.'

b. **saare shikṣak* [*Ram-ko **kitaab** paṛh-ne*] *det-**i*** ***hai***
all teachers.M Ram-DAT book.F read-INF let.IPFV-F.SG AUX.3SG
'All the teachers let Ram read a book.'

[examples from Keine & Dash 2022]

LDA does not require object movement

There is no evidence that LDA is dependent on object movement (Bhatt 2005, Bhatt & Keine 2017, Keine 2019, 2020b, Agarwal 2026):

(10) **Object may follow embedded adverbs and receive a nonspecific interpretation**
Sita-ne aaj [*Anu-ko phir-se* ***mehnat*** *kar-ne*] *d-**ii***
Sita-ERG today Anu-DAT again hardwork.F do-INF let.PFV-F.SG
'Today Sita let Anu do hard work again.'

(11) **LDA across multiple clause boundaries**
Anu-ne [*Sita-ko* [*Sarosh-ko* ***gaaṛii*** *calaa-ne*] *de-ne*] *d-**ii***
Anu-ERG Sita-DAT Sarosh-DAT car.F drive-INF let-INF let.PFV-F.SG
'Anu permitted Sita to let Sarosh drive the car.'

[examples from Rajesh Bhatt (p.c.)]

LDA does not require object movement

(12) **Idiomatic object resists movement**

a. *Ram-ne bhains ke aage* ***biin*** *bajaa-**yii***
Ram-ERG buffalo in.front.of flute.F.SG play-PFV.F.SG
'Ram did something futile.' (*lit.* 'Ram played the flute in front of buffalo.')

b. #***biin*****$_1$** *Ram-ne bhains ke aage* ____$_1$ *bajaa-**yii***
flute.F.SG Ram-ERG buffalo in.front.of play-PFV.F.SG
'The flute, Ram played in front of buffalo.' (*idiomatic reading deviant*)

(13) **Idiomatic object still can control LDA**

Anu-ne [*Sita-ko bhains ke aage* ***biin*** *bajaa-ne*] *d-**ii***
Anu-ERG Sita-DAT buffalo in.front.of flute.F play-INF let.PFV-F.SG
'Anu let Sita do something futile.'

[Bhatt & Keine 2017, Keine 2017, 2020b, Keine & Dash 2022, Agarwal 2026; examples from Keine & Dash 2022 and Rajesh Bhatt (p.c.)]

Modeling Hindi LDA

Structural properties:

- Probe must be able to agree with the matrix subject or the embedded object.
- Agreement with the matrix subject takes precedence if possible.
- LDA does not require object movement → long-distance Agree

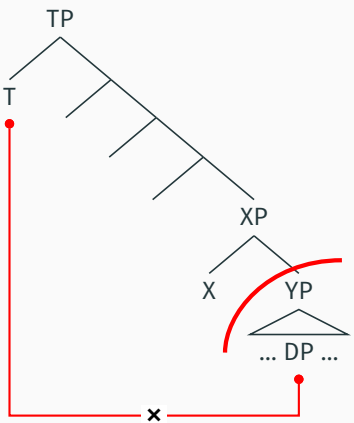
Assumptions:

- The ϕ-probe is located on T.
  [Bhatt 2005, Keine 2020b, Keine & Dash 2022, Bhatia & Bhatt 2023, Agarwal 2026]
- T agrees with the closest accessible DP in its c-command domain.
- If no DP is found, we get default agreement.
- Optionality of LDA is the result of structural ambiguity: the embedded clause may be larger (opaque to Agree) or smaller (transparent to Agree).
  [Bhatt 2005, Keine 2020b, and others]

Returning to phases

Edge effect
If XP is a phase, then a higher ϕ-probe should be able to agree with an XP-internal DP if this DP is moved to XP's edge, but not otherwise.

(14)



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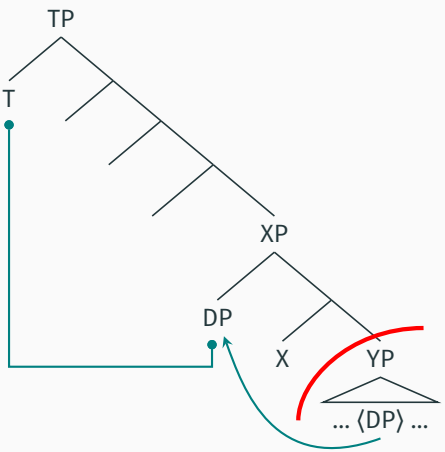

Local Agree and vP

Local object agreement already presents a problem for vP phases (Keine 2017) because T must be able to agree with the object. Since this agreement is obligatory, it cannot depend on (optional) object scrambling.

(16) *Ram-ne* *bhains* *ke aage* ***biin*** *bajaa-**ii*** [*object agr*]
Ram-ERG buffalo in.front.of flute.F.SG play-PFV.F.SG
'Ram did something futile.' (*lit.* 'Ram played the flute in front of buffalo.')

(17) $T_{[*\phi*]}$ [$_{\underline{vP}}$ DP^{ERG} v [$_{VP}$ V $DP_{[\phi]}$]]

If vP is a phase, this Agree step would violate the PIC: the object should no longer be accessible by the time T is merged.

LDA and vP

LDA demonstrates that agreement across **two** vP is possible as well. The embedded clause must contain a vP to project an external argument (either the dative DP or a PRO, see Davison 2014) so we get the following Agree:

(18) *Anu-ne* [*Sita-ko* *bhains ke aage* ***biin*** *bajaa-ne*] *d-**ii***
Anu-ERG Sita-DAT buffalo in.front.of flute.F play-INF let.PFV-F.SG
'Anu let Sita do something futile.'

(19) $[_{TP}\ T^{o}_{[*\phi*]}\ [\underline{_{vP}}\ DP^{ERG}\ v\ [_{VP}\ V\ [_{\text{nonfinite clause}}\ [\underline{_{vP}}\ DP^{DAT}\ v\ [_{VP}\ V\ DP_{[\phi]}\ ]]]]$

[Keine 2017]

More on LDA and vP

And even **three vPs** can be crossed:

(20) *Anu-ne* [*Sita-ko* [*Sarosh-ko* ***gaaṛii*** *calaa-ne*] *de-ne*] *d-**ii***
Anu-ERG Sita-DAT Sarosh-DAT car.F drive-INF let-INF let.PFV-F.SG
'Anu permitted Sita to let Sarosh drive the car.'

(21) *Anu-ne* [*mujhe* [*tumhẽ* ***bains*** *ke aage* *biin* *bajaa-ne*] *de-ne*]
Anu-ERG me.DAT you.DAT buffalo in.front.of flute.F play-INF let-INF
*d-**ii***
let.PFV-F.SG
'Anu permitted me to let you do something futile.'

(22) $[_{TP}\ T^{0}_{[*\phi*]}\ \underline{[_{vP}}\ DP^{ERG}\ v\ [_{VP}\ V\ [_{\substack{nonfin\\clause}}\ \underline{[_{vP}}\ DP^{DAT}\ v\ [_{VP}\ V\ [_{\substack{nonfin\\clause}}\ \underline{[_{vP}}\ DP^{DAT}\ v\ [_{VP}\ V\ DP_{[\phi]}\ ]]]]]]]$

[examples from Rajesh Bhatt (p.c.)]

Conclusion

There is **no evidence for an edge effect at vP:** Agree with elements in the phase domain is possible, and there is no special status for elements at the vP edge. vP phases are therefore **too restrictive.**

Now let us turn to CPs ...

LDA and CPs

Embedded finite clauses in Hindi are CPs and can be used to test for edge effects.

→ Finite clauses do not permit LDA into them, including with elements at their edge:

(23) **No LDA with elements inside CP clause**

laṛkõ-ne	*soc-**aa**/***-ii***	[$_{CP}$	*Mona-ne*	***kitaab***	*paṛh-ii*
boys-ERG	think-PFV.DFLT/*-PFV.F.SG		Mona-ERG	book.F	read-PFV.F.SG
thii	]				
be.PST.F.SG					

'The boys thought that Mona had read a book.'

(24) **No LDA with elements at the CP edge**

laṛkõ-ne	*soc-**aa**/***-ii***	[$_{CP}$	***kitaab*$_1$**	*Mona-ne*	____$_1$	*paṛh-ii*
boys-ERG	think-PFV.DFLT/*-PFV.F.SG		book.F	Mona-ERG		read-PFV.F.SG
thii	]					
be.PST.F.SG						

'The boys thought that Mona had read a book.'

No LDA even with movement through edge

Furthermore, even DPs that undergo movement out of the embedded clause cannot trigger LDA. By the PIC, these elements must pass through the clause edge, and yet they still cannot trigger LDA:

(25) **No LDA with elements that pass through CP edge**

***kitaab*$_1$**	*Firoz-ne*	*soc-**aa**/***-ii***	[$_{CP}$ *Mona-ne*	____$_1$	*paṛh-ii*
book.F	Firoz-ERG	think-PFV.DFLT/*-PFV.F.SG	Mona-ERG		read-PFV.F.SG
thii]					
be.PST.F.SG					

'Firoz thought that Mona had read a book.'

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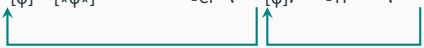
***kitaab*$_1$**	*Firoz-ne*	*soc-**aa**/***-ii***	[$_{CP}$ *Mona-ne*	____$_1$	*paṛh-ii*
book.F	Firoz-ERG	think-PFV.DFLT/*-PFV.F.SG	Mona-ERG		read-PFV.F.SG
thii	]				
be.PST.F.SG					

'Firoz thought that Mona had read a book.'

(26) $DP_{[\phi]}$ $T_{[*\phi*]}$ DP^{ERG} V [$_{CP}$ ⟨$DP_{[\phi]}$⟩ C [$_{TP}$ … ⟨$DP_{[\phi]}$⟩ …]]



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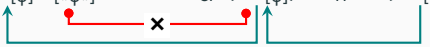
(25) **No LDA with elements that pass through CP edge**

***kitaab*$_1$**	*Firoz-ne*	*soc-**aa**/***-ii***	[$_{CP}$ *Mona-ne*	____$_1$	*paṛh-ii*
book.F	Firoz-ERG	think-PFV.DFLT/*-PFV.F.SG	Mona-ERG		read-PFV.F.SG
thii	]				
be.PST.F.SG					

'Firoz thought that Mona had read a book.'

(26) $DP_{[\phi]}$ $T_{[*\phi*]}$ DP^{ERG} V [$_{CP}$ ⟨$DP_{[\phi]}$⟩ C [$_{TP}$ … ⟨$DP_{[\phi]}$⟩ …]]



Conclusion

We do not find an edge effect at CP either: No ϕ-Agree across a CP node is possible, even with elements located at the CP edge. CP phases are therefore too permissive.

Conclusion:
In Hindi LDA at least, we do not find an edge effect at either vP or CP: **vPs** are **entirely transparent**, and **CPs** are **entirely opaque** to agreement.

Takeaway

For Hindi at least, all we need is a way for a domain to be completely accessible (vP) or complement inaccessible (CP) to ϕ-Agree, not partial (=edge) accessibility.

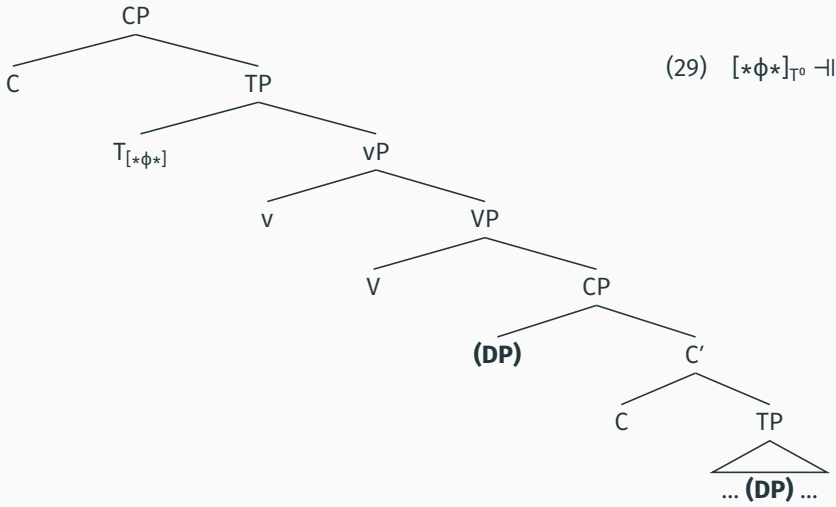
1. **Intervention** (Bošković 2007a, Mursell 2020):
   CPs bears [3M.SG] features that intervene for Agree between matrix T and anything dominated by CP.

2. **Horizons** (Keine 2020b):
   CPs are horizons to the ϕ-probe: they halt search by the ϕ-probe, preventing the probe from contacting anything dominated by CP.

   (27) ***Horizons***
   If a probe [∗ϕ∗] has some category feature δ as its horizon (notated as "[∗ϕ∗] ⊣ δ"), then [∗ϕ∗]-initiated search terminates at a δ-bearing node X. As a consequence, all elements properly dominated by X are outside [∗ϕ∗]'s search space.

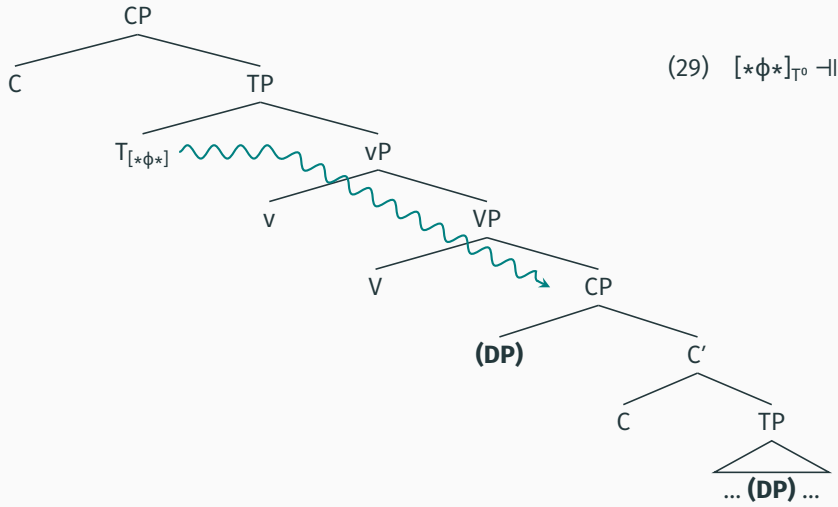
   (28) $[*\phi*]_{T^0} \dashv C$

Horizons: Search space of [∗ϕ∗] in Hindi



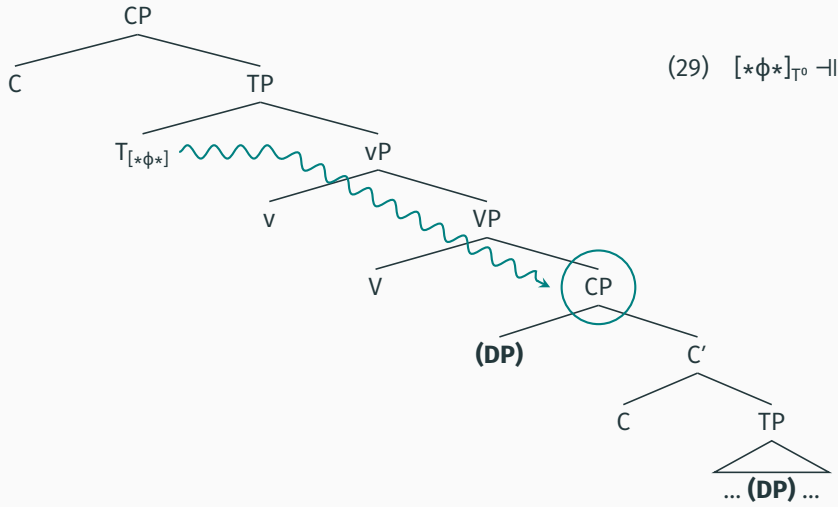
(29) $[*\phi*]_{T^0} \dashv\mid C$

Horizons: Search space of [∗ϕ∗] in Hindi



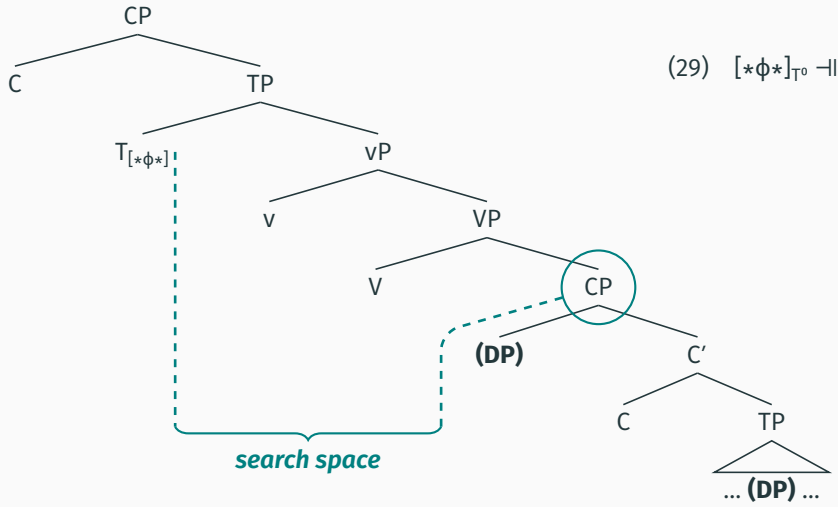
(29) $[*\phi*]_{T^0} \dashv\mid C$

Horizons: Search space of [∗ϕ∗] in Hindi



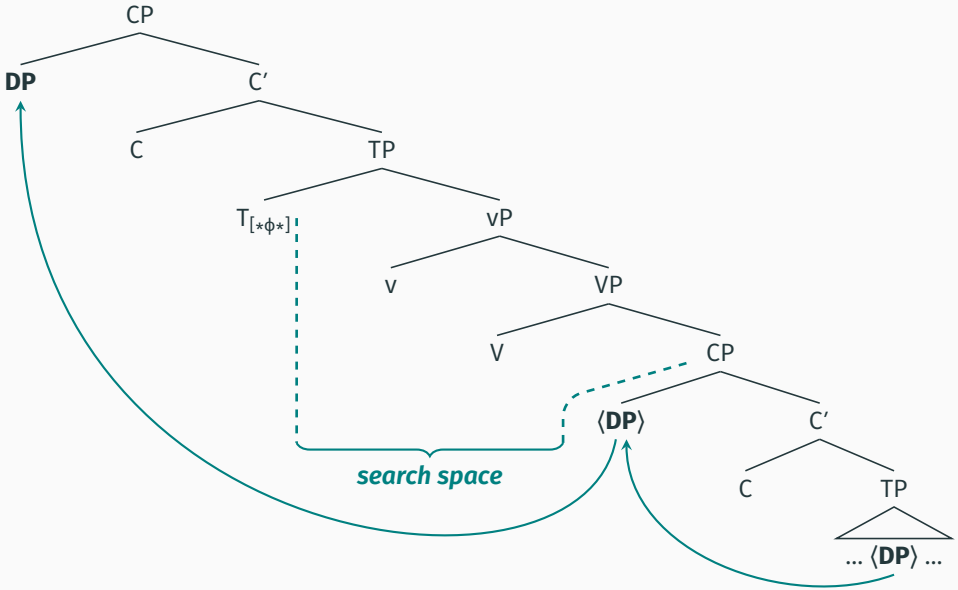
(29) $[*\phi*]_{T^0} \dashv\mid C$

Horizons: Search space of [∗ϕ∗] in Hindi



(29) $[*\phi*]_{T^0} \dashv\mid C$

Movement through edge does not feed LDA



Returning to phases

This state of affairs is at odds with vP phases, but in principle compatible with CP phases.

The next section considers on influential argument for an edge effect at CP: LDA in Tsez.

Revisiting edge effects in LDA: LDA in Tsez and Hinuq

LDA in Tsez

Tsez (Caucasian) optionally permits LDA into a finite clause (Polinsky & Potsdam 2001):

(30) *eni-r* [*už-ā* ***magalu*** *b-āc'-ru-łi*] ***b/r****-iy-xo*
mother-DAT boy-ERG bread.**III**.ABS III-eat-PSTPRT-NMLZ **III/IV**-know-PRES
'The mother know the boy ate the bread.'

Notes:

- Class IV is default agreement.
- Polinsky & Potsdam (2001) gloss *-łi* as a 'nominalizer' but their structures do not reflect that. See also Lyutikova (2026) for arguments that these clauses lack nominal structure in Tsez.

Topichood requirement

Polinsky & Potsdam (2001) show that LDA requires the embedded element to be a topic:

- LDA is obligatory if the embedded object is overtly topic-marked:

(31) *eni-r* [*už-ā* ***magalu-n*** *b-āc'-ru-łi*] ***b/*r**-iy-xo*
mother-DAT boy-ERG bread.III.ABS-TOP III-eat-PSTPRT-NMLZ III/*IV-know-PRES
'The mother knows that the bread, the boy ate.'

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(31) *eni-r* [*už-ā* ***magalu-n*** *b-āc'-ru-łi*] ***b/*r****-iy-xo*
mother-DAT boy-ERG bread.III.ABS-TOP III-eat-PSTPRT-NMLZ III/*IV-know-PRES
'The mother knows that the bread, the boy ate.'

- LDA is impossible with elements that can't be topics:

(32) *eni-r* [***t'ek-kin*** *y-igu* *yāt-ru-łi*] ***r/*y****-iy-xo*
mother-DAT book.II.ABS-FOC II-good be-PSTPRT-NMLZ IV/*II-know-PRES
'The other knows that the BOOK is good.'

(33) *eni-r* [***isi*** *y-egir-xosi-łi*] ***r/*y****-iy-xo*
mother-DAT snow.II.ABS II-send-PRSPRT-NMLZ IV/*II-know-PRES
'The mother knows that it is snowing.'

Topichood requirement

(34) **Topic condition on LDA** (Polinsky & Potsdam 2001)
LDA occurs when the referent of the embedded absolutive NP is the (primary) topic of the embedded clause.

Polinsky & Potsdam's (2001) analysis: Edge agreement

(35) $[_{TP}\ T_{[*\phi*]} \ldots V\ [_{TopP}\ Top\ [_{TP} \ldots DP^{ABS}_{[\phi]} \ldots]]]$

Polinsky & Potsdam's (2001) analysis: Edge agreement

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(36) $[_{TP}\ T_{[*\phi*]} \ldots V\ [_{TopP}\ DP^{ABS}_{[\phi]}\ Top\ [_{TP} \ldots \langle DP^{ABS}_{[\phi]} \rangle \ldots]]]$

Polinsky & Potsdam's (2001) analysis: Edge agreement

(35) $[_{TP}\ T_{[*\phi*]} \ldots V\ [_{TopP}\ Top\ [_{TP} \ldots DP^{ABS}_{[\phi]} \ldots]]]$

(36) $[_{TP}\ T_{[*\phi*]} \ldots V\ [_{TopP}\ DP^{ABS}_{[\phi]}\ Top\ [_{TP} \ldots \langle DP^{ABS}_{[\phi]} \rangle \ldots]]]$

On this account, we observe an **edge effect** with LDA at CP/TopP.

But there are several problems with this account ...

Problem 1: Edge movement

The purported edge movement does not manifest in the word order, it must be systematically covert:

(37) *eni-r* [*už-ā* ***magalu*** *b-āc'-ru-łi*] ***b/r****-iy-xo*
mother-DAT boy-ERG bread.III.ABS III-eat-PSTPRT-NMLZ **III/IV**-know-PRES
'The mother know the boy ate the bread.'

But:

- Covert topicalization is dubious (e.g. Bošković 2007a,b).
- While the topichood requirement indicates a syntactic dependency with a Top projection, this does not, in and of itself, implicate movement, so this is at least not clearcut evidence for an edge effect.
- Notably, there is no clear independent evidence for movement of the LDA controller (e.g., scope, binding, parasitic gaps, ...)

Problem 2: Edge movement always covert?

Moreover, it seems that in all cases of information-structure-triggered LDA, the purported movement to the edge is covert.

(38) **Hinuq (Forker 2010)**

Iyo-z ***b****-eq'i-yo* [$_{CP}$ *Pat'imat-ez* [$_{CP}$ ***tort*** *b-ac'-a*]
mother-DAT III-know-PRS Patimat-DAT cake.III III-eat-INF
b*-eti-š-łi*]]
III-want-RES-ABST
'The mother knows that Patimat wanted to eat the cake.'

(39) **Khwarshi (Khalilova 2009): LDA reflects 'salience'**

Uža-l ***b****-iq'-še* [$_{CP}$ *łu* ***zihe*** *b-iti-xx-u*]
boy-LAT IV/III-know-PRS who.ERG cow.III III-divide-CAUS-PST.PTCP
'The boy knows who has stolen the cow.'

More covert edge movement

(40) **Innu-aimûn (Branigan & MacKenzie 2002): LDA with topic or *wh*-phrase**
Tsh**-uî-tshissenim-**itinâu [*tân ishpin* ***Pûn mâk tshîn*** *tshi-nîtshipet-ûtâu*]
2-want-know-1/2PL when Paul and you 2-stop-2PL
'I want to know when Paul and you stopped.'

More covert edge movement

(40) **Innu-aimûn (Branigan & MacKenzie 2002): LDA with topic or *wh*-phrase**
Tsh**-uî-tshissenim-**itinâu [*tân ishpin* ***Pûn mâk tshîn*** *tshi-nîtshipet-ûtâu*]
2-want-know-1/2PL when Paul and you 2-stop-2PL
'I want to know when Paul and you stopped.'

Generalization:
There appears to be no clear case of LDA into an embedded CP that is parasitic on overt movement to the clause edge.

Problem 3: Embedded vs. matrix topicalization?

Börjesson & Müller (2020) observe that Polinsky & Potsdam (2001) edge-movement analysis actually derives that the LDA controller is a **topic of the embedded clause**, not a matrix topic.

- Polinsky & Potsdam's (2001) analysis requires that the reading is (41a), not (41b), but they do not present evidence.

(41) a. The mother knows that, **as for the bread**, the boy ate it.
b. **As for the bread**, the mother knows that the boy ate it.

- This, Börjesson & Müller (2020) note, is especially problematic for verbs like *know*, whose complement is factive and thus presupposes the truth of the complement clause. This makes the entire complement clause part of the background, which seems to conflict with singling out a single element the topic.

Problem 4: Clause accessibility

In Tsez, and maybe universally, LDA with an element inside a finite clause is possible **only if the finite clause itself is in a position that can control agreement**.

(42) "In addition to the requirement that the agreement trigger in LDA be an absolutive, it is also necessary that the trigger be within a clause that would otherwise trigger absolutive agreement." (Polinsky & Potsdam 2001:607)

(43) *[***kid*** *y-āy-zał*] *eni-r* *xabar* ***y****-iy-s*
girl.II.ABS II-arrive-WHEN mother-DAT news.III.ABS II-know-PST.EVID
'When the girl arrived, the mother found the news.'

- This is surprising if LDA involves a direct relationship between a matrix probe and a DP at the clause edge.
- Instead, this suggests that the agreement is **mediated via the embedded clause**.

LDA as cyclic agreement

Can we develop an account of Tsez LDA without an edge effect fed by covert topicalization?

→ Yes! Movement is mediated via the embedded CP—not via its edge, but **via the CP node itself**.

- There are several existing reanalyses of Tsez LDA in which the agreement is mediated by the embedded clause. Many of them still assume movement of the DP to the clause edge (Franks 2006, Koopman 2006, Poole 2022).

- Given that covert topicalization is dubious, I will pursue an account that does away with it (following the lead of Legate 2005, Bjorkman & Zeijlstra 2019, and Mursell 2020).

- I will present one rendition, revising and extending the account of LDA in Keine (2020b).

Horizons and Agree

(44) ***Horizons***
If a probe [∗ϕ∗] has some category feature δ as its horizon (notated as "[∗ϕ∗] ⊣ δ"), then [∗ϕ∗]-initiated search terminates at a δ-bearing node X. As a consequence, all elements properly dominated by X are outside [∗ϕ∗]'s search space.

⇒ Crucially, while horizons block Agree into them, **the node that constitutes the horizon is itself accessible** (Keine 2020b).

Assumptions

- **Horizon:**

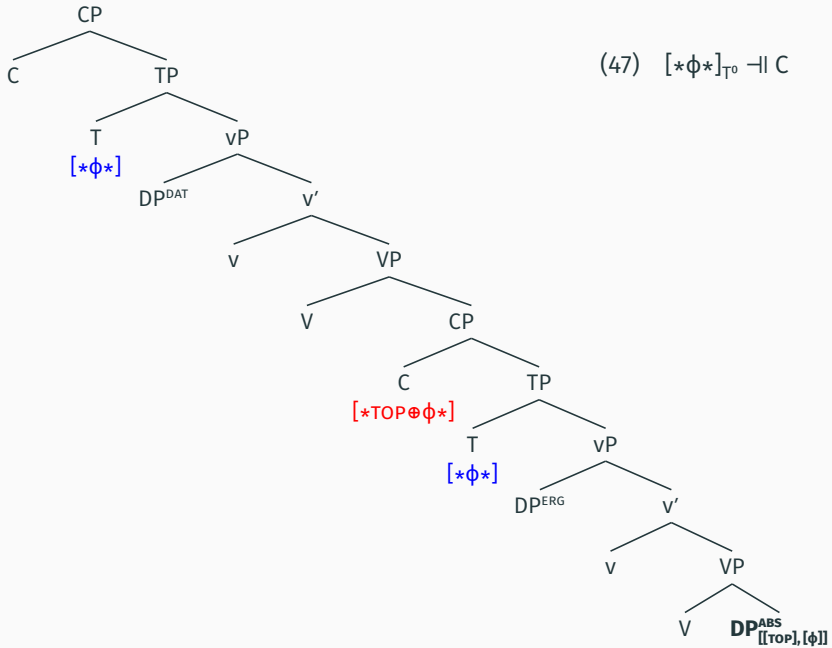
  (45) $[*\phi*]_{T^0} \dashv\mid C$
  ($\rightarrow$ $[*\phi*]_{T^0}$ cannot search into CP but can agree with CP)

- **Composite probing:**
  C contains composite probe $[*\textsc{top}\oplus\phi*]$, which can agree only with elements that bear $[\phi]$ and $[\textsc{top}]$.

  (46) ***Composite probing***
  In order for a probe to agree with a goal, the features of the goal must be **superset** of the features of the probe. (Béjar 2003, 2008, Béjar & Kahnemuyipour 2017, Bejar & Kahnemuyipour 2023)

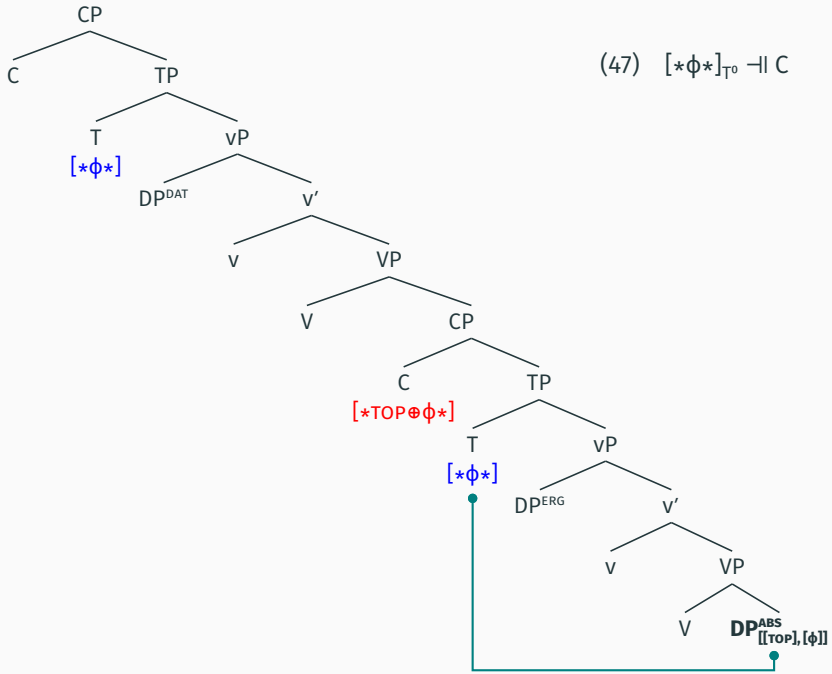
- **Feature percolation:**
  A valued ϕ-feature on C projects to CP.

Cyclic agreement derivation of LDA in Tsez



(47) $[*\phi*]_{T^0} \dashv\Vdash C$

Cyclic agreement derivation of LDA in Tsez



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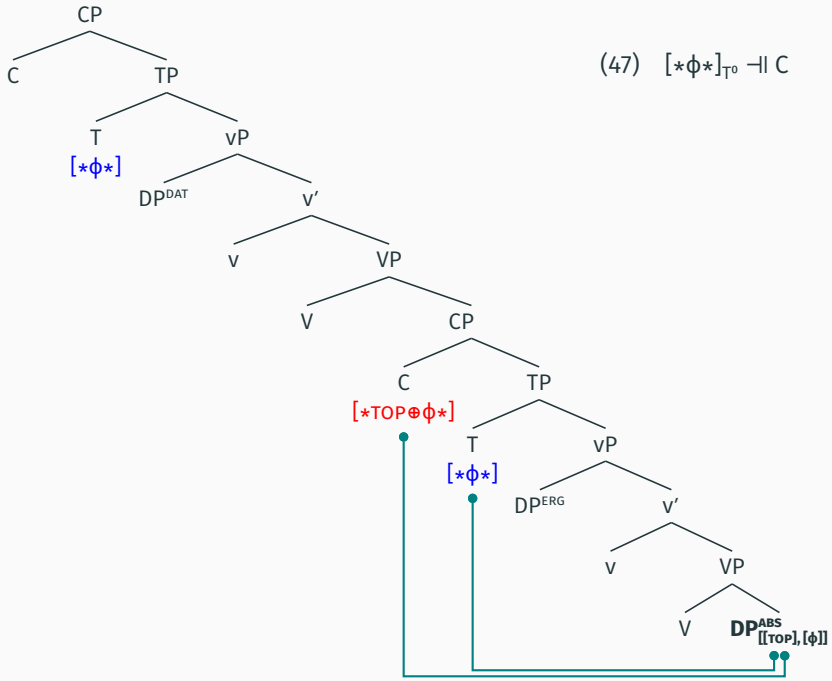

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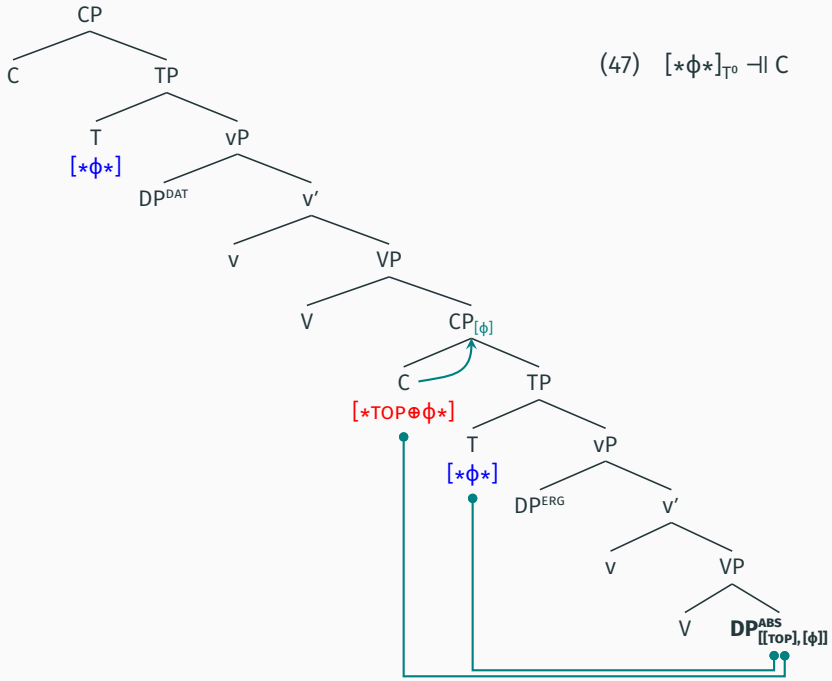

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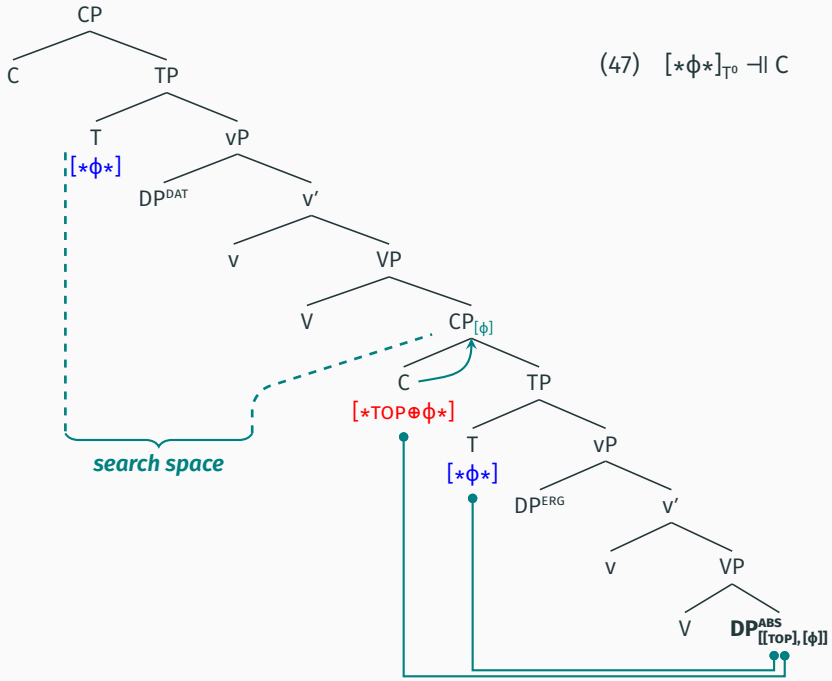

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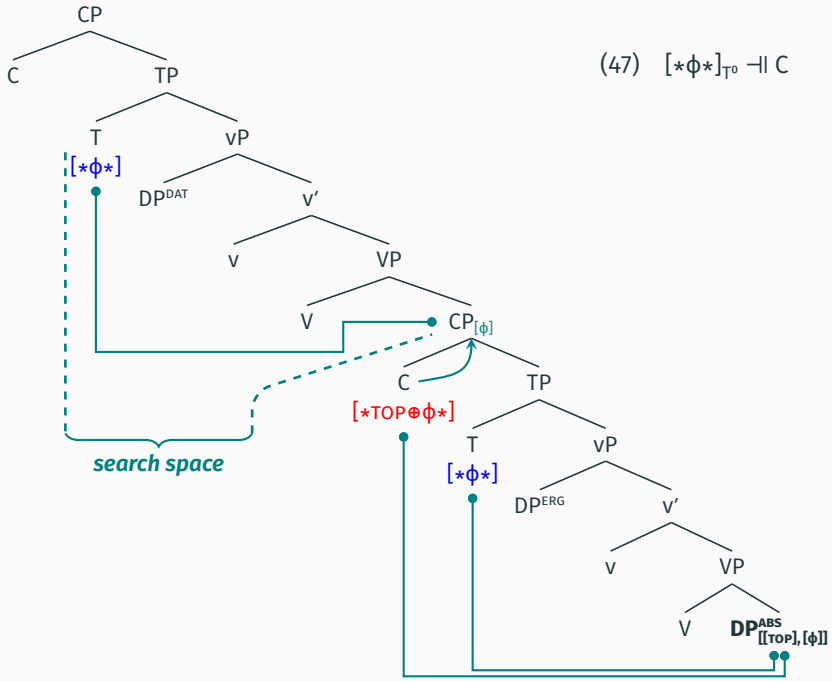


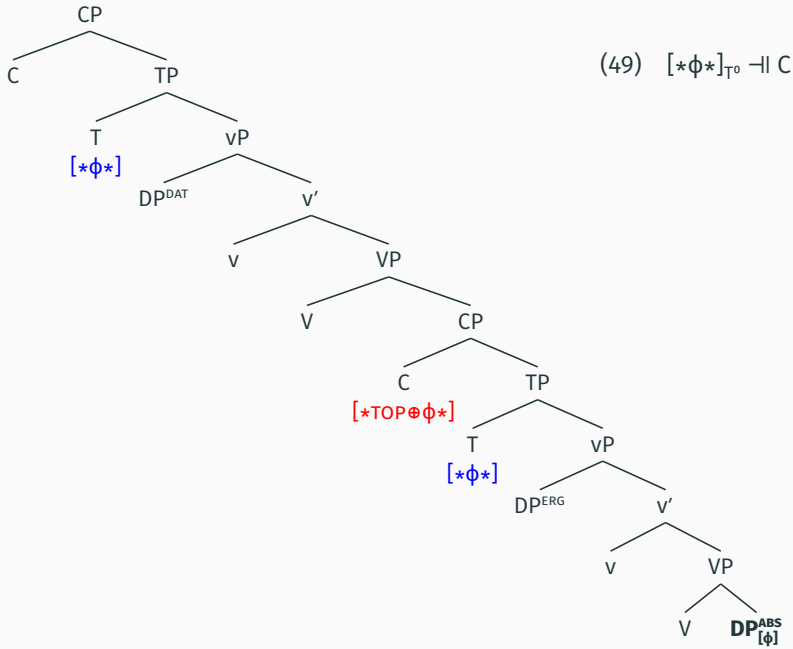
(47) $[*\phi*]_{T^0} \dashv\Vdash C$

Topic requirement

Consequence:
Elements that are not topics, cannot agree with [∗TOP⊕ϕ∗] and therefore cannot control LDA.

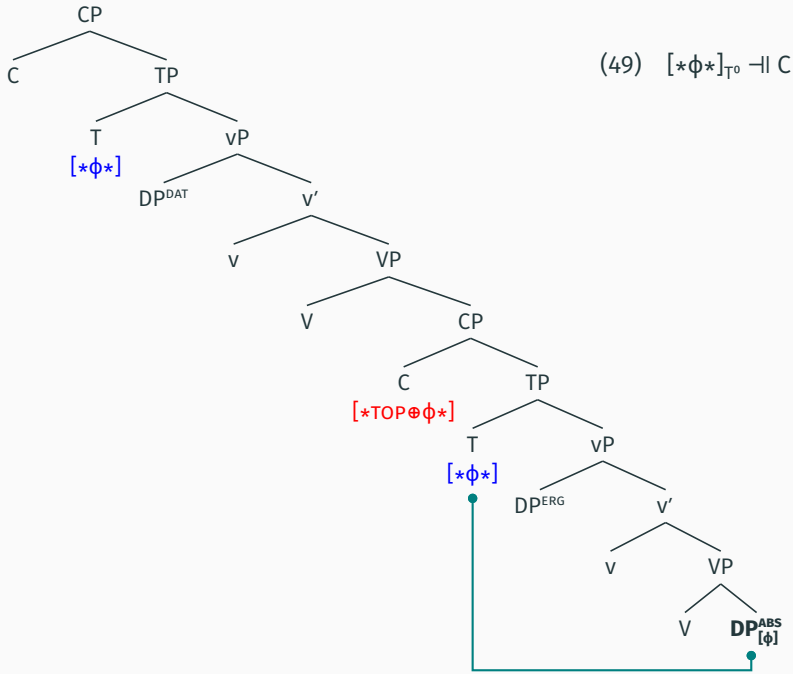
(48) *eni-r* [***t'ek-kin*** *y-igu* *yāł-ru-łi*] ***r/*y**-iy-xo*
mother-DAT book.II.ABS-FOC II-good be-PSTPRT-NMLZ IV/*II-know-PRES
'The other knows that the BOOK is good.'

No topic → no LDA



(49) $[*\phi*]_{T^0} \dashv\mid C$

No topic → no LDA



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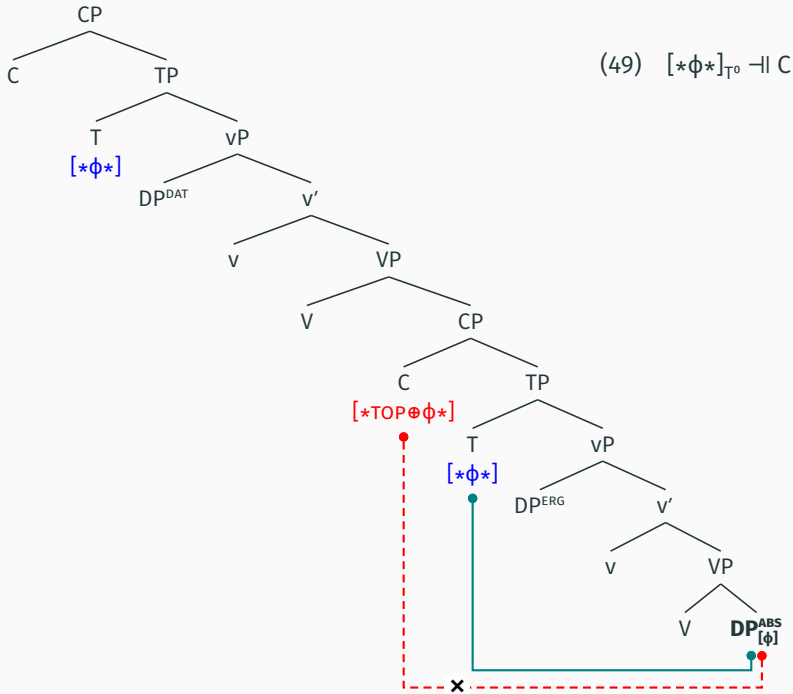

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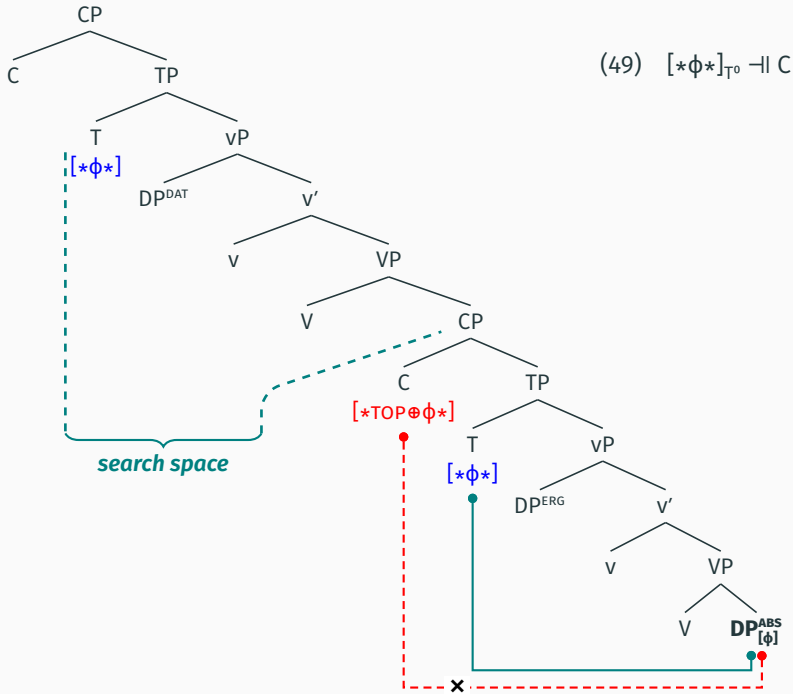


Consequence: No need for covert topicalization

- Since topicality is the semantic consequence of the [TOP] feature that enables the agreement with C, we obtain the link between LDA and topicality without having to postulate covert topicalization.
- The analysis also does not commit us to an *embedded* topic interpretation.

Edge?

- In this account, there is **no edge effect:** the edge does not have a priviledged status and LDA does not proceed through the CP edge.
- The CP node itself is accessible, but nothing it dominates is.
- The only way of making the embedded DP's ϕ-features accessible to the matrix T is to bring them to CP, via Agree with C.
- This Agree imposes information-structural requirements.

Clause accessibility

Of course, this account also derives that LDA is possible only if the embedded clause is in a position in which it can control matrix agreement.

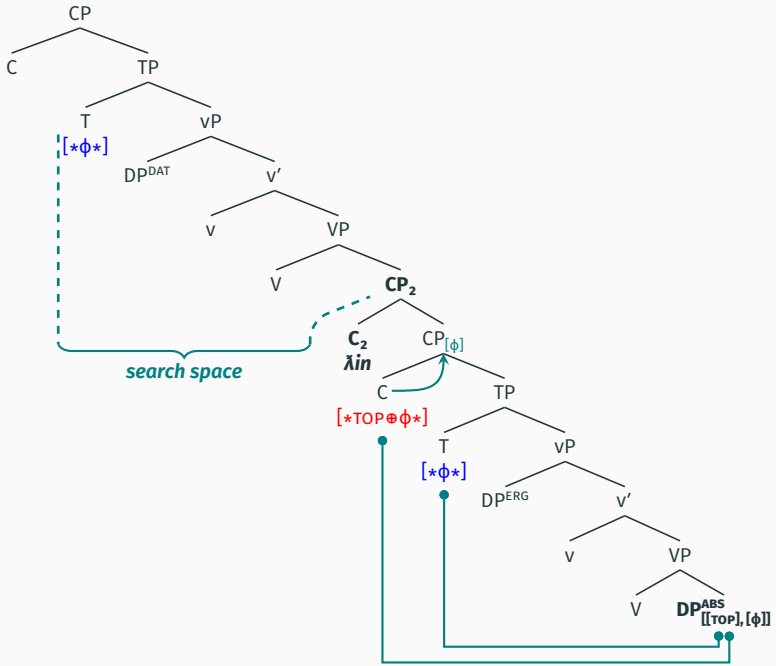
Blocking by complementizer

Polinsky & Potsdam (2001) also observe that LDA is blocked if the embedded clause contains the complementizer *-ƛin*.

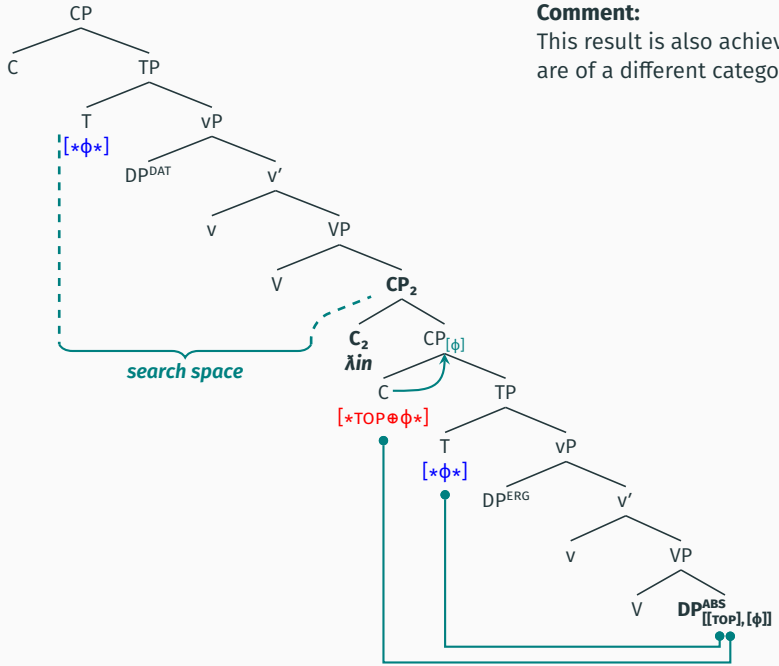
(50) **eni-r* [$_{CP}$ *už-ā* ***magalu*** *b-ac'-si-**ƛin***] ***b**-iyxo*
mother-DAT boy-ERG bread.III III-eat-PST.EVID-C III-knows
'The mother knows that the boy ate bread.'

This also follows from the account, assuming that the CP projection associated with *-ƛin* lacks a ϕ-probe.

Blocking by complementizer: Derivation



Blocking by complementizer: Derivation



Comment:
This result is also achieved if the two C heads are of a different category (Keine 2020b).

Non-recursive nature of LDA in Tsez

Another generalization noted by Polinsky & Potsdam (2001) is that LDA in Tsez is not recursive: the LDA trigger must be in the clause immediately below the agreeing verb:

(51) *babi-r* [*eni-r* [*už-ā* ***magalu*** *b-āc'-ru-łi*] ***b****-iyxosi-łi*]
father-DAT mother-DAT boy-ERG bread.III III-eat-PSTPRT-NMLZ III-knows-NMLZ
r/*b*-iyxo*
IV/*III-knows
'The father knows the mother knows the boy ate the bread.'

Polinsky & Potsdam (2001) derive this restriction from the independent fact that Tsez does not permit crossclausal movement. (51) then follows as as edge effect.

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'The father knows the mother knows the boy ate the bread.'

Polinsky & Potsdam (2001) derive this restriction from the independent fact that Tsez does not permit crossclausal movement. (51) then follows as as edge effect.

⇒ **Without access to an edge, we need a different account of this restriction.**

Analysis

To analyze this locality restriction, I propose that [∗TOP⊕ϕ∗] has a horizon of C as well:

(52) $[*\text{TOP}\oplus\phi*]_{C^0}$ ⊣I C

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Consequence:

- To derive the illicit long LDA, ...

(53) $[_{CP}$ C $[_{TP}$ $T_{[*\phi*]}$ ... $[_{CP}$ $C_{[*\text{TOP}\oplus\phi*]}$ $[_{TP}$ $T_{[*\phi*]}$ ... $[_{CP}$ $C_{[*\text{TOP}\oplus\phi*]}$ $[_{TP}$ $T_{[*\phi*]}$ ... DP]]]]]]

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(52) $[*\text{TOP}\oplus\phi*]_{C^0} \dashv\!\vdash C$

Consequence:

- To derive the illicit long LDA, ...
  1. matrix T must agree with the intermediate CP (given $[*\phi*]_{T^0} \dashv\!\vdash C$)

(53) $[_{CP}\ C\ [_{TP}\ T_{[*\phi*]}\ \ldots\ [_{CP}\ C_{[*\text{TOP}\oplus\phi*]}\ [_{TP}\ T_{[*\phi*]}\ \ldots\ [_{CP}\ C_{[*\text{TOP}\oplus\phi*]}\ [_{TP}\ T_{[*\phi*]}\ \ldots\ DP\ ]]]]]]$

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(52) $[*\text{TOP}\oplus\phi*]_{C^0} \dashv\!\shortmid\ C$

Consequence:

- To derive the illicit long LDA, ...
  1. matrix T must agree with the intermediate CP (given $[*\phi*]_{T^0} \dashv\!\shortmid\ C$)
  2. the intermediate C must agree with the innermost CP,

(53) $[_{CP}\ C\ [_{TP}\ T_{[*\phi*]}\ \ldots\ [_{CP}\ C_{[*\text{TOP}\oplus\phi*]}\ [_{TP}\ T_{[*\phi*]}\ \ldots\ [_{CP}\quad C_{[*\text{TOP}\oplus\phi*]}\ [_{TP}\ T_{[*\phi*]}\ \ldots\ \text{DP}\qquad]]]]]]$

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(53) $[_{CP}\ C\ [_{TP}\ T_{[*\phi*]}\ \ldots\ [_{CP}\ C_{[*\text{TOP}\oplus\phi*]}\ [_{TP}\ T_{[*\phi*]}\ \ldots\ [_{CP}\quad C_{[*\text{TOP}\oplus\phi*]}\ [_{TP}\ T_{[*\phi*]}\ \ldots\ \text{DP}\quad]]]]]]$

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  2. the intermediate C must agree with the innermost CP, ← ***CP must bear [TOP]***
  3. the innermost C must agree with the embedded object,

(53) $[_{CP}\ C\ [_{TP}\ T_{[*\phi*]}\ \ldots\ [_{CP}\ C_{[*\text{TOP}\oplus\phi*]}\ [_{TP}\ T_{[*\phi*]}\ \ldots\ [_{CP^{[\text{TOP}]}}\ C_{[*\text{TOP}\oplus\phi*]}\ [_{TP}\ T_{[*\phi*]}\ \ldots\ DP \quad]]]]]]$

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Consequence:

- To derive the illicit long LDA, ...
  1. matrix T must agree with the intermediate CP (given $[*\phi*]_{T^0} \dashv\Vdash C$)
  2. the intermediate C must agree with the innermost CP, ← ***CP must bear [TOP]***
  3. the innermost C must agree with the embedded object, ← ***object must bear [TOP]***

(53) $[_{CP}\ C\ [_{TP}\ T_{[*\phi*]}\ \ldots\ [_{CP}\ C_{[*\textsc{top}\oplus\phi*]}\ [_{TP}\ T_{[*\phi*]}\ \ldots\ [_{CP^{\textsc{[top]}}}\ C_{[*\textsc{top}\oplus\phi*]}\ [_{TP}\ T_{[*\phi*]}\ \ldots\ DP^{\textsc{[top]}}\ ]]]]]]$

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  1. matrix T must agree with the intermediate CP (given $[*\phi*]_{T^0} \dashv\Vdash C$)
  2. the intermediate C must agree with the innermost CP, ← ***CP must bear [TOP]***
  3. the innermost C must agree with the embedded object, ← ***object must bear [TOP]***

(53) $[_{CP}\ C\ [_{TP}\ T_{[*\phi*]}\ \ldots\ [_{CP}\ C_{[*\text{TOP}\oplus\phi*]}\ [_{TP}\ T_{[*\phi*]}\ \ldots\ [_{CP^{[\text{TOP}]}}\ C_{[*\text{TOP}\oplus\phi*]}\ [_{TP}\ T_{[*\phi*]}\ \ldots\ DP^{[\text{TOP}]}\ ]]]]]]$

(54) **Topic-within-topic prohibition:**
Topic-within-topic configurations are ruled out.

Returning to phases

- While CP phases are not required, the account of Tsez is in principle compatible with them.
- In what follows, I will present an extension of the account of Tsez to LDA in the closely related language **Hinuq** (Forker 2010, 2013), which requires the **absence of phases**.

LDA in Hinuq

Like Tsez, Hinuq allows LDA:

(55) *hayło-z* ***b****-ike-s* [***meši*** *čeq-i-do* *b-iƛ'i-š*]
he.OBL-DAT III-see-PST calf.III forest-IN-DIR III-go-PST
'He saw that a calf went into the forest.'

But Hinuq is more permissive than Tsez in several respects. First, it allows both topics and foci to control LDA:

(56) "Sentences with long distance agreement are used when the speaker wants to direct the attention of the hearer to the referent of the agreement trigger, which can be **topic** of **focus**. In constrast, sentences with local agreement are, so to say, neutral: none of the arguments in the embedded clause are particularly salient." (Forker 2013:634, emphasis mine)

Recursive LDA in Hinuq

Second, unlike what we saw for Tsez, in Hinuq LDA is recursive and **may cross multiple clause boundaries**:

(57) *ʔai-ž* ***b****-eti-yo* [[*obu-y* *ec'endiyu* ***mašina*** ***b****-ux-ƛ'os-ɬi*]
Ali-DAT III-want-PRS father-ERG new car.III III-buy-HAB-ABST
Madina-z ***b****-eq'-ayaz*]
Madina-DAT III-know-PURP
'Ali wants Madina to know that the father will buy a new car.'

Crossclausal movement

Third, Hinuq permits **crossclausal movement**. Such movement makes LDA obligatory.

(58) ***tort*$_1$** *ǎ'ere* **r/b-ux-o* [*diž* ____$_1$ *neǎ-ayaz*]
cake.III on *V/III-take-IMP I.DAT give-PURP
'Promise me to give me the CAKE!'

(59) *di-qo* *Ø-iker-o* [$_{CP}$ *ɣʷe-y* *maħ-mo-ǎ'o-zo* [$_{CP}$ ____ *Ø-aq'e-s-ɬi*]
I.OBL-DAT I-show-IMP dog-ERG smell-OBL-SPR-GEN2 I-come-RES-ABST
r/Ø-eq'ir-ho* *goɬa*] ***ǎerba*
*V/I-know-ICVB be.PTCP guest.I
'Show me the guest who the dog recognized by smell that he came.'

Analysis of Hinuq

- The relevant probe on C is **[⁎Ā⊕ϕ⁎]** (using "Ā" as a cover symbol for topic and focus).
- **C's [⁎Ā⊕ϕ⁎] probe does not have a horizon:**

  (60) $[*\bar{A}\oplus\phi*]_{C^0} \dashv\mid \varnothing$

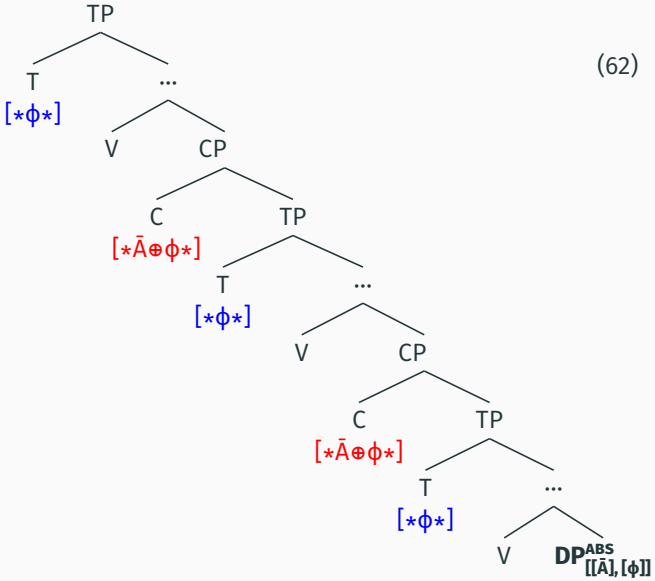
  (NB: I suspect this can be derived from the presence of crossclausal Ā-movement in Hinuq, if the horizon of a composite probe follows the horizon of the least restrictive sub-feature of that probe.)

- **But T's ϕ-probe still has C as its horizon:**

  (61) $[*\phi*]_{T^0} \dashv\mid C$

⇒ As in Tsez, LDA on higher T heads must be mediated via the CP and hence [⁎Ā⊕ϕ⁎].

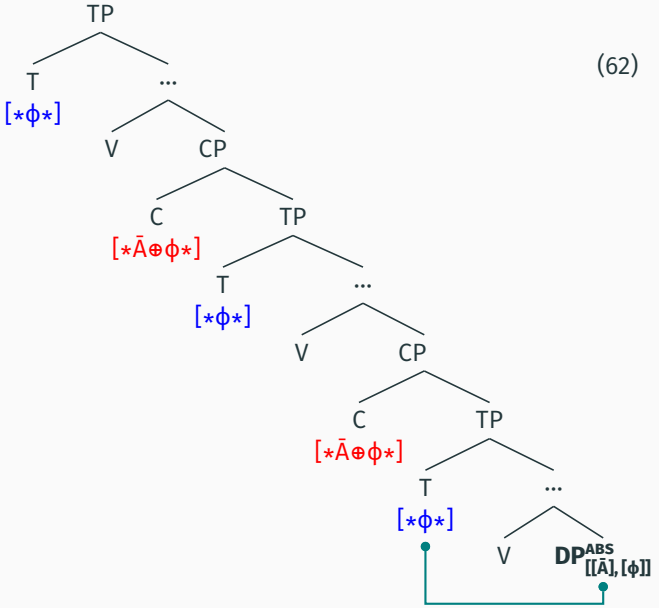
Derivation of “long” LDA in Hinuq



(62) a. $[*\bar{A}\oplus\phi*]_{C^0}$ ⊣∥ ∅

b. $[*\phi*]_{T^0}$ ⊣∥ C

Derivation of “long” LDA in Hinuq



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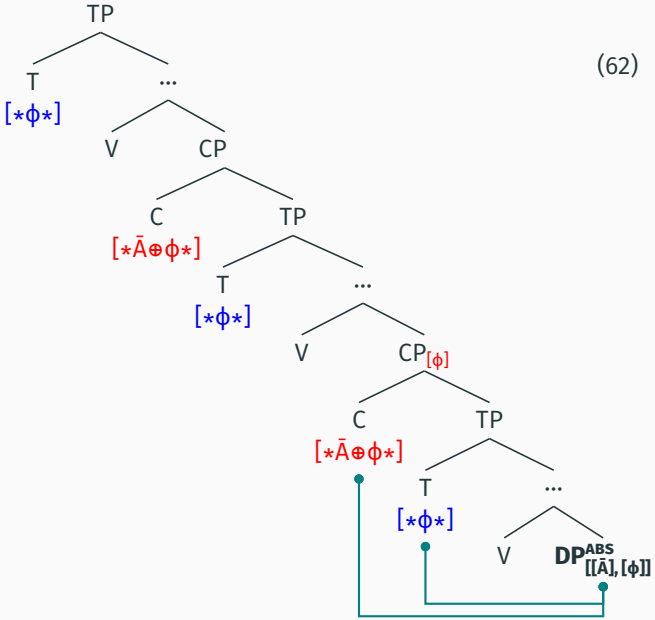

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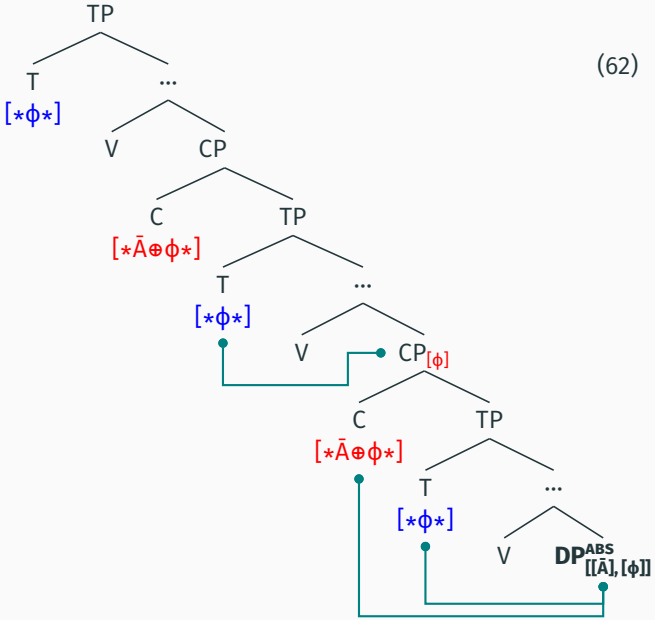

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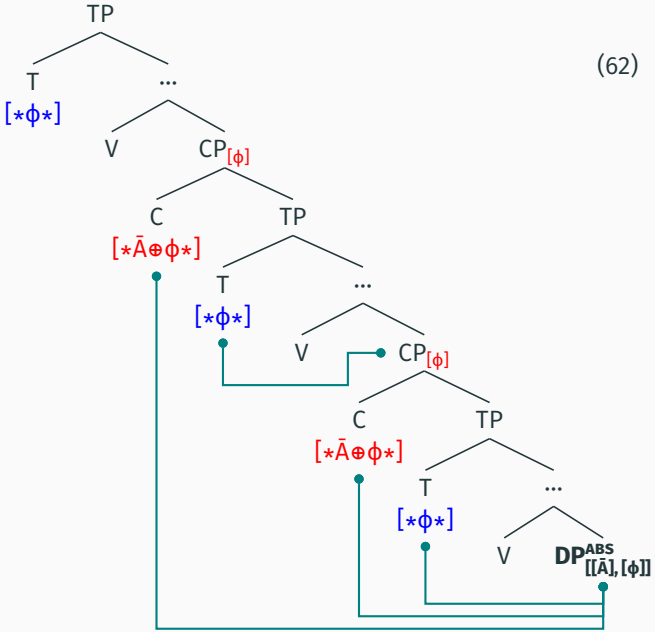

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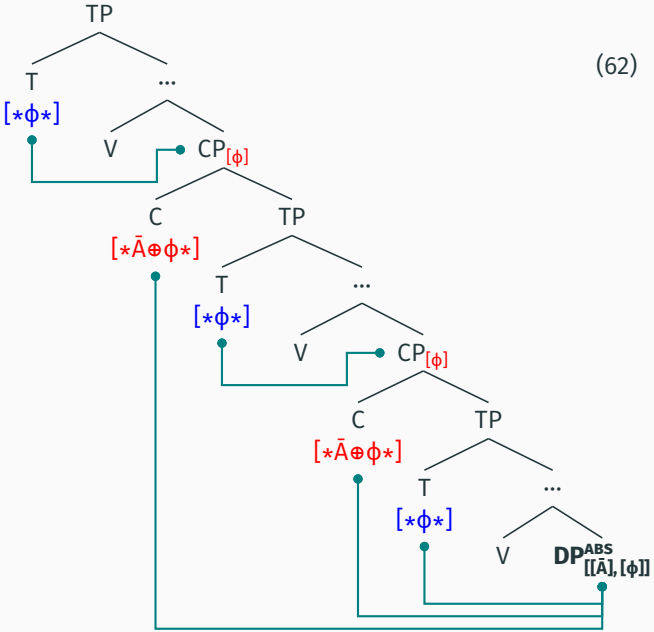

(62) a. $[*\bar{A}\oplus\phi*]_{C^0}$ ⊣⊢ ∅
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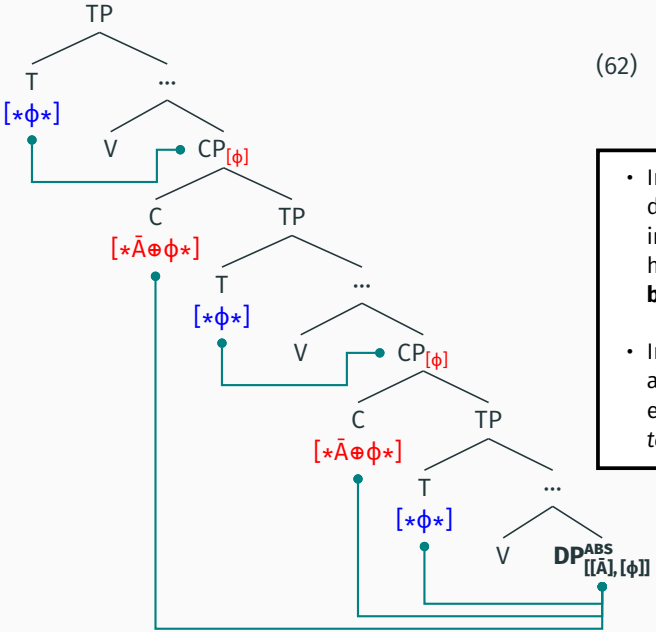


(62) a. $[*\bar{A}\oplus\phi*]_{C^0}$ ⊣⊩ ∅
b. $[*\phi*]_{T^0}$ ⊣⊩ C

- In **Hinuq**, the probe on the higher C can directly agree with the DP in the innermost clause (given that it has no horizon) → **CP is not a locality boundary**
- In **Tsez**, [∗TOP⊕ϕ∗] has C as its horizon and so could only agree with the embedded clause itself (violating the *topic-within-topic prohibition*).

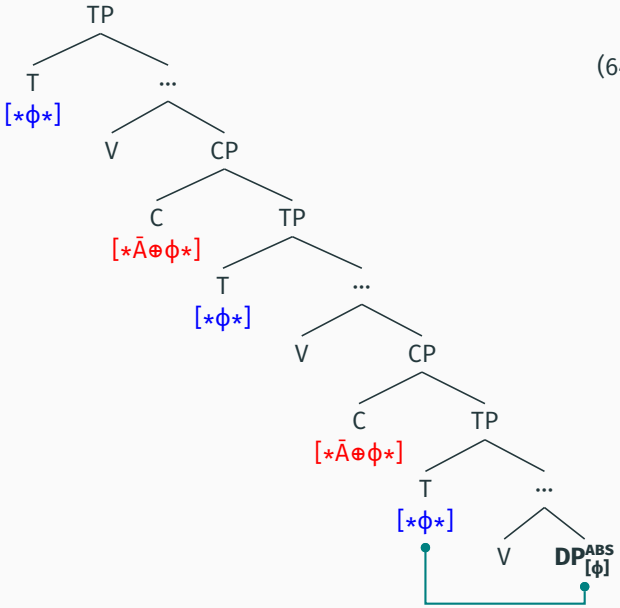
Lack of LDA

LDA in Hinuq is not obligatory:

(63) *diž* ***r****-eti-n* [*debez* ***r****-eq'-a* [*ɬu-y* *gulu* *b-ik'ek'-iš-ɬi*]]
I.DAT V-want-UWPST you.SG.DAT V-know-INF who-ERG horse.III III-steal-RES-ABST
'I want you to know who stole the horse.'

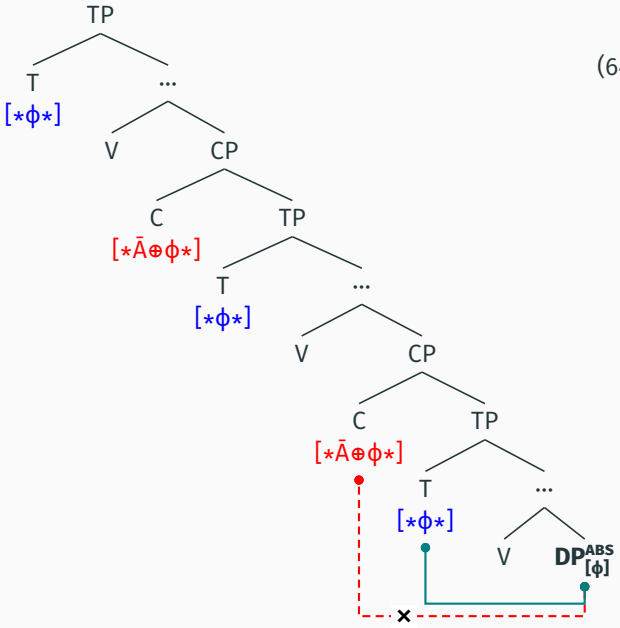
Absence of LDA arises if the DP does not bear the information-structural [Ā] feature necessary to control Agree on C.

Lack of LDA: Derivation



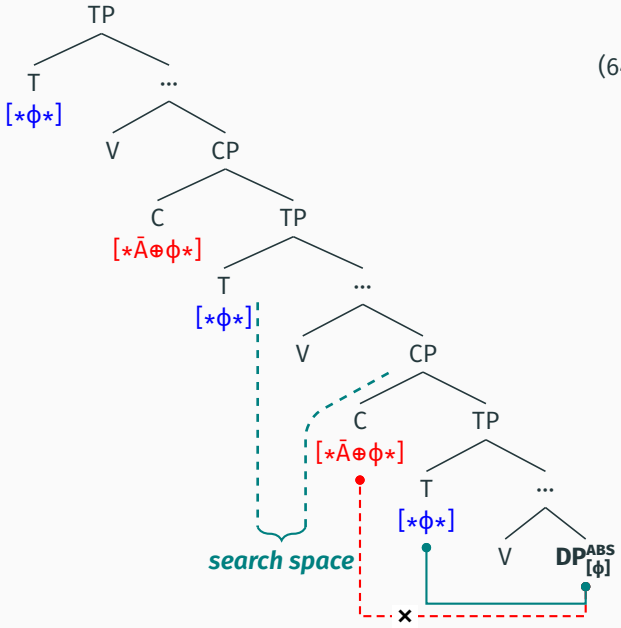
(64) a. $[*\bar{A}\oplus\phi*]_{C^0}$ ⊣∥ ∅
b. $[*\phi*]_{T^0}$ ⊣∥ C

Lack of LDA: Derivation



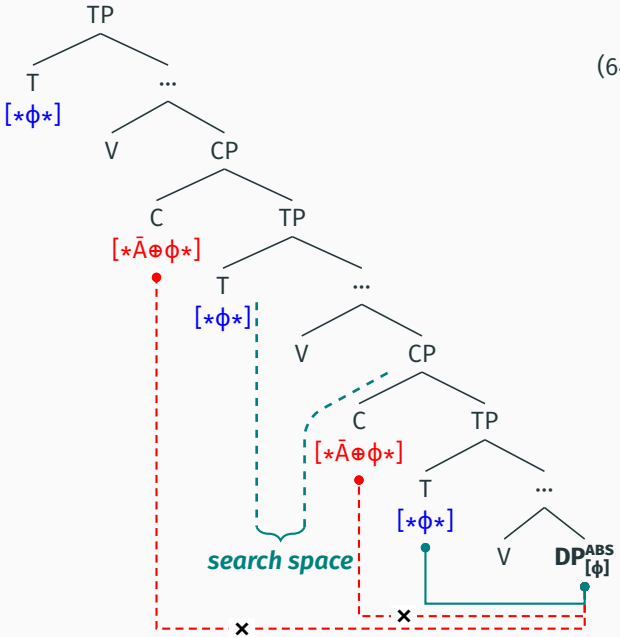
(64) a. $[*\bar{A}\oplus\phi*]_{C^0}$ ⊣∥ ∅
b. $[*\phi*]_{T^0}$ ⊣∥ C

Lack of LDA: Derivation



(64) a. $[*\bar{A}\oplus\phi*]_{C^0}$ ⊣⊩ ∅
b. $[*\phi*]_{T^0}$ ⊣⊩ C

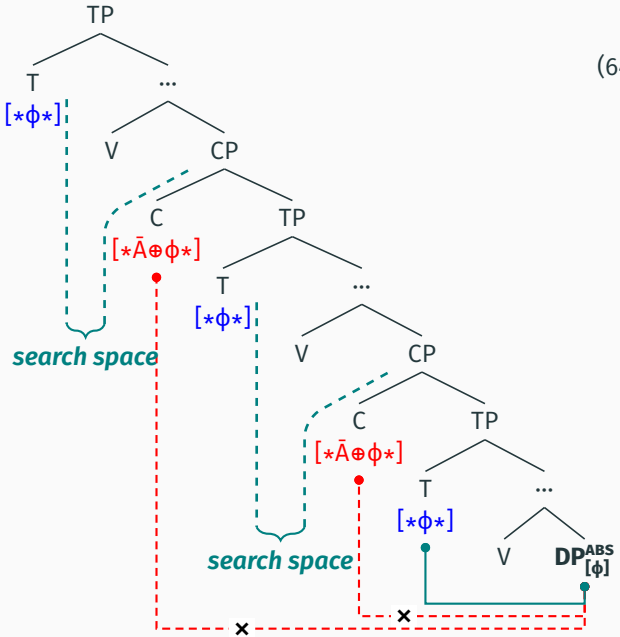
Lack of LDA: Derivation



(64) a. $[*\bar{A}\oplus\phi*]_{C^0} \dashv\!\shortmid \varnothing$

b. $[*\phi*]_{T^0} \dashv\!\shortmid C$

Lack of LDA: Derivation



(64) a. $[*\bar{A}\oplus\phi*]_{C^0}$ ⊣⊩ ∅
b. $[*\phi*]_{T^0}$ ⊣⊩ C

Crossclausal movement and LDA

Recall that crossclausal Ā-movement makes LDA obligatory in Hinuq:

(65) ***tort*$_1$** *ǎ'ere* **r/b-ux-o* [*diž* ____$_1$ *neǎ-ayaz*]
cake.III on *V/III-take-IMP I.DAT give-PURP
'Promise me to give me the CAKE!'

Analysis:

- In order to undergo the Ā-movement, the DP must bear [Ā].
- This makes the DP invariably visible to C's composite probe, feeding LDA with matrix T.

→ It's not the movement that feeds LDA. Instead, the feature that enables movement also enables LDA.

Conclusion: Tsez and Hinuq

- I proposed an account that treats the restrictions on LDA purely as the result of horizon settings of probe, without PIC effects.
- While Agree in Tsez has traditionally been treated as requiring the notion of an edge, the account here does without an edge effect.
- For the account of Hinuq it is furthermore crucial that there is no PIC effect at CP.

  → I conclude that LDA in Caucasian does not require CP phases (contra Keine 2020b).

Conclusion

Consequences: Phases and the edge

- LDA should, in principle, offer a particularly clear picture into the distribution of phases because the characteristic edge effect should be overtly observable.
- Across the languages considered here, there is **no clear evidence for an edge effect.**
- **Hindi:**
  everything in vP accessible; nothing in CP accessible
- **Tsez, Hinuq:**
  edge effect would need to be completely covert and is independently problematic

Consequences: Locality without edges

- **Proposal:**
  I proposed an account of LDA that employs only horizons, not the PIC.
- **No edges:**
  Domains are completely transparent or completely opaque. As a result, even elements at the edge of the embedded clause may be inaccessible to LDA, and even elements embedded deeply within CP may be accessible.
- **Apparent edge effect as cyclic agreement:**
  The apparent edge effect in Tsez and Hinuq is instead the result of cyclic agreement with the embedded clause. Whether the embedded clause can acquire the relevant features depends on horizons (→ the difference between Tsez and Hinuq).
- **Benefit:**
  Without edges, no covert movement to the edge is required.

Distribution of phases

- The Hindi data here provide clear evidence **against a PIC effect at vP** → no vP phases (also see Grano & Lasnik 2018, Keine 2020a,b, Mendes & Ranero 2021, Keine & Zeijlstra 2025).

- The account of Hinuq provides theory-internal evidence **against a PIC effect at CP** as well.

→ At least as far as LDA is concerned, phases are best dispensed with altogether.

– This could be because ϕ-Agree is not restricted by phases (Bošković 2007a,b, Agarwal 2026).

– Or maybe we should question phases more generally (Halpert & Zeijlstra 2024).

Thank you!

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