Selective opacity

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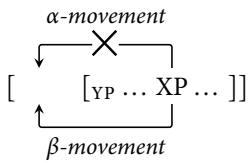
1 Introduction

- ***The phenomenon***
  In many cases, one and the same domain allows one type of movement out of it, but blocks another kind of movement. I will refer to this phenomenon as **selective opacity.**

  (1) **Selective Opacity**
  A syntactic domain is selectively opaque for α-movement if this domain prohibits α-movement but allows β-movement out of it, where α and β are different types of movement.

  (2) **Illustration of selective opacity**:



- ***Example 1: Hyperraising a.k.a. improper movement***
  While $\overline{\text{A}}$-movement (like *wh*-movement) can leave a finite clause in English, A-movement (like raising) cannot (Chomsky 1973, 1977, 1981, May 1979).

  (3) **Movement out of finite clauses**
  a. *$\overline{A}$-movement:* ✓
  Who$_1$ do you think [t_1 likes oatmeal] ?
  b. *A-movement:* ✗
  *John$_1$ seems [t_1 likes oatmeal].

- ***Example 2: Movement out of nonfinite clauses***
  In English, nonfinite clauses allow A- and $\overline{\text{A}}$-movement, but still block extraposition out of them:

  (4) **Nonfinite clause**
  a. *A-movement:* ✓
  John$_1$ is believed [t_1 to be certain [that Fred is crazy]] by everyone.
  b. *Extraposition:* ✗
  *[John$_1$ is believed [t_1 to be certain t_2] by everybody [that Fred is crazy]$_2$]. (Baltin 1978:144)

- ***Example 3: Movement out of German finite clauses***
  In German, finite clauses allow *wh*-movement out of them, but they block scrambling or relativization out of them.

  (5) **Finite V-final clause**
  a. *Wh-movement:* ✓
  Wen$_1$ glaubst du [dass die Maria t_1 liebt]
  Who believe you that the Maria loves
  'Who do you believe Maria loves?'
  b. *Scrambling:* ✗
  *Ich glaube den Fritz$_1$ [dass die Maria t_1 liebt]
  I believe the Fritz that the Maria loves
  Intended: 'Fritz, I believe that Maria loves.'
  c. *Relativization:* ✗
  *der Mann, den$_1$ Fritz glaubt [dass Maria t_1 mag]
  the man who Fritz believes that Maria likes
  Intended: 'the man who Fritz believe that Maria likes'

- ***Example 4: Movement out of German V2 clauses***
  In some cases, German allows embedded clause to be V2. These clauses allow *wh*-movement out of them into another V2 clause, but block *wh*-movement out of them into a V-final clause.

  (6) **V2 clause**

  a. *Wh-movement into V2 clause:* ✓

  [$_{CP_{V2}}$ Wen$_1$ meinst du [$_{CP_{V2}}$ hat sie t_1 getroffen]]?
  who think you has she met
  'Who do you think that she met?'

  b. *Wh-movement into V-final clause:* ✗

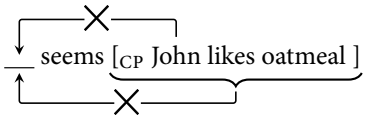
  *(Ich weiß nicht) [$_{CP_{V\text{-}final}}$ wen$_1$ du meinst [$_{CP_{V2}}$ hat sie t_1
  I know not who you think has she
  getroffen]]?
  met
  Intended: '(I don't know) who you think that she met.'

  . . . . . .

- ***A unified approach to selective opacity***
  Cases like the above are often treated in a piecemeal fashion, invoking designated constraints likes Chomsky's (1973) *Ban on Improper Movement*. I will argue that selective opacity is a general, systematic and pervasive property of locality. In other words, I will treat it as a **uniform** phenomenon.

- ***Problems presented by selective opacity***
  Selective opacity is puzzling under standard conceptions of locality:

  1. **Phases** and **subjacency** (barriers) are strictly *binary* locality principles: A domain is either accessible from the outside or not. Locality mismatches between movement types therefore cannot be modeled.
  2. **Minimality** and the **A-over-A Principle** prevent movement out of a domain if there is a closer target (Chomsky 1964, 1973, Bresnan 1976). But this is not the case in (most) examples of selective opacity (*contra* McFadden 2004, Halpert 2015, van Urk 2015). **English hyperraising** provides an example: A finite clause blocks A-movement out of it even if it cannot itself undergo such movement. Minimality/A-over-A has nothing to say about this.

(7) 

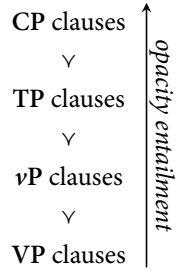
a. *CP movement* ⇝ *[$_{CP}$ John likes oatmeal] seems.

b. *DP movement* ⇝ *John seems [$_{CP}$ t likes oatmeal].

. . . . . .

- ***Constraints on selective opacity***
  Furthermore, locality mismatches do not seem to be distributed randomly. The current literature highlights two higher-level generalizations (see Williams 2003, 2011, 2013, Abels 2007, 2009, 2012a, Müller 2014a,b).

(8) **Upward Entailment**
If a clause is opaque to a movement type, then larger clauses are also opaque to this movement type.



a. *Example:* Nonfinite **TP** clauses are opaque for extraposition → Finite **CP** clauses are opaque as well

(9) **Height–Locality Connection**
Movement types differ in their landing sites. The higher the landing site of a movement type in the clausal structure, the more structures that are transparent to this movement type.

Examples:

a. *English:* $\overline{\text{A}}$-movement (Spec,CP) > A-movement (Spec,TP)

b. *German: wh*-movement (Spec,CP) > scrambling (Spec,*v*P)

c. *Italian:* relativization (Rel°) > modifier fronting (Mod°) (Abels 2012a)

- ***The problem***
  Standard accounts of locality do not have the right structure to derive (8) and (9). In particular, the connection between landing site and locality is a mystery.

- ***Goal for this talk***
  Develop an account of selective opacity that
  - **(i)** allows for locality mismatches between operations, and at the same time
  - **(ii)** imposes a limit on locality mismatches by
  - **(iii)** deriving upward entailment (8) and the height–locality connection (9) from more basic principles.

- ***Claims in this talk:***
  Based on a case study of selective opacity in Hindi/Urdu, I will argue that:
  - **(i)** Selective opacity is not limited to movement, but also holds for ϕ-agreement and in-situ *wh*-licensing.
  - **(ii)** The locus of selective opacity is the operation **Agree**. Movement requires Agree and therefore shows selective opacity effects.
  - **(iii)** A probe's search can be terminated by category features (e.g., C or T), leading to opacity.
  - **(iv)** Probes differ in what categories terminate their search.
  - **(v)** Upward entailment (8) and the height–locality connection (9) will follow from independently motivated properties of extended projections.

2 Selective opacity beyond movement: A Hindi case study

- ***Is selective opacity restricted to movement?***
  Virtually all previous accounts of selective opacity treat it as a constraint on *movement* (Müller & Sternefeld 1993, 1996, Svenonius 2004, Abels 2007, 2009, Neeleman & van de Koot 2010, Müller 2014a,b).

- ***Overview***
  This section takes a close look at the locality of four operations in Hindi:
  1. A-movement
  2. $\overline{\text{A}}$-movement
  3. ϕ-agreement
  4. *wh*-licensing

- We will see that clauses of different sizes display selective opacity with respect to these operations.

(10) **Preview: Selective opacity across Hindi clauses**

Operation	*Landing site/ probe location*	*Size of embedded clause*		
		CP	TP	*v*P
$\overline{\text{A}}$-movement	C	✓	✓	✓
wh-licensing	C	✗	✓	✓
A-movement	T	✗	✗	✓
ϕ-agreement	T	✗	✗	✓

- There is evidence that ϕ-agreement and *wh*-licensing do *not* involve movement but can be established long-distance.

☞ **Selective opacity is not confined to movement and therefore should not be modeled as a constraint on movement.**

2.1 Finite vs. nonfinite clauses

- ***A first approximation to locality differences***
  Finite and nonfinite clauses in Hindi differ in what they block.

- ***Clause sizes in Hindi***
  There is good evidence that finite and nonfinite clauses differ in their size in Hindi:

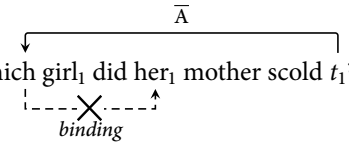
(11) a. **Finite clauses**
can bear the complementizer *ki* 'that' and can carry interrogative force
⇒ **are CPs**

b. **Nonfinite clauses**
can never contain a complementizer and obligatorily lack interrogative force (Dayal 1996)
⇒ **are TPs or smaller**

2.1.1 A- vs. $\overline{\text{A}}$-movement

- ***Distinguishing A- and $\overline{\text{A}}$-movement: Weak crossover***
  A-movement can feed pronominal binding (12); $\overline{\text{A}}$-movement cannot (13).

(12) Every girl$_1$ seemed to her$_1$ mother [t_1 to be industrious].
A
binding



- I will use weak crossover as a diagnostic for A/Ā-movement in Hindi. Other diagnostics such as reciprocal binding lead to the same conclusions.

- ***A-movement out of nonfinite clauses***
  Nonfinite clauses in Hindi allow A-movement out of them (Keine 2013). This movement shows A-properties and patterns in this regard with clause-internal movement. See Déprez (1989), Mahajan (1990, 1994), Gurtu (1992), Jones (1993), Dayal (1994a) and Kidwai (2000) for previous work on Hindi scrambling.

  (14) **Nonfinite clauses: No weak crossover**

  a. *No-movement baseline → Binding impossible*
  uskii$_{2/*1}$ bahin [**har** **laṛke-ko$_1$** dekha-naa] caahtii thii.
  his/her sister every boy-ACC see-INF want be
  'His/her sister wanted to see every boy.' (*bound reading impossible*)

  b. *Movement feeds binding → A-movement possible*
  har **laṛke-ko$_1$** uskii$_1$ bahin [t_1 dekha-naa] caahtii thii.
  every boy-ACC his/her sister see-INF want be
  'For every boy x, x's sister wants to see x.'

- ***Only Ā-movement out of finite clauses***
  Finite clauses differ from nonfinite clauses: They do allow movement out of them, but this movement does not show A-properties (Mahajan 1990).

  (15) **Finite clauses: Weak crossover**

  a. *Ā-movement possible*
  har **laṛke-ko$_1$** uskii$_2$ bahin soctii hai [ki Raam-ne t_1
  every boy-ACC his/her sister think be that Ram-ERG
  dekhaa].
  see
  'His/her$_2$ sister thinks that Ram saw every boy$_1$.'

  b. *Weak crossover → A-movement impossible*
  *__har__ **laṛke-ko$_1$** uskii$_1$ bahin soctii hai [ki Raam-ne t_1
  every boy-ACC his/her sister think be that Ram-ERG
  dekhaa].
  see
  Intended: 'For every boy x, x's sister thinks that Ram saw x.'

- ***Summary***
  Finite clauses allow Ā-movement out of them, but not A-movement. Nonfinite clauses allow both. This is just like in English (see (3) and (4)).

2.1.2 ϕ-agreement

- ***Long-distance agreement (LDA)***
  As is well-known, Hindi allows ϕ-agreement into an nonfinite clause (Mahajan 1989, Davison 1991, Butt 1993, Boeckx 2004, Frank 2004, Bhatt 2005, Chandra 2007):[1]

  (16) *ϕ-agreement into nonfinite clause possible (LDA)*
  laṛkõ-ne [**roṭii** khaa-nii] caah-ii.
  boy.PL-ERG bread.F eat-INF.F.SG want-PF.F.SG
  'The boys wanted to eat bread.'

- ***LDA does not require movement***
  LDA is genuinely long-distance. Its optionality hence cannot be attributed to the optionality of movement. It was does not require movement of the controller, because elements that do not move can trigger LDA.

  – The idiom *X-kii khuub marammat karnaa* 'give X a good beating' (lit. 'do X's many repairs') cannot be moved:

  (17) a. Raam-ne **Prataap-kii khuub marammat** kii.
  Ram-ERG Pratap-GEN lot repair.F.SG do.PF.F.SG
  'Ram gave Pratap a good beating.'
  (*lit.* 'Ram did Pratap's many repairs.')

  b. #**Prataap-kii khuub marammat$_1$** Raam-ne t_1 kii.
  Pratap-GEN lot repair.F.SG Ram-ERG do.PF.F.SG
  (*idiomatic reading deviant*)

  – Yet, the idiom can still trigger LDA:

[1] If the embedded object controls LDA on the matrix verb, and only then, the infinitival verb also agrees with it. There is evidence that this infinitival agreement is a side-effect of LDA (Bhatt 2005) and I will abstract away from it here.

(18) Raam-ne [Prataap-kii khuub **marammat** kar-nii/-naa]
Ram-ERG Pratap-GEN lot repair.F.SG do-INF.F.SG/-INF.M.SG
caah -ii/-aa .
want-PF.F.SG/-PF.M.SG
'Ram wanted to give Pratap a good beating.'

- ***No ϕ-agreement into finite clauses***
Crossclausal agreement is completely impossible if the lower clause is finite (e.g., Mahajan 1989, Davison 1991, Butt 1993):

(19) *ϕ-Agreement into finite clause impossible → only default agreement*

Firoz-ne soc -aa/*-ii [(**kitaab**) Monaa-ne (**kitaab**)
Firoz-ERG think-PF.M.SG/*-PF.F.SG book.F Mona-ERG book.F
paṛh-ii thii].
read-PF.F.SG be.PST.F.SG
'Firoz thought that Mona had read a book.'

(20) **Interim summary** (*to be revised*)

Operation	Finite clause (CPs)	Nonfinite clause (TPs)
$\overline{\text{A}}$-movement	✓	✓
A-movement	✗	✓
ϕ-agreement	✗	✓

2.2 Refining the picture: Two types of nonfinite clauses

- ***The phenomenon***
There is an intricate interaction between LDA and A-movement, but not $\overline{\text{A}}$-movement.

- ***Claims:***
  - These interactions follow if nonfinite clauses come in (at least) two sizes (*v*P and TP; see Wurmbrand 2001), *and*
  - the locality profile of A-movement and ϕ-agreement is identical.
  - Therefore, selective opacity cannot be restricted to movement, but must also encompass ϕ-agreement.

2.2.1 The locality of ϕ-agreement

- ***Local verb agreement in Hindi***
Local verb agreement in Hindi is deterministic:

(20) **Local verb agreement in Hindi** (e.g., Pandharipande & Kachru 1977)
Agree with the structurally highest unmarked argument. If there is no such argument, masculine singular default agreement arises.

- ***ϕ-agreement is obligatory***
(20) follows from the logic of obligatory operations (Preminger 2011, 2014): If a ϕ-probe can agree, it has to agree. If it cannot agree, that is fine and we get default agreement.

☞ **If ϕ-agreement is possible, it is required. Default agreement is the realization of an unvalued ϕ-probe.**

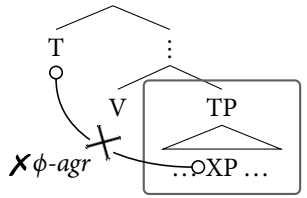
- ***Optionality in long-distance agreement***
In puzzling contrast to local agreement, long-distance agreement seems to be optional and to freely alternate with masculine singular default agreement.

(21) laṛkõ-ne [**roṭii** khaa-nii/-naa] caah -ii/-aa .
boy.PL-ERG bread.F eat-INF.F.SG/-INF.M.SG want-PF.F.SG/-PF.M.SG
'The boys wanted to eat bread.'

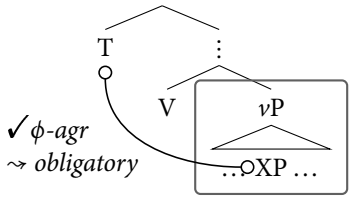
- ***The optionality problem***
Why is agreement over a clause boundary optional if it is otherwise obligatory?

- ***Two types of nonfinite clauses***
The optionality (21) indicates that nonfinite clauses come in **two sizes:**
  1. **Big (TP):** opaque for ϕ-agreement → default agreement
  2. **Small (*v*P):** transparent for ϕ-agreement → LDA obligatory

(22) **TP nonfinite clauses**



(23) ***v*P nonfinite clauses**



- ***Distinguishing vP and TP clauses***
LDA allows us to tease *v*Ps and TPs apart → *v*Ps allow LDA into them and LDA is forced; TPs block LDA

2.2.2 The locality of A-movement

- ***Upshot***
  In some cases, the optionality of LDA breaks down: If *any* element is A-moved out of the lower clause, then LDA is obligatory. $\overline{\text{A}}$-movement has no such effect.

- ***Claim***
  These interactions fall out on the claim that nonfinite clauses come in a *v*P and TP variant and if ϕ-agreement partakes in selective opacity: Its locality is identical to A-movement, but different from $\overline{\text{A}}$-movement.

- ***Data point 1: Moving the indirect object***
  A-movement of the indirect object (IO) makes LDA with the direct object (DO) obligatory. $\overline{\text{A}}$-movement has no such effect.

  (24a): Baseline, no movement → LDA with DO *ek maalaa* optional

  (24b): Movement of IO *har bacce-ko* without binding pronoun → LDA with DO *ek maalaa* optional

  (24c): Movement of IO *har bacce-ko* with binding of pronoun → LDA with DO *ek maalaa* **obligatory**

  (24) **Crossover and LDA: Indirect object**

  a. uskii$_1$ mãã-ne [**har** **bacce-ko$_2$** *ek* *maalaa*
  his/her mother-ERG every child-DAT a necklace.F
  de-nii/-naa] caah-ii/-aa.
  give-INF.F.SG/INF.M.SG want-PF.F.SG/-PF.M.SG
  'His/her$_1$ mother wanted to give a necklace to every child$_2$.'

  b. **har** **bacce-ko$_2$** uskii$_1$ mãã-ne [t_2 *ek* *maalaa*
  every child-DAT his/her mother-ERG a necklace.F
  de-nii/-naa] caah-ii/-aa.
  give-INF.F.SG/-INF.M.SG want-PF.F.SG/-PF.M.SG
  'His/her$_1$ mother wanted to give a necklace to every child$_2$.'

  c. **har** **bacco-ko$_1$** uskii$_1$ mãã-ne [t_1 *ek* *maalaa*
  every child-DAT his/her mother-ERG a necklace.F
  de-nii/*-naa] caah -ii/*-aa .
  give-INF.F.SG/*-INF.M.SG want-PF.F.SG/*-PF.M.SG
  'For every child x, x's mother wanted to give a necklace to x.'

- ***The significance of A-movement***
  What is special about (24c) is that it must be produced by A-movement.

  (24b): could be produced by either A- or $\overline{\text{A}}$-movement

  (24c): $\overline{\text{A}}$-movement would give rise to a weak crossover violation → IO must be A-moved

  – Furthermore, there is no evidence that the DO *ek maalaa* has undergone movement, as it can be interpreted as a weak indefinite.

  ☞ **A-movement of the IO renders LDA with the DO obligatory, $\overline{\text{A}}$-movement has no such effect.**

- ***Data point 2: Moving a possessor***
  (25) gives a paradigm analogous to (24). Here it is the possessor of the DO that moves. As in (24), A-movement of this possessor makes LDA with the DO obligatory, whereas $\overline{\text{A}}$-movement has no such effect.

  (25) **Crossover and LDA: Possessor**

  a. uskii$_1$ patnii-ne [[**har** **lekhak-kii$_2$** *kitaabẽ*]
  his/her wife-ERG every author-GEN books.F
  paṛh-nii/-naa] caah-ĩĩ/-aa.
  read-INF.F.PL/-INF.M.SG want-PF.F.PL/-PF.M.SG
  'His/her$_1$ wife wanted to read the books of every author$_2$.'

  b. **har** **lekhak-kii$_2$** uskii$_1$ patnii-ne [[t_2 *kitaabẽ*]
  every author-GEN his/her wife-ERG books.F
  paṛh-nii/-naa] caah-ĩĩ/-aa.
  read-INF.F.PL/-INF.M.SG want-PF.F.PL/-PF.M.SG
  'His/her$_1$ wife wanted to read the books of every author$_2$.'

  c. **har** **lekhak-kii$_1$** uskii$_1$ patnii-ne [[t_1 *kitaabẽ*]
  every author-GEN his/her wife-ERG books.F
  paṛh-nii/*-naa] caah -ĩĩ/*-aa .
  read-INF.F.PL/*-INF.M.SG want-PF.F.PL/*-PF.M.SG
  'For every author x, x's wife wanted to read x's books.'

- ***The role of A-movement***
  Just like (24c), (25c) must be produced by A-movement of the possessor. As before, A-movement of **one** element makes LDA with **another** element obligatory.

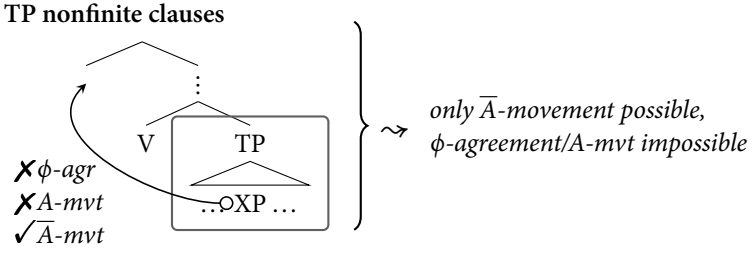
- **Conclusion: A-movement and ϕ-agreement**
  The overarching generalization is given in (26).

(26) **A-Movement–Agreement Generalization**
A-movement of **any** element out of a nonfinite clause makes LDA into this clause obligatory. $\overline{\text{A}}$-movement has no such effect.

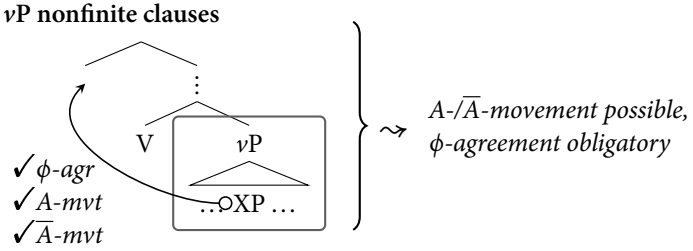
- ***The challenge of deriving (26)***
  What is special about (26) is that it does not relate movement and agreement of a *single* element. Rather, it is a generalization about the **clause.**

- ***How to derive (26)***
  (26) is an instance of selective opacity. Recall that nonfinite clauses in Hindi come in two sizes. They differ not only in their transparency for ϕ-agreement, but for A-movement as well:
  1. **Big (TP):** opaque for ϕ-agreement and A-movement; transparent for $\overline{\text{A}}$-movement
  2. **Small (*v*P):** transparent for ϕ-agreement and A-movement

(27) **TP nonfinite clauses**



(28) ***v*P nonfinite clauses**



- ***Deriving (26):***
  - A-movement out of the nonfinite clause entails a *v*P structure (28)
    ⇝ LDA obligatory
  - $\overline{\text{A}}$-movement is possible out of *v*Ps and TPs
    ⇝ no effect on LDA

- ***(Non-)Interactions as selective opacity***
  ϕ-agreement interacts with A-movement but not with $\overline{\text{A}}$-movement. This is an instance of a locality mismatch. Therefore, (26) is an instance of selective opacity.

(29) **Summary** (*to be extended*)

	Finite clauses	Nonfinite clauses	
Operation	CP	TP	*v*P
$\overline{\text{A}}$-movement	✓	✓	✓
A-movement	✗	✗	✓
ϕ-agreement	✗	✗	✓

- ***Conclusion: Selective opacity beyond movement***
  ϕ-agreement partakes in selective opacity just like A-movement does, but it does not involve movement. Therefore, selective opacity is not restricted to movement.

2.3 The locality of *wh*-licensing

- ***In-situ wh-licensing***
  A second process that arguably does not involve any movement but partakes in selective opacity is *wh*-licensing. *Wh*-words in Hindi do not require movement:

(30) Raam-ne **kyaa** khaayaa thaa.
Ram-ERG what eat was
'What did Ram eat?' (Mahajan 1990:125)

- ***No covert movement***
  In-situ *wh*-phrases in Hindi are subject to **focus intervention** ('Beck effects'; see Beck 1996, 2006, Beck & Kim 1997, Pesetsky 2000, Cable 2010, Kotek 2014). This indicates that they do not covertly raise (see also Simpson 2000).

(31) **Focus intervention**
(**kis-ko**) kisi-bhii laṛke-ne (??**kis-ko**) nahĩĩ dekhaa?
who-ACC some-NPI boy-ERG who-ACC not saw
'Who did no one see?'

- ***Wh-Agree***
I will assume that *wh*-licensing takes place via Agree for [*u*wh] between a C head and the *wh*-phrase.

- ***The locality of wh-licensing***
Wh-licensing is not unbounded: It cannot happen past a finite clause boundary:

(32) **No *wh*-licensing across finite clause boundary**
a. *Siitaa-ne socaa [ki Ravii-ne **kis-ko** dekhaa]?
Sita-ERG thought that Ram-ERG who-ACC saw
Intended: 'Who did Sita think that Ravi saw?' (Mahajan 2000:319)
b. *Siitaa-ne socaa [(**kis-ko**) Ravii-ne (**kis-ko**) dekhaa]?
Sita-ERG thought who-ACC Ram-ERG who-ACC saw

- ***Aside: Crossclausal questions in Hindi***
Matrix construals become possible if *wh*-licensing does not have to take place over a finite clause boundary, either by moving the *wh*-element or by using a 'scope marker' (Dayal 1994b, 1996, 2000, to appear, Lahiri 2002).

- ***Wh-licensing out of nonfinite clauses***
Nonfinite clauses do not block *wh*-licensing across them. In addition, *wh*-licensing does not interact with LDA.

(33) Raam-ne [**kaunse baccõ-ko** *film* dikhaa-naa/-nii]
Ram-ERG which child-DAT movie show-INF.M.SG/-INF.F.SG
caah -aa/-ii ?
want-PF.M.SG/-PF.F.SG
'Which child did Ram want to show a movie to?'

- ***Summary***
The locality of *wh*-licensing falls between $\overline{\text{A}}$-movement and A-movement/ϕ-agreement: It is blocked by CPs, but not by TPs or *v*Ps. Just like ϕ-agreement, *wh*-licensing does not require movement.

(34) **Summary: Selective opacity across Hindi clauses** (*to be extended*)

	Size of embedded clause		
Operation	CP	TP	*v*P
$\overline{\text{A}}$-movement	✓	✓	✓
wh-licensing	✗	✓	✓
A-movement	✗	✗	✓
ϕ-agreement	✗	✗	✓

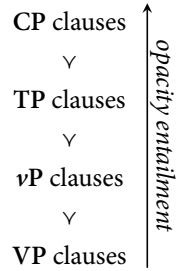
2.4 Section summary

- Embedded clauses come in (at least) three sizes, which differ in their locality:
  - **CP:** ✓$\overline{\text{A}}$-mvt, ✗*wh*-licensing, ✗A-mvt, ✗ϕ-agr
  - **TP:** ✓$\overline{\text{A}}$-mvt, ✓*wh*-licensing, ✗A-mvt, ✗ϕ-agr
  - ***v*P:** ✓$\overline{\text{A}}$-mvt, ✓*wh*-licensing, ✓A-mvt, ✓ϕ-agr
- Selective opacity is not restricted to movement.

3 Regularities of selective opacity: Evidence from Hindi

- ***Reminder***
Recall that selective opacity is not distributed randomly, but subject to the generalizations in (35) (= (8)) and (36) (= (9)).

(35) Upward Entailment
If a clause is opaque to a movement type, then larger clauses are also opaque to this movement type.



- ***(35) in Hindi***
(35) is plainly true in Hindi: If some structure is opaque for some process, larger structures are as well.

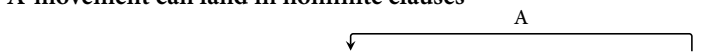
(36) **Height–Locality Connection**
Movement types in their landing sites. The higher the landing site of a movement type in the clausal structure, the more structures that are transparent to this movement type.

- ***(36) in Hindi***
(36) holds in Hindi as well, and it holds for movement and non-movement alike. To see this, we need to determine the height of the four operations. Following Bhatt (2005), I take the **ϕ-probe** to be located on **T°**. Moreover, I assume (as is standard) that the ***wh*-feature** resides on **C°**.

- ***The landing sites of movement***
Due to Hindi's very flexible word order, surface inspection does not reveal where A- and $\overline{\text{A}}$-movement land.

- ***Where does A-movement land?***
As (37) shows, A-movement can land within a nonfinite clause. The nonfinite clause is extraposed to make sure that the movement does not leave it (Bhatt & Dayal 2007).

(37) **A-movement can land in nonfinite clauses**



Raam-ne t_2 caahaa [**har** **kuttaa**$_1$ uske$_1$ baccõ-ko t_1
Ram-ERG want every dog his/her owner-DAT
dikhaa-naa]$_2$
show-INF
'Ram wanted to show every dog x to x's owner.'

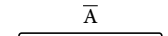
☞ ***Conclusion***
Because nonfinite clauses are maximally TPs, A-movement must land in **Spec,TP** (or lower).

. . . . . .

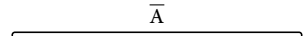
- ***Where does $\overline{\text{A}}$-movement land?***
Indirect evidence comes from the paradigm in (38).[2]
  - In (38), a finite clause is embedded within a nonfinite clause, which is itself embedded in the matrix clause.
  - ☞ Because the lowermost clause is finite, any movement out of it must be $\overline{\text{A}}$-movement.
  - In (38b), movement into the nonfinite clause is impossible → **$\overline{\text{A}}$-movement cannot land inside a nonfinite clause**
  - In (38c), the DP is moved all the way into the (finite) matrix clause and the result is grammatical.

(38) **$\overline{\text{A}}$-movement cannot land in nonfinite clauses**

a. *Base configuration:*
mãĩ caahtaa hũũ [kah-naa [ki mãĩ-ne **kitaab** paṛh lii hai]]
I want be say-INF [that I-ERG book read take be
'I want to say that I read the book.'
✓[$_{\text{matrix clause}}$ [$_{\text{nonfinite clause}}$ [$_{\text{finite clause}}$ DP]]]

b. *No $\overline{\text{A}}$-mvt into nonfinite clauses:*
*mãĩ caahtaa hũũ [**kitaab**$_1$ kah-naa [ki mãĩ-ne t_1 paṛh lii
I want be book say-INF that I-ERG read take
hai]]
be


*[$_{\text{matrix clause}}$ [$_{\text{nonfinite clause}}$ DP [$_{\text{finite clause}}$ t]]]

c. *$\overline{\text{A}}$-mvt into finite clauses:*
kitaab$_1$ mãĩ caahtaa hũũ [kah-naa [ki mãĩ-ne t_1 paṛh lii
book I want be say-INF that I-ERG read take
hai]]
be


✓[$_{\text{matrix clause}}$ DP [$_{\text{nonfinite clause}}$ [$_{\text{finite clause}}$ t]]]

☞ ***Conclusion***
$\overline{\text{A}}$-movement lands in **Spec,CP.** Because nonfinite clauses lack a CP layer, they do not provide a landing site for $\overline{\text{A}}$-movement.

- ***The Height–Locality Connection in Hindi***
Hindi obeys the Height–Locality Connection: Operations triggered by structurally high projections ($\overline{\text{A}}$-movement, *wh*-licensing) can access more domains than operations triggered by structurally low projections (A-movement, ϕ-agreement).

. . . . . .

- ***Putting it all together***
(39) combines all our findings for Hindi.

[2] Thanks to Klaus Abels for suggesting this test to me.

(39) **Summary: Selective opacity across Hindi clauses**

Operation	*Landing site/ probe location*	*Size of embedded clause*		
		CP	TP	*v*P
$\overline{\text{A}}$-movement	C	✓	✓	✓
wh-licensing	C	✗	✓	✓
A-movement	T	✗	✗	✓
ϕ-agreement	T	✗	✗	✓

- *Key conclusions*
  1. **Selective opacity beyond movement**
     Selective opacity is not restricted to movement. It also encompasses ϕ-agreement and *wh*-licensing.
  2. **Upward entailment**
     If a clause is opaque to a movement type, then larger clauses are also opaque to this movement type → also holds for non-movement operation
  3. **Height–Locality Connection**
     The higher the locus of an operation, the more structures that are transparent to this operation → also holds for non-movement structures

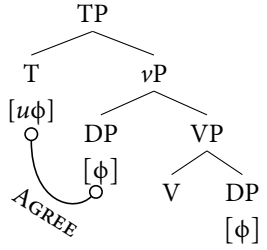
4 Proposal: An account of selective opacity

4.1 Agree-barriers

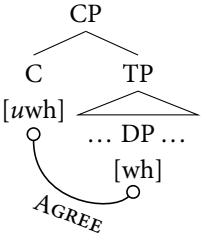
- ***The locus of selective opacity***
  We have seen that selective opacity is more general than movement. I propose that selective opacity is a property of **Agree**. All operations, including movement, are parasitic on Agree (Chomsky 2000, 2001). See Müller (1996), Grewendorf & Sabel (1999), and Sauerland (1999) for justification of the claim that optional movement is triggered by features as well.

(40) **Agree**
An unvalued feature [*u*X] (the 'probe') serially searches through its c-command domain for a valued counterpart (a 'goal'). It agrees with the closest goal.

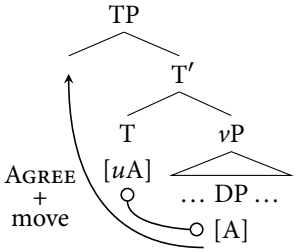
(41) **ϕ-Agreement**



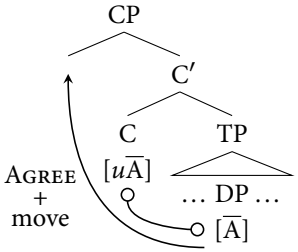
(42) ***Wh*-licensing**



(43) **A-movement**



(44) **$\overline{\text{A}}$-movement**



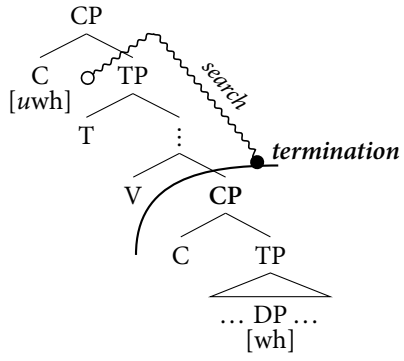
- ***Key consequence***
  Because ϕ-agreement, *wh*-licensing and movement all involve Agree, a constraint on Agree will adequately restrict all three.

- ***Agree-barriers***
  Let potentially any **category label** be a barrier for a probe, leading to **termination** of Agree-probing
  → a probe cannot search into structures contained in that category

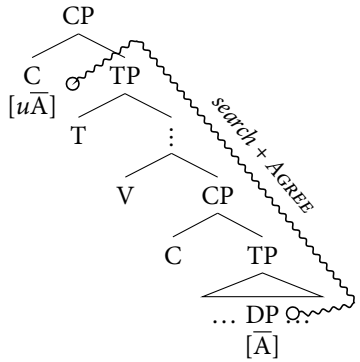
(45) **Agree-Barriers**
If a category label X is an Agree-barrier for probe [*u*F] (notated as '[*u*F] ⊣∣ X'), then a [*u*F]-initiated search terminates at XP.

- ***Remarks***
  - Crucially, probes can **differ** in their Agree-barriers, giving rise to locality mismatches.
  - Agree-barriers render XP **entirely opaque** for some probe. Nothing inside is, not even the specifier, is accessible to that probe.

(46) **C is an Agree-barrier for [*u*wh]**



(47) **C is not an Agree-barrier for [*u*$\overline{\text{A}}$]**



- ***How are Agree-barriers distributed?***
  Let the distribution of Agree-barriers be completely unconstrained. Distributional patterns will then **emerge** from the interaction of Agree-barriers with other aspects of the system. They will therefore be **derived.**

- ***Upward entailment***
  We saw above one general property of selective opacity: Upward entailment, now stated in terms of operations instead of just movement:

  (48) **Upward entailment**
  If a clause is opaque to an operation, then larger clauses are also opaque to this operation.

- ***Deriving upward entailment***
  Upward entailment follows from independently motivated properties of **extended projections:** Grimshaw (1991, 2000) and Shlonsky (2006) argue that features of a head are **inherited upward** within the extended projection that the head is part of, a general consequence of the **endocentric** nature of extended projections (van Riemsdijk 1988, 1998).

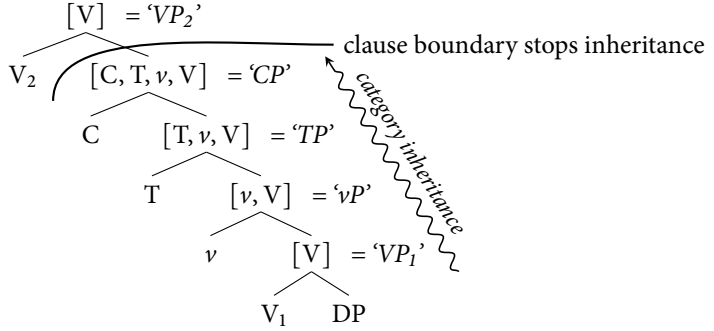
  – Grimshaw (1991, 2000) notes a variety of cases like (49): Verbs differ in whether they select for indicative or subjunctive clauses but this difference is a feature of T, not C (also see Shlonsky 2006).
  – Grimshaw concludes that T's features must be visible on the CP node.
  – She proposes that features are inherited upward throughout an extended projection.

(49) a. We requested *that* he leave/?left at 6.
b. We thought *that* he left/*leave at 6. (Grimshaw 2000:130)

- I will adopt Grimshaw's (1991, 2000) conclusion and propose (50).

(50) **Category Inheritance**
The category features of a head are inherited up through an extended projection.

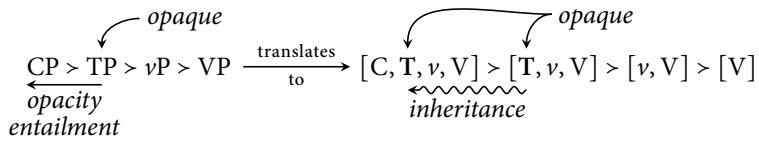
(51) *Schematic example of (50)*



- ***Barrier inheritance***
  Because Agree-barriers operate on category features, category inheritance (50) has the effect that Agree-barriers effectively percolate up as well. This derives upward entailment.

(52) **Barrier Inheritance Theorem**
Given a probe [*u*F] and an extended projection Φ, if a projection Π is an Agree-barrier for [*u*F], then all projection above Π in Φ are likewise Agree-barriers for [*u*F] because Π is inherited (by (50)).

(53) ***Upward entailment follows from category inheritance***



4.2 Application

- We are now in a position to tackle selective opacity effects.

(54) **Summary: Selective opacity across Hindi clauses** (= (39))

Operation	*Landing site/ probe location*	*Size of embedded clause*		
		CP	TP	*v*P
$\overline{\text{A}}$-movement	C	✓	✓	✓
wh-licensing	C	✗	✓	✓
A-movement	T	✗	✗	✓
ϕ-agreement	T	✗	✗	✓

(55) **Hindi probes and their Agree-barriers**

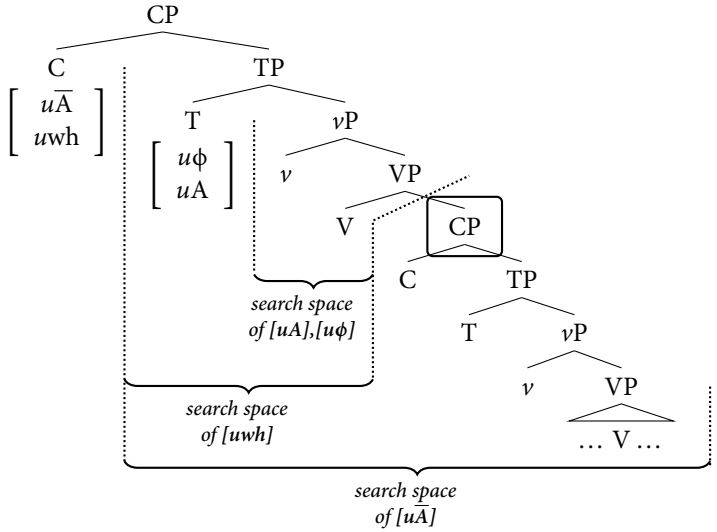
a. $[u\text{A}]_{\text{T}} \dashv\!\shortmid \text{T}$ ⇝ terminates at TP or CP

b. $[u\phi]_{\text{T}} \dashv\!\shortmid \text{T}$ ⇝ terminates at TP or CP

c. $[u\text{wh}]_{\text{C}} \dashv\!\shortmid \text{C}$ ⇝ terminates at CP

d. $[u\overline{\text{A}}]_{\text{C}} \dashv\!\shortmid \varnothing$ ⇝ no Agree-barrier

(56) **Finite clause (CP) embedding in Hindi**[3]

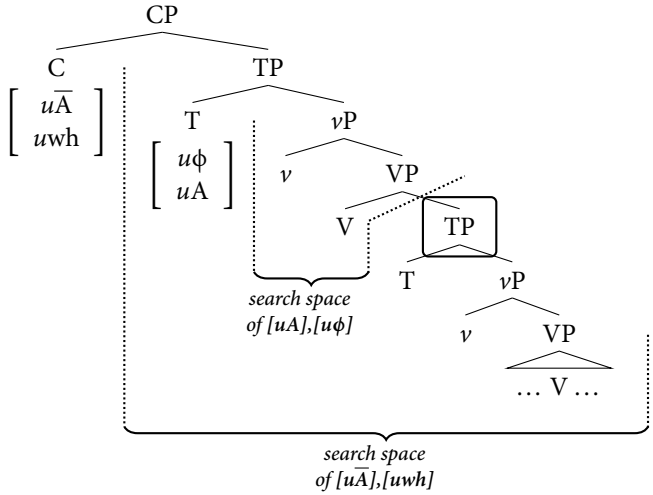


[3] The search space in (56) is shown only with respect to Agree-barriers. Other constraints, like phases, plausibly impose additional restrictions.

⇒ Only $\overline{\text{A}}$-movement out of the lower clause is possible

⇒ Neither A-movement nor ϕ-agreement nor *wh*-licensing is possible

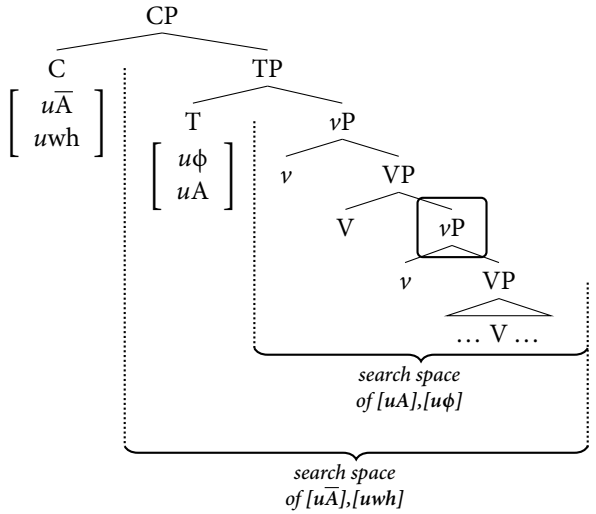
(57) **Large nonfinite clause (TP) embedding in Hindi**



⇒ $\overline{\text{A}}$-movement and *wh*-licensing are possible

⇒ Neither A-movement nor ϕ-agreement are possible

(58) **Small nonfinite clause (*v*P) embedding in Hindi**



⇒ A/$\overline{\text{A}}$-movement, ϕ-agreement and *wh*-licensing are all possible

- ***A theory of locality mismatches***
  AGREE-barriers provide us with a systematic and general account of selective opacity that captures the intricate locality profiles of A-movement, $\overline{\text{A}}$-movement, ϕ-agreement, and *wh*-licensing.

- ***Deriving interactions between operations***
  Because all four processes are governed by the same principle, we also derive interactions between them: (59).
  - A-movement out of the nonfinite clause is possible only if it is a *v*P ⇝ obligatorily transparent for ϕ-agreement ⇝ obligatory LDA

  (59) **A-MOVEMENT–AGREEMENT GENERALIZATION** (= (26))
  A-movement of **any** element out of an nonfinite clause makes LDA into this clause obligatory.

- ***Deriving non-interactions***
  At the same time, because locality mismatches between operations, we also derive non-interactions:
  - $\overline{\text{A}}$-movement has no effect on LDA, because it is possible out of *v*Ps and TPs alike.
  - *Wh*-licensing has no effect for the same reason.

- ***Interactions and non-interactions***
  The (non-)interactions between operations in Hindi are accounted for because the operations differ in their locality.

- ***Hyperraising***
  Hyperraising and other movement type asymmetries follow in an analogous way: The AGREE relation necessary for movement cannot be established.

(60) T seems [CP John eats oatmeal for breakfast].
[*u*A]
search space

☞ Improper movement is really improper AGREE.

5 Deriving the height–locality connection

- ***The mysterious link between height and locality***
  One discovery of the previous literature on selective opacity is that a movement type's landing sites correlates with its locality (Williams 2003, 2011, 2013, Abels 2007, 2009, 2012a, Müller 2014a,b). We have seen that this also holds for non-movement operations.

- A **probe-based** formulation is given in (61).

  (61) **HEIGHT–LOCALITY CONNECTION**
  The higher the location of a probe in the clausal structure, the more structures that are transparent to this probe.

- ***Proposal***
  (61) emerges in the AGREE-barrier system from an interplay between unconstrained AGREE-barriers and category inheritance. Thus, AGREE-barriers offer an account of why (61) should hold in the first place.

- ***Vacuous probes***
  - The system does not impose any direct restrictions on linking a probe's height and its locality.
  - Crucially, however, certain pairings of height and locality deprive a probe of **all** search space.

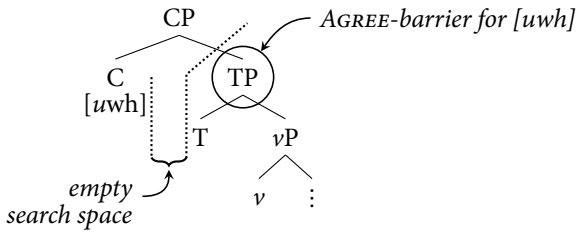
  ☞ Such probes will never agree with anything. For all practical purposes, they do not exist.

- ***An example from Hindi***
  Let us take a look at [*u*wh] in Hindi. It resides on C and has C as an AGREE-barrier.
  - Suppose that it had T as an AGREE-barrier. Then its search would terminate at a **TP.**
  - But because [*u*wh] sits on C, its sister would be a barrier.

  ⇒ Therefore, [*u*wh] would have **no search space whatsoever.** It would never be able to agree with anything.

  ☞ In this counterfactual case, [*u*wh] would be **vacuous.**

(62) Example of a vacuous probe: [*u*wh] on C with [*u*wh] ⊣| T



- ***Generalization***
  This restriction generalizes: Because of barrier inheritance (52), if **any** projection lower than C were an Agree-barrier for [*u*wh], [*u*wh] would be vacuous.
  - If [*u*wh] on C had *v* as an Agree-barrier, it would not only be blocked by *v*Ps, but also by TPs. This would again render [*u*wh] vacuous.

- ***Consequence: Constraining locality mismatches***
  Because [*u*wh] is located on C, it cannot have TP or *v*P as an Agree-barrier without being vacuous.

(63) **Examples of impossible height–locality pairings**

a. $[u\text{wh}]_C \dashv\vdash T$
b. $[u\text{wh}]_C \dashv\vdash v$
c. $[u\text{wh}]_C \dashv\vdash V$

} *vacuous → could not trigger any operation*

☞ ***Consequence***
The syntactic position of the *wh*-probe constrains its locality profile.

- ***Deriving the height–locality connection***
  The above reasoning generalizes: For *any* probe, no projection lower in the functional spine than this probe can be a barrier for it.

☞ **Agree-barriers derive (61).**

(64) **Height–Locality Theorem**
Given an extended projection $\Phi = \langle X_n > X_{n-1} > \ldots > X_1 \rangle$, for any non-vacuous probe [*u*F],

a. If [*u*F] is located on X_m, then a projection $\in \{X_{m-1}, \ldots, X_1\}$ cannot be an Agree-barrier for [*u*F].

Example: C > T > *v* > V
*[u*F*]'s location*
impossible Agree-barriers

b. If [*u*F] has X_m as an Agree-barrier, [*u*F] cannot be located on a projection $\in \{X_n, \ldots, X_{m+1}\}$.

Example: C > T > *v* > V
*[u*F*]'s Agree-barrier*
impossible locations

- ***Remark***
  Importantly, (64) is not a stipulation. It **emerges** from the interaction of Agree-barriers and category inheritance.
  - Although any probe can have any category as an Agree-barrier, certain pairings yield a vacuous probe.
  - Because all operations are triggered by non-vacuous probes (by definition), we will only observe probes that conform to (64).

☞ This derives the height–locality connection.

(65) ***Some empirical consequences of (64) for Hindi***

(i) ***Wh*-licensing** is triggered by a probe on **C**
→ neither T nor *v* nor V can be a barrier for it
→ TP, *v*P, and VP clauses *must* be transparent for *wh*-licensing
☞ Nonfinite clauses **could not** be *wh*-islands.
☞ *Wh*-licensing **could not** interact with LDA.

(ii) **$\overline{\text{A}}$-movement** is triggered by probe on **C**
→ neither T nor *v* nor V can be an Agree-barrier for it
→ TP, *v*P, and VP clauses *must* be transparent for $\overline{\text{A}}$-movement
☞ Nonfinite clauses **could not** be opaque for $\overline{\text{A}}$-movement.
☞ $\overline{\text{A}}$-movement **could not** interact with LDA.

(iii) **TPs** are opaque for **A-movement**
→ [*u*A] must have T as an Agree-barrier
→ [*u*A] *could not* be located in C (by (64b))
☞ A-movement **must** be able to land in a nonfinite clause

- ***Remark***
  We have seen that these implications indeed hold. Agree-barriers derive them as **necessary properties** of the system.

- ***The benefits of Agree-barriers***
  - Systematic and general account of selective opacity for movement **and** non-movement operations.
  - Captures various **interactions** and **non-interactions** between operations in Hindi.
  - Imposes a general **limit** on locality mismatches → upward entailment and the height–locality connection are derived.
  - Explains **why** the selective opacity patterns in Hindi are the way they are and not just any other way.

6 Variation in Agree-barriers

- ***Divergences between height and locality***
  On the Agree-barriers account, a probe's height constrains its locality profile and vice versa. At the same time, there is some amount of variability.

  ☞ **Height restricts locality, but does not determine it.**

  (66) **Possible and impossible height–locality pairings for a probe located on C**
  a. $[u\text{F}]_{\text{C}} \dashv\!\shortmid \varnothing$ } ✓
  b. $[u\text{F}]_{\text{C}} \dashv\!\shortmid \text{C}$ } ✓
  c. $[u\text{F}]_{\text{C}} \dashv\!\shortmid \text{T}$ } *vacuous* (*don't conform to (64a)*)
  d. $[u\text{F}]_{\text{C}} \dashv\!\shortmid v$ } *vacuous* (*don't conform to (64a)*)
  e. $[u\text{F}]_{\text{C}} \dashv\!\shortmid \text{V}$ } *vacuous* (*don't conform to (64a)*)

- ***Example: Probes on C in Hindi***
  Both [*u*wh] and [*u*$\overline{\text{A}}$] are located on C, yet they differ in their locality:

  (67) a. $[u\text{wh}]_{\text{C}} \dashv\!\shortmid \text{C}$ ⇝ terminates at CP
  b. $[u\overline{\text{A}}]_{\text{C}} \dashv\!\shortmid \varnothing$ ⇝ no Agree-barrier

- Such mismatches are readily accounted for under Agree-barriers: A probe on C cannot have TP or *v*P as a barrier, but it may or may not have C as a barrier.

- ***The relation between height and locality***
  Agree-barriers allow height and locality to mismatch, but at the same time impose a strict limit on such mismatches.

- ***Crosslinguistic variation in hyperraising***
  It is well-known that some languages do allow A-movement out of a finite clause, unlike English (Ura 1994), e.g.:

  1. Bantu languages (Carstens 2010, 2011, Diercks 2012, Halpert 2012)
  2. Greek (Alexiadou & Anagnostopoulou 2002)
  3. Brazilian Portuguese (Nunes 2008, though cf. Williams 2011)

  (68) Babaandu$_1$ ba-lolekhana [(mbo) t_1 ba-kwa]. [Lubukusu]
  2.people 2sa-seem (that) 2sa.pst-fall
  'The people seem like they fell/The people seem to have fallen.'
  (Carstens & Diercks 2013:100)

  (69) **Account**
  a. *English:* [*u*A] $\dashv\!\shortmid$ C
  b. *Lubukusu:* [*u*A] $\dashv\!\shortmid \varnothing$

- Agree-barriers provide a simple account of such crosslinguistic differences:
  – A probe on T **cannot** have *v*P as a barrier.
  – But it may or may not have CP as a barrier ⇝ **variation**

7 Default barriers

- ***Question***
  Given that height and locality may mismatch to some extent, are there default barriers for probes?

- ***Answer*** – Yes.
  – Because of barrier inheritance (52), the lower a probe's barrier, the smaller its search space will be.
  – At the same time, the account imposes a lower limit on Agree-barriers ⇝ (64a)
  – Assuming that minimization of search space is desired (Chomsky 2000, 2001), the **default** Agree-barrier for a probe will be the projection the probe is located on
  ⇒ This minimizes search space while still not rendering the probe vacuous.[4]

> (70) **Default barriers**
> For any probe [*u*F] on head X, the default Agree-barrier setting is $[u\text{F}]_{\text{X}} \dashv\!\shortmid \text{X}$.

- ***Acquiring variation***
  Divergences from the default setting can be acquired on the basis of **purely positive** evidence – by observing well-formed dependencies. Upon encountering such a dependency, the Agree-barrier is adjusted upward.

8 Agree-barriers and phases

- ***Agree-barriers and CP phases: A merry coexistence***
  Agree-barriers and phases are fully compatible with each other, without creating any redundancy.

[4] This default setting is similar, though not identical, to the effects of Williams' (2003, 2011, 2013) system.

- ***The locality effects of Agree-barriers***
  Agree-barriers determine whether a given domain is accessible to a probe or not.

- ***The locality effects of phases***
  Because the phase edge remains accessible, phases do not block movement but merely render it **successive-cyclic** (Boeckx & Grohmann 2007, Abels 2012b).

- ***Combining the two***
  Agree-barriers determine whether movement out of a domain is possible, phases determine the shape of licit movement paths.

(71) **A-movement out of CPs:**
* John seems (that) likes oatmeal.

$[_{TP}$ __ $T^o \ldots [_{CP}$ John $C^o [_{TP} \ldots$ ⇝ *ruled out by Agree-barriers*

(72) **One-fell-swoop movement out of CP**
* What did John ask who bought?

$[_{CP}$ __ $C^o [_{TP} \ldots [_{CP}$ who C^o ($[_{TP} \ldots$ what ⇝ *ruled out by phases*

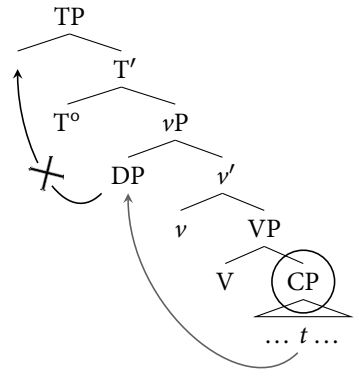
(73) **Successive-cyclic $\overline{\text{A}}$-movement**
What did John say that Mary bought?

$[_{CP}$ __ $C^o \ldots [_{CP}$ __ $C^o \ldots$ what

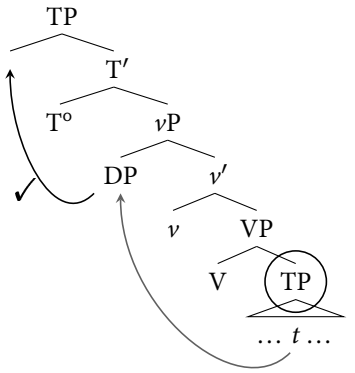
. . . . . .

- ***vP phases***
  It is standardly assumed that *v* is also a phase. A general problem of *v*P phases is that they make any account of hyperraising much harder (Müller 2014a)
  - If *v*P is a phase, then movement over it must pass through its specifier.
  - Whether movement from Spec,*v*P to Spec,TP is possible or not can then not be determined locally → it depends on the status of the lower clause

(74) **CP clause → No *v*P-to-TP movement**



(75) **TP clause → *v*P-to-TP movement**



- ***Conclusion: The problem of vP phases***
  *v*P phases destroy information necessary to determine whether a movement step is possible or not. This is a very general problem and independent of Agree-barriers. Either information about the movement history of an element has to be recorded on that element (Müller 2014a) or *v*P are not phases.

- See Keine (2015) for converging processing evidence against *v*P phases.

9 Conclusion

- I have argued that selective opacity is a general, systematic, and pervasive property of locality. Furthermore, it is not limited to movement, but also encompasses in-situ relations like ϕ-agreement and *wh*-licensing.

- I have proposed **Agree-barriers,** the notion that a probe's search can terminate upon encountering a particular category feature. Probes differ in which category feature they are sensitive to, producing selective opacity.

- Because of its generality, the system is able to capture intricate interactions between various operations in Hindi and their differing locality profiles.

- Distributional patterns of Agree-barriers are not stipulated, but derived from the interplay of Agree-barriers with independently motivated properties of extended projections.
  - **Upward entailment** and the **Height–Locality Connection** follow from category inheritance.

☞ In this way, the system not only accounts for locality mismatches, it also imposes systematic and non-stipulatory constraints on such mismatches.

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