# Crossover asymmetries

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## 1. Introduction: Crossover

- It is typically impossible for an $\bar{A}$-moved DP to bind an element from its landing site, even if this landing site c-commands the pronoun and so that usual conditions for binding would appear to be met. Such configurations are called *crossover* (Postal 1971, Wasow 1972). It is customary to distinguish between *weak crossover* and *strong crossover* (see Safir 2017 for an overview).

(1) *Strong crossover (SCO): Pronoun c-commands the trace*

a. *$\text{DP}_1 \ldots \text{pron}_1 \ldots t_1$

b. ***Who$_1$** does **she$_1$** like ___$_1$?

(2) *Weak crossover (WCO): Pronoun does not c-command the trace*

a. *$\text{DP}_1 \ldots [_{\text{DP}} \ \ldots \text{pron}_1 \ldots ] \ldots t_1$

b. ***Who$_1$** does [ **her$_1$** mother ] like ___$_1$?

- In English, WCO and SCO travel together: $\bar{A}$-movement is subject to both, while A-movement is subject to neither.

(3) *Strong crossover*

a. *A-movement*
**Every girl$_1$** seems to **herself$_1$** ___$_1$ to be a genius.

b. *$\bar{A}$-movement*
***Who$_1$** does **she$_1$** like ___$_1$?

(4) *Weak crossover*

a. *A-movement*
**Every girl$_1$** seemed to [ **her$_1$** dad ] ___$_1$ to be a genius.

b. *$\bar{A}$-movement*
***Who$_1$** does [ **her$_1$** mother ] like ___$_1$?

(5)

| | *English A-movement* | *English $\bar{A}$-movement* |
|---|---|---|
| WCO | N | Y |
| SCO | N | Y |

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- ***Goal for today***
  We examine and analyze the apparently paradoxical behavior of local scrambling in Hindi w.r.t. crossover. We find that WCO and SCO do part ways here:
  - ▹ Scrambling is not subject to (secondary) WCO → patterns like English A-movement
  - ▹ Scrambling is subject to (secondary) SCO → patterns like English $\bar{\text{A}}$-movement

- ***Proposal***
  This divergence between WCO and SCO indicates that the two should not be unified (pace Chomsky's 1976 *Leftness* condition, Van Riemsdijk and Williams's 1981 *NP structure* account, Reinhart's 1983 A/$\bar{\text{A}}$-condition, Safir's 2004, 2019 *Independence Principle* accounts). Instead, we find evidence that WCO and SCO have **distinct sources**, and it helps us in identifying these sources.
  - ▹ Across the movement types we investigate here, WCO correlates with the **landing site:**
    - – Movement that targets CP is subject to WCO; movement that lands lower is not.
    - – Building on Büring (2004), we propose a syntactic restriction on the placement of an operator necessary for pronominal binding. This operator cannot occur in a phase edge.
  - ▹ SCO is conditioned by the representation of the moved element in the **launching site:**
    - – SCO is an instance of Condition C connectivity, conditioned by the amount of structure in the launching site, which itself follows from **case.** This provides support for Takahashi and Hulsey's (2009) Wholesale Late Merge.

(6) Local scrambling (in Hindi) involves movement of an already case-marked DP to a TP-internal position.

  a. The TP-internal location of the landing site enables WCO obviation.
     → *in this respect, scrambling patterns like English A-movement*

  b. Because scrambling applies to a case-marked DP, we get Condition C connectivity. This leads to SCO.
     → *in this respect, scrambling patterns like English $\bar{A}$-movement*

- ***Consequences for the nature of scrambling:***
  - ▹ The properties of scrambling in Hindi cannot be reduced to it being either A- or $\bar{\text{A}}$-movement. Descriptively, scrambling is a third movement type.
  - ▹ But the crossover properties of scrambling do not have to be stipulated but follow from other, independently observable properties of scrambling.
    - ➪ By breaking the concepts of A- and $\bar{\text{A}}$-movement down into smaller pieces, we obtain a more accurate picture of the ways in which movement types may differ.

## 2. A crossover puzzle in Hindi scrambling

- A close look at WCO and SCO in Hindi reveals an asymmetry: local scrambling is subject to SCO but not to WCO. In SCO configurations, binding is impossible even though all the standard prerequisites seem to be met.

### 2.1. Weak crossover

- Local scrambling is not subject to WCO (Déprez 1989, Mahajan 1990, Gurtu 1992): binding of pronoun from the landing site is possible.

(7) *Local scrambling is not subject to WCO*

a. [**us-kii$_{1/*2}$** behin-ne ] [**har laṛke-ko**]$_2$ ḍããṭaa
s/he-GEN sister-ERG every boy-ACC scolded
'Her/his$_{1/*2}$ sister scolded every boy$_2$.'

b. [**har laṛke-ko**]$_1$ [**us-kii$_1$** behin-ne ] ___$_1$ ḍããṭaa
every boy-ACC s/he-GEN sister-ERG scolded
'For every boy $x$, $x$'s sister scolded $x$.'

### 2.2. Strong crossover

- Local scrambling is still subject to SCO:

(8) *[**har laṛke-ko**]$_1$ **us-ne$_1$/apne aap-ne$_1$** ___$_1$ dekhaa
every boy-ACC s/he-ERG/self-ERG saw
*Intended:* 'Every boy$_1$, he$_1$ saw.'

- (8) is perhaps not telling us very much.
  - ▹ The pronoun *us-ne* is likely bad because of Condition B.
  - ▹ The reflexive *apne aap-ne* is subject-oriented. This plausibly accounts for why it cannot be bound by the object in (8).

- ***Possessor binding:***
We can circumvent these confounds by embedding the binder into the moving element. Hindi allows binding by possessors:

(9) a. [**har laṛke-kii$_1$** behin-ne ] **us-ko$_1$** ḍããṭaa
every boy-GEN sister-ERG he-ACC scolded
'For every boy $x$, $x$'s sister scolded $x$.'

b. [**har laṛke-kii$_1$** behin-ne ] [**us-ke$_1$** dost-ko ] ḍããṭaa
every boy-GEN sister-ERG he-GEN friend-ACC scolded
'For every boy $x$, $x$'s sister scolded $x$'s friend.'

- Moreover, possessors do not c-command out the container DP, as revealed by Condition B (10).

(10) [ **Ram-kii$_1$** behin-ne ] **use$_1$** dekhaa
Ram-GEN sister-ERG him saw
'Ram's$_1$ sister saw him$_1$.'

- ***No possessor raising***
Possessor binding does not seem to require movement out of the container DP. This is because at least some such container DPs do not allow extraction out of them.

(11) *No possessor extraction out of ergative DPs*

a. kal [ Ram-kii behin-ne ] Anu-ko ḍããṭaa
yesterday Ram-GEN sister-ERG Anu-ACC scolded
'Yesterday, Ram's sister scolded Anu.'

b. *Ram-kii$_1$ kal [ ___$_1$ behin-ne ] Anu-ko ḍããṭaa
Ram-GEN yesterday sister-ERG Anu-ACC scolded

(12) *No possessor extraction out of ko-marked objects*

a. us-ne [ Ram-kii behin-ko ] ḍããṭaa
s/he-ERG Ram-GEN sister-ACC scolded
'S/he$_1$ scolded Ram's$_2$ sister.'

b. *Ram-kii$_1$ us-ne [ ___$_1$ behin-ko ] ḍããṭaa
Ram-GEN s/he-ERG sister-ACC scolded

- ***Secondary weak crossover (SWCO):***
So far, we have seen possessor binding in base-generated structures. Possessor binding may also be fed by movement, as (13) shows. Because the binder is embedded inside the moving element, (13) instantiates a *secondary weak crossover* configuration (Safir 1984, Postal 1993).

(13) *Binding by possessor inside scrambled DP possible → no SWCO*
[ **har laṛke-kii$_1$** behin-ko ]$_2$ [ **us-ke$_1$** dost-ne ] ___$_2$ ḍããṭaa
every boy-GEN sister-ACC he-GEN friend-ERG scolded
'For every boy *x*, *x*'s friend scolded *x*'s sister.'

- ***Secondary strong crossover (SSCO):***
But binding is out if the pronoun c-commands the launching site, that is, in *secondary strong crossover* configurations (Van Riemsdijk and Williams 1981, Postal 1993):

(14) *No binding by possessor if pronoun c-commands trace → SSCO*
*[ **har laṛke-kii$_1$** behin-ko ]$_2$ **us-ne$_1$** ___$_2$ ḍããṭaa
every boy-GEN sister-ACC he-ERG scolded
*Intended:* 'For every boy *x*, *x* scolded *x*'s sister.'

- ***The puzzle:***
  1. Scrambling may feed pronominal binding (see (7) and (13));
  2. Possessors may bind outside the host DP in the absence of movement (see (9)) and after movement (see (13));
  3. The trace in (14) is not coindexed with the subject pronoun, so there is no transparent Condition B/C effect w.r.t. the trace.
  4. Traditional constraints on WCO like the *Bijection Principle* (Koopman and Sportiche 1983) and the *Parallelism Constraint on Operator Binding* (Safir 1984) are respected.

  (15) *[ every boy's$_1$ sister ]$_2$ … he$_1$ … $t_2$ …

➽ ***Why is (14) ungrammatical?***

.....

- ***Terminology:***
  - ▹ The weak/strong crossover distinction refers to the position of the pronoun (embedded vs. unembedded).
  - ▹ The distinction between secondary and primary crossover refers to the position of the binder (embedded vs. unembedded).

(16)

| | | QP binder | |
|---|---|---|---|
| | | unembedded | embedded |
| pronoun | unembedded | *primary SCO:*<br>QP$_1$ … pron$_1$ … $t_1$ | *secondary SCO:*<br>[ QP$_1$ … ]$_2$ … pron$_1$ … $t_2$ |
| | embedded | *primary WCO:*<br>QP$_1$ … [ pron$_1$ … ] … $t_1$ | *secondary WCO:*<br>[ QP$_1$ … ]$_2$ … [ pron$_1$ … ] … $t_2$ |

.....

- ***Further examples:***
  The same puzzle arises with other configurations as well.
  - ▹ This includes object–PP interactions.

  (17) *Binding from PP*
  Ram-ne [ **har laṛkii$_1$-ke liye** ] [ [ **us-kii$_1$** mãã-kii ] tasviir ] banaayii
  Ram-ERG every girl-for s/he-GEN mother-GEN picture made
  'For every girl *x*, Ram took *x*'s mother's picture for *x*.'

(18) *No secondary weak crossover*
Ram-ne [**har mãã-kii$_1$** tasviir ]$_2$ [**us-kii$_1$** beṭii-ke liye ] ___$_2$ banaayii
Ram-ERG every mother-GEN picture s/he-GEN daughter-for made
'For every mother *x*, Ram took *x*'s picture for *x*'s daughter.'

(19) *Secondary strong crossover*
*Ram-ne [**har mãã-kii$_1$** tasviir ]$_2$ **us$_1$-ke liye** ___$_2$ banaayii
Ram-ERG every mother-GEN picture s/he-for made
*Intended:* 'For every mother *x*, Ram took *x* picture for *x*.'

▹ The puzzle can also be observed in some biclausal configurations:

(20) *No secondary weak crossover*
[**har mãã-kii$_1$** betaa-ko]$_2$ mãĩ-ne [[**us-ke$_1$** bhaaii-ko] ___$_2$ ḍããṭ-ne ] diyaa
every mother-GEN son-ACC I-ERG s/he-GEN son-DAT scold-INF let
'For every mother *x*, I let *x*'s brother scold *x*'s son.'

(21) *Secondary strong crossover*
*[**har mãã-kii$_1$** betaa-ko]$_2$ mãĩ-ne [**us-ko$_1$** ___$_2$ ḍããṭ-ne ] diyaa
every mother-GEN son-ACC I-ERG s/he-DAT scold-INF let
*Intended:* 'For every mother *x*, I let *x* scold *x*'s son.'

▹ Furthermore, the asymmetry is not restricted to universally-quantified DPs:

(22) *No secondary weak crossover*
[**sirf Ram-ke** baccõ-ko ]$_1$ [**us-kii$_1$** behin-ne ] ___$_1$ ḍããṭaa
only Ram-GEN children-ACC s/he-GEN sister-ERG scolded
'Ram is the only *x* such that *x*'s children scolded *x*'s sister.'

(23) *Secondary strong crossover*
*[**sirf Ram-ke** baccõ-ko ]$_1$ **us-ne$_1$** ___$_1$ ḍããṭaa
only Ram-GEN children-ACC s/he-ERG scolded
*Intended:* 'Ram is the only *x* such that *x* scolded *x*'s sister.'

- ***Contrast to English:***
In this respect, Hindi differs from English A-movement, which is not subject to SSCO.

(24) *Secondary strong crossover*

a. *A-movement*
[**Every boy's$_1$** mother]$_2$ seems to **him$_1$** ___$_2$ to be a genius.

b. *Ā-movement*
*[**Whose$_1$** mother]$_2$ does **he$_1$** admire ___$_2$?

(25) *Secondary weak crossover*

a. *A-movement*
[ **Every boy's$_1$** mother ]$_2$ seems to [ **his$_1$** friends ] ___ $_2$ to be a genius.

b. *$\bar{A}$-movement*
* [ **Whose$_1$** mother ]$_2$ do [ **his$_1$** friends ] admire ___ $_2$?

.....

- ***Summary***
We can summarize the data so far as follows:

(26)

| | *English A-movement* | *Hindi local scrambling* | *English $\bar{A}$-movement* |
|---|---|---|---|
| (S)WCO | **N** ((4a),(25a)) | **N** ((7),(13)) | **Y** ((4b),(25b)) |
| SSCO | **N** (24a) | **Y** (14) | **Y** (24b) |

- ***Questions:***
  - ▹ What causes the SSCO effect?
  - ▹ How do we explain the difference between WCO and SCO? What conditions them?
  - ▹ How does scrambling relate to the A/$\bar{A}$-movement distinction (Mahajan 1990)? Does scrambling constitute a third primitive type of movement (e.g., Webelhuth 1989, 1992, Dayal 1994a)? Or can its properties be derived from other properties of scrambling?

- ***Overview of claims:***

**1.** SCO and WCO do not necessarily travel together.

**2.** SSCO is an instance of Condition C connectivity.

**3.** SCO and WCO are correlated with different properties of a movement type.
  - ▹ WCO correlates with the landing site of a movement type (CP domain vs. lower).
  - ▹ (S)SCO is conditioned by the amount of structure in the launching site, which is itself conditioned by case/licensing (Takahashi and Hulsey 2009).

(27) Local scrambling (in Hindi) involves movement of an already case-marked DP to a TP-internal position.

a. The TP-internal location of the landing site enables WCO obviation.
→ *in this respect, scrambling patterns like English A-movement*

b. Because scrambling applies to a case-marked DP, we get Condition C connectivity. This leads to SCO.
→ *in this respect, scrambling patterns like English $\bar{A}$-movement*

## 3. Long scrambling

- To complete the picture, we note that not all scrambling in Hindi obviates (S)WCO. Long scrambling (i.e., scrambling that crosses a finite clause boundary) does not feed pronominal binding (Mahajan 1990, Gurtu 1992), so we observe both (S)WCO and (S)SCO:

(28) *Long scrambling is subject to (S)WCO*

a. *Weak crossover*
[**har laṛke-ko**]$_1$ [**us-kii$_{2/*1}$** behin-ne] socaa [$_{CP}$ ki Sangita-ne ___$_1$ ḍããṭaa]
every boy-ACC s/he-GEN sister thought that Sangita-ERG scolded
'Every boy$_1$, his$_{2/1}$ sister thought that Sangita scolded (him).'

b. *Secondary weak crossover*
[**har laṛke-ke$_1$** dost-ko]$_2$ [**us-kii$_{3/*1}$** behin-ne] socaa [$_{CP}$ ki Sangita-ne ___$_2$ ḍããṭaa]
every boy-GEN friend-ACC s/he-GEN sister-ERG thought that Sangita-ERG scolded
'Every boy's$_1$ friend, his$_{3/*1}$ thought that Sangita scolded (him).'

(29) *Long scrambling is subject to (S)SCO*

a. *Strong crossover*
[**har laṛke-ko**]$_1$ **us-ne$_{2/*1}$** socaa [$_{CP}$ ki Sangita-ne ___$_1$ ḍããṭaa]
every boy-ACC s/he-ERG thought that Sangita-ERG scolded
'Every boy$_1$, he$_{2/*1}$ thought that Sangita scolded (him).'

b. *Secondary strong crossover*
[**har laṛke-kii$_1$** dost-ko]$_2$ **us-ne$_{3/*1}$** socaa [$_{CP}$ ki Sangita-ne ___$_2$ ḍããṭaa]
every boy-GEN friend-ACC s/he-ERG thought that Sangita-ERG scolded
'Every boy's$_1$ friend, he$_{3/*1}$ thought that Sangita scolded.'

- In this regard, long scrambling patterns like English Ā-movement:

(30)

| | *English A-movement* | *Hindi local scrambling* | *English Ā-movement* | *Hindi long scrambling* |
|---|---|---|---|---|
| (S)WCO | **N** ((4a),(25a)) | **N** ((7),(13)) | **Y** ((4b),(25b)) | **Y** (28) |
| SSCO | **N** (24a) | **Y** (14) | **Y** (24b) | **Y** (29) |

- By comparing Hindi short and long scrambling, we can investigate (S)WCO while leaving the (S)SCO properties constant. Conversely, by comparing Hindi local scrambling and English A-movement, we can investigate (S)SCO while leaving the (S)WCO properties constant.

➽ The hope is that this will give us a window into what properties of a movement type correlate with SCO and WCO and thereby shed light on what conditions them.

## 4. Weak crossover: Landing site

- The traditional generalization about WCO is that it constrains movement to an Ā-position but not movement to an A-position (Reinhart 1983).
  - ▹ We could therefore stipulate that local scrambling targets an A-position and long scrambling targets an Ā-position. This would work, but it is potentially circular. The evidence for classifying this position as an A-position is that the movement is not subject to WCO.[1]
  - ▹ Can we find an independent correlate?

- ***Where does scrambling land?***
  Keine (2018, 2019) presents evidence that local scrambling and long scrambling differ in their landing site in Hindi: local scrambling may target a TP-internal position; long scrambling targets Spec,CP.

- ***Background***
  It is fairly uncontroversial that finite clauses in Hindi are CPs and that nonfinite clauses lack a CP layer (Dayal 1994b, Bhatt 2005, Chandra 2005, Keine 2018).

(31) *Generalization* (Keine 2018, 2019)
Scrambling out of a finite clause cannot land in a nonfinite clause.

(32) $[_{CP}$ … (DP) … $[_{TP}$ … (*DP) … $[_{CP}$ … (DP) … ]]]

a. *Base configuration*
$[_{CP}$ mãĩ caahtaa hũũ $[_{TP}$ kahnaa $[_{CP}$ ki mãĩ-ne **kitaab** paṛh lii hai ]]]
I want AUX say.INF that I-ERG book read take AUX
'I want to say that I read the book.'

b. *No scrambling into nonfinite clauses*
*$[_{CP}$ mãĩ caahtaa hũũ $[_{TP}$ **kitaab$_1$** kahnaa $[_{CP}$ ki mãĩ-ne ___$_1$ paṛh lii hai ]]]
I want AUX book say.INF that I-ERG read take AUX

c. *Scrambling into finite clauses*
$[_{CP}$ **kitaab$_1$** mãĩ caahtaa hũũ $[_{TP}$ kahnaa $[_{CP}$ ki mãĩ-ne ___$_1$ paṛh lii hai ]]]
book I want AUX say.INF that I-ERG read take AUX

(33) $[_{CP}$ … $[_{TP}$ … (DP) … XP … (DP) … ]]
$[_{CP}$ mãĩ caahtaa hũũ $[_{TP}$ **har** **kitaab$_1$** [us-ke$_1$ chapneke din-hii ] ___$_1$ paṛhnaa ]]
I want AUX every book it-GEN publication day-EMPH read.INF
'I want to read every book *x* on *x*'s publication day.'

(34) *Conclusion*

a. Long scrambling targets Spec,CP.

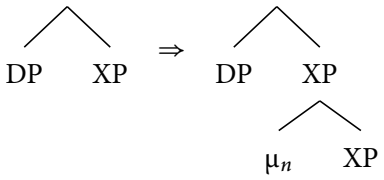
b. Local scrambling target a TP-internal position.

[1] Mahajan (1990) and Gurtu (1992) show that scrambling may feed reflexive binding, which is consistent with it targeting an A-position. But many speakers do not allow such binding (Dayal 1994a, Bhatia and Poole 2016) because the reflexive is subject-oriented in many varieties.

- ***Back to WCO***
  The landing site difference in (34) coincides with the WCO facts:
  - ▹ Long scrambling lands in Spec,CP and is subject to (S)WCO.
  - ▹ Local scrambling lands lower than C is not subject to (S)WCO

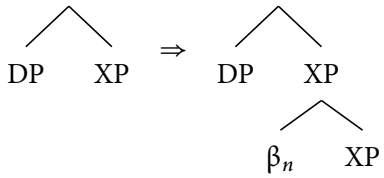
- ***Account***
  To implement this connection, we adopt a proposal by Büring (2004), who develops an analysis in which traces and pronouns are bound by different operators so that the semantics of movement does not enable pronominal binding (also see Sauerland 1998 and Ruys 2000 a related proposal that the type of variable created by $\bar{A}$-movement is different from the type of pronouns). Instead, pronominal binding is enabled by a $\beta_n$-operator that can be freely inserted below A-positions:[2]

  (35) *Trace binding (Büring 2004)*

  a. 
  
  where *n* is a movement index

  b. $[\![\mu_n\ \mathrm{XP}]\!]^{w,g} = \lambda x.\ [\![\mathrm{XP}]\!]^{w,g[t_n \to x]}$

  (36) *Pronoun binding (Büring 2004)*

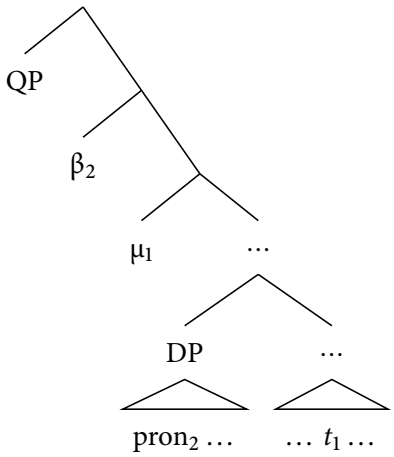
  a. 
  
  where *n* is an index, and DP occupies an A-position

  b. $[\![\beta_n\ \mathrm{XP}]\!]^{w,g} = \lambda x.\ \left[[\![\mathrm{XP}]\!]^{w,g[n \to x]}(x)\right]$

- Movement that obviates WCO (like A-movement or scrambling) involves both operators:

[2] As far as we can see, the choice-function analysis of WCO (Sauerland 1998, Ruys 2000) would be incompatible with the Late-Merge system developed later because it requires interpreting the NP restrictor in the launching site.

(37)




- ***Possessor binding***
  We are going to abstract away from the details of how possessor binding is accomplished. See Büring (2004) for a proposal in terms of e-type pronouns.

- ***Constraining $\beta_n$***
  The restriction that Ā-movement and long scrambling cannot feed pronominal binding then translates into (38).

  (38) *Restriction on $\beta_n$-adjunction*
  The $\beta_n$-operator cannot be adjoined to CP.

- ***Consequence:***
  - ▹ Local scrambling does not land in CP → $\beta_n$ possible → pronominal binding → no WCO
  - ▹ Long scrambling lands in Spec,CP → $\beta_n$ impossible → no pronominal binding → WCO

- ***$\beta_n$ and phases***
  (38) might be an instance of a more general restriction. One general restriction we need to ensure is that pronominal binding is not possible from intermediate landing sites created by Ā-movement.

  (39) *[$_{CP}$ **Who$_1$** did [$_{vP}$ ___$_1$ Sue say [$_{CP}$ ___$_1$ that [$_{vP}$ ___$_1$ **their$_1$** friends admire ___$_1$]]]]?

- This entails the $\beta_n$-operator cannot be inserted below an intermediate landing site of Ā-movement. This entails (40):[3]

  (40) *Restriction on $\beta_n$-adjunction* (supersedes (38))
  The $\beta_n$-operator cannot appear in a phase edge.

- Because CP is a phase, we can dispense with (38) and subsume it under (40).
  - ▹ Long scrambling is subject to WCO because it targets a phase edge. It can hence utilize $\mu_n$ but not $\beta_n$.

[3] More needs to be said about cases where it appears that binding from a phase-edge position is possible, as in Dinka (Van Urk 2015).

- ***Possible account of (40):***

  1. $\beta_n$-adjunction applies postcyclically at LF.
  2. The phase head is part of the phasal Transfer domain (pace Chomsky 2000, 2001).
  3. Labels are projected occurrences of heads (Rezac 2003, Béjar and Rezac 2009, Keine and Dash 2020).
  4. Adjunction to XP requires XP to bear a label (Zeijlstra 2020).

  ➽ LF adjunction of $\beta_n$ to a phase is impossible because Transfer has removed the label necessary for adjunction.

- ***$\beta_n$ vs. $\mu_n$***
  The $\mu_n$-operator is not restricted in this way because, by assumption, it is not created by adjunction but rather represents the interpretation of the movement-inducing feature on the (phase) head (Kratzer 2004, 2009, Adger and Ramchand 2005, Moulton 2009).

- ***Summary***
  Hindi long scrambling and English wh-movement are subject to WCO because they land in CP (a phase) and $\beta_n$-adjunction is hence ruled out.

(41)

| | *English A-movement* | *English $\bar{A}$-movement* | *Hindi local scrambling* | *Hindi long scrambling* |
|---|---|---|---|---|
| Landing site | TP-internal | Spec,CP | TP-internal | Spec,CP |
| $\beta_n$-operator possible? | Y | N | Y | N |
| (S)WCO | N | Y | N | Y |
| SSCO | N | Y | Y | Y |

- **Some extensions:**

  1. ***English topicalization***
     This account extends to topicalization in English. As Lasnik and Stowell (1991) have shown, topicalization does not induce WCO (their "weakest crossover"):

     (42) [ **This book** ]$_1$ I would never ask **its$_1$** author to read ___$_1$ but [ that book ]$_2$ I would Δ

     This correlates with its landing site. Topicalization must land to the right of *that,* hence plausibly below C (Lasnik and Saito 1992). This allows the $\beta_n$-operator and hence binding.

     (43) I think [ that **this book$_1$** everyone should read ___$_1$ ]

  2. ***German scrambling vs. topicalization***
     German has local (i.e., clausebounded scrambling), which is not subject to WCO (Grewendorf 1988, Fanselow 1990, Frey 1993, Haider 1993). It is uncontroversial that such scrambling lands lower than C.

(44) *Scrambling obviates WCO*
dass [ **jeden Jungen** ]$_1$ **seine$_1$** Eltern ___$_1$ abholen werden
that every boy.ACC his parents pick.up will
'that for every boy $x$, $x$'s parents will picked up $x$'

German also allows movement of non-wh elements to Spec,CP (so-called topicalization). Significantly, such movement is subject to WCO (see Frey 1993 and Büring and Hartmann 1994 for wh-movement).

(45) *Topicalization does not obviate WCO*
[ **Jeden Jungen** ]$_1$ haben **seine$_{2/*1}$** Eltern gedacht [$_{CP}$ würde Maria ___$_1$ abholen]
every boy.ACC have his parents thought would Maria pick.up
'Every boy$_1$, his$_2$ parents thought that Maria would pick up.'

➪ Here too WCO correlates with the landing site of movement, in line with (38)/(40).

- ***Question:***
While WCO might thus correlate with the position of the landing site of a movement step, SSCO clearly does not: Local scrambling lands in a TP-internal position but exhibits SSCO effects.

  ▷ *What property of a movement type conditions the (S)SCO facts?*

# 5. Strong crossover: Launching site

## 5.1. Condition C

- ***The problem***
We saw that local scrambling is subject to SSCO but not (S)WCO:

(46) a. *Local scrambling is subject to SSCO …* =(14)
*[ **har laṛke-kii$_1$** behin-ko ]$_2$ **us-ne$_1$** ___$_2$ ḍããṭaa
every boy-GEN sister-ACC he-ERG scolded
*Intended:* 'For every boy $x$, $x$ scolded $x$'s sister.'

b. *… but not subject to SWCO* =(13)
[ **har laṛke-kii$_1$** behin-ko ]$_2$ [ **us-ke$_1$** dost-ne ] ___$_2$ ḍããṭaa
every boy-GEN sister-ACC he-GEN friend-ERG scolded
'For every boy $x$, $x$'s friend scolded $x$'s sister.'

- So far, our account predicts binding in both because $\beta_n$ may be adjoined below the landing site.

- ***Observation:***
In Hindi, Condition C connectivity mirrors these facts.[4]

[4] The existence of Condition C connectivity effects under extraction has recently been called into question based on experimental

(47) *Local scrambling does not amnesty possessor Condition C violations*

a. * **us-ne$_1$** [ **Sita-ke$_1$** bhaaii-ko ] ḍããṭaa
she-ERG Sita-GEN brother-ACC scolded
*Intended:* 'She$_1$ scolded Sita's$_1$ brother.'

b. * [ **Sita-ke$_1$** bhaaii-ko ]$_2$ **us-ne$_1$** ___ $_2$ ḍããṭaa
Sita-GEN brother-ACC she-ERG scolded
*Intended:* 'Sita's$_1$ brother, she$_1$ scolded.'

- If the pronoun does not c-command the launching site, the restriction does not arise:

(48) *Control structure: no c-command*
[ **Sita-ke$_1$** bhaaii-ko ]$_2$ [ **us-kii$_1$** sahelii-ne ] ___ $_1$ ḍããṭaa
Sita-GEN brother-ACC she-GEN female.friend-ERG scolded
'Sita's$_1$ brother, her$_1$ friend scolded.'

➽ ***Conclusion:***
SSCO coincides with Condition C connectivity. A natural interpretation is that they are connected: SSCO reduces to Condition C.

- Like local scrambling, long scrambling shows Condition C connectivity:

(49) *Long scrambling does not amnesty possessor Condition C violations*
* [ **Sita-ke$_1$** bhaaii-ko ]$_2$ **us-ne$_1$** socaa [ ki Sangita-ne ___ $_2$ ḍããṭaa ]
Sita-GEN brother-ACC s/he-ERG thought that Sangita-ERG scolded
*Intended:* 'Sita's$_1$ brother, she$_1$ thought that Sangita scolded (her).'

(50) *Control structure: no c-command*
[ **Sita-ke$_1$** bhaaii-ko ]$_2$ [ **us-kii$_1$** sahelii-ne ] socaa [ ki Sangita-ne ___ $_2$
Sita-GEN brother-ACC s/he-GEN female.friend-ERG thought that Sangita-ERG
ḍããṭaa ]
scolded
'Sita's$_1$ brother, her$_1$ friend thought that Sangita scolded (her).'

- ***English:***
Some support for the link between SSCO and Condition C comes from English A-movement. A-movement is subject to neither SSCO nor possessor Condition C connectivity:

(51) *English A-movement*

a. *No SSCO*
[ **Every boy's$_1$** mother ]$_2$ seems to **him$_1$** ___ $_2$ to be a genius.

results (e.g., Adger et al. 2017, Bruening and Khalaf 2019). See, however, Wierzba et al. (to appear) and Stockwell et al. (2020) for experimental evidence for Condition C connectivity and discussion of possible factors that might have prevented earlier studies from detecting the effect.

b. *No possessor Condition C connectivity*
[ **John's$_1$** mother ]$_2$ seems to **him$_1$** [ ___ $_2$ to be a genius ]

- The situation with Ā-movement is less clear. Sentences like (52) seem degraded, but similar configurations are judged as acceptable by Postal (1993) and Safir (1999).

(52) *Possessor Condition C connectivity in English Ā-movement*
* [ **John's$_1$** mother ]$_2$ **he$_1$** thinks [ ___ $_2$ is a genius ]

(53)

| | *English A-movement* | *Hindi local scrambling* | *English Ā-movement* | *Hindi long scrambling* |
|---|---|---|---|---|
| (S)WCO | **N** ((4a),(25a)) | **N** ((7),(13)) | **Y** ((4b),(25b)) | **Y** (28) |
| SSCO | **N** (24a) | **Y** (14) | **Y** (24b) | **Y** (29) |
| Condition C connectivity w/ possessors | **N** (51b) | **Y** (47) | **Y** (52) | **Y** (49) |

- ***Question:***
Can we find an independent correlate of SSCO/Condition C connectivity across these movement types? What does it tell us about the underlying cause of these effects?

- ***Our answer:***
SSCO/Condition C connectivity track properties of the launching site of movement, in particular the presence of a full copy. This in turn coincides with nominal licensing. We implement this connection using Takahashi and Hulsey's (2009)'s system of *Wholesale Late Merge*.

## 5.2. Late Merge, Case, and Condition C

### *5.2.1. Late Merge*

- Lebeaux (1988, 2000) observes that an R-expression inside an adjunct does not give rise to Condition C connectivity under either A- or Ā-movement.

(54) [ Which picture that **Mary$_1$** took during her recent trip ]$_2$ did **she$_1$** show ___ $_2$ to Alex?

- Lebeaux (1988, 2000) proposes that the relative clause can be late-merged to the DP *after* this DP has undergone movement.[5]

(55) a. [C [she$_1$ show [which picture] to Alex] ]

b. [ [Which picture] C [she$_1$ show ⟨[which picture]⟩ to Alex] ]

c. [ [Which picture] **that Mary$_1$ took during her recent trip**] C [she$_1$ show ⟨[which picture]⟩ to Alex] ]

[5] See Sportiche (2019) for recent arguments against Late Merge. It seems to us that our Late-Merge system could be replaced with Sportiche's (2016) *Neglect* system, on which subparts of a copy in the launching site can selectively be ignored at LF. The most direct way of porting our Late-Merge system over to a Neglect system is by making Neglect sensitive to case/licensing, though this is not the route that Sportiche (2016) takes.

➪ Because the lower copy does not contain an R-expression, Condition C is respected.

- ***Condition C connectivity with possessors: an asymmetry***
  If an R-expression is embedded inside an argument or possessor, Condition C connectivity arises with Ā-movement, but not with A-movement.

  (56) a. *A-movement*
  [ **John's$_1$** mother ]$_2$ seems to **him$_1$** [ ___ $_2$ to be a genius ]

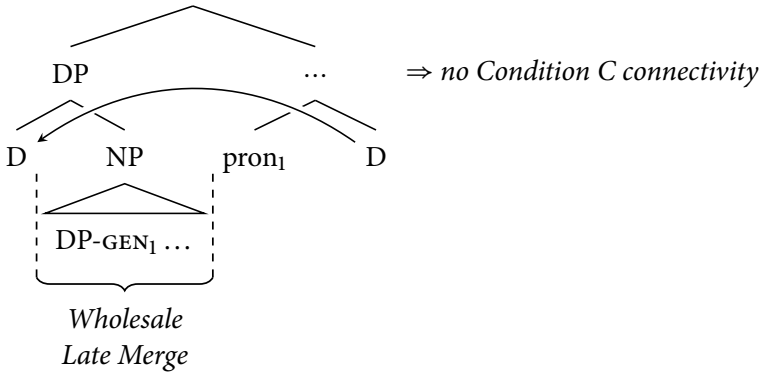
  b. *Ā-movement*
  * [ **John's$_1$** mother ]$_2$ **he$_1$** thinks [ ___ $_2$ is a genius ]

- ***Wholesale Late Merge (WLM)***
  Building on Sauerland (1998), Fox (1999), Bhatt and Pancheva (2004), and others, Takahashi and Hulsey (2009) extend Lebeaux's (1988, 2000) Late Merge account to asymmetries of this type (also see Stanton 2016, Safir 2019):

  ▷ ***English A-movement***
  Takahashi and Hulsey (2009) propose that A-movement has the option of late-merging the NP restrictor (so-called *Wholesale Late Merger,* WLM).

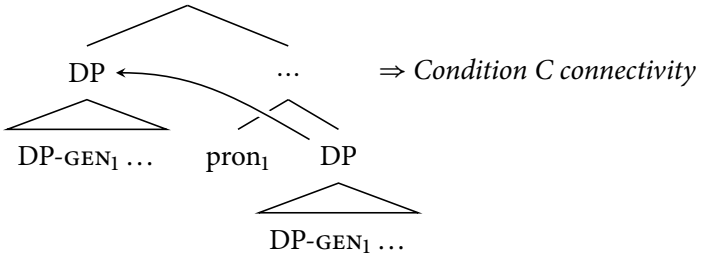
  – Because the launching site only contains a D head, Condition C is not violated.
  – More generally, after Trace Conversion, the D head in the launching site is not different from a pronoun in the relevant respects, and it is hence not subject to Condition C for principled reasons.

  (57) *Takahashi and Hulsey's (2009) analysis of English A-movement*




- ***English Ā-movement***
  Ā-movement does not have access to WLM. It leaves behind a copy of the moved DP minus adjuncts. Assuming that possessors cannot be late-merged (Safir 1999), a possessor R-expression gives rise to Condition C connectivity.

(58) *Takahashi and Hulsey's (2009) analysis of English $\bar{A}$-movement*




- ***Restricting WLM: The role of Case***
  To ensure that Condition C is obviated with possessors only under A-movement, the WLM derivation in (57) must only be available to A-movement.

  ▹ Importantly, Takahashi and Hulsey (2009) do not stipulate this restriction as such, but attribute it to Case: Concretely, they assume that the NP restrictor is subject to the Case Filter, and as a result, the NP restrictor must be merged prior to the DP reaching a position in which its case is assigned.[6]

  ▹ If WLM applied after T assigns nominative to a DP, the NP would not receive case, violating (59).

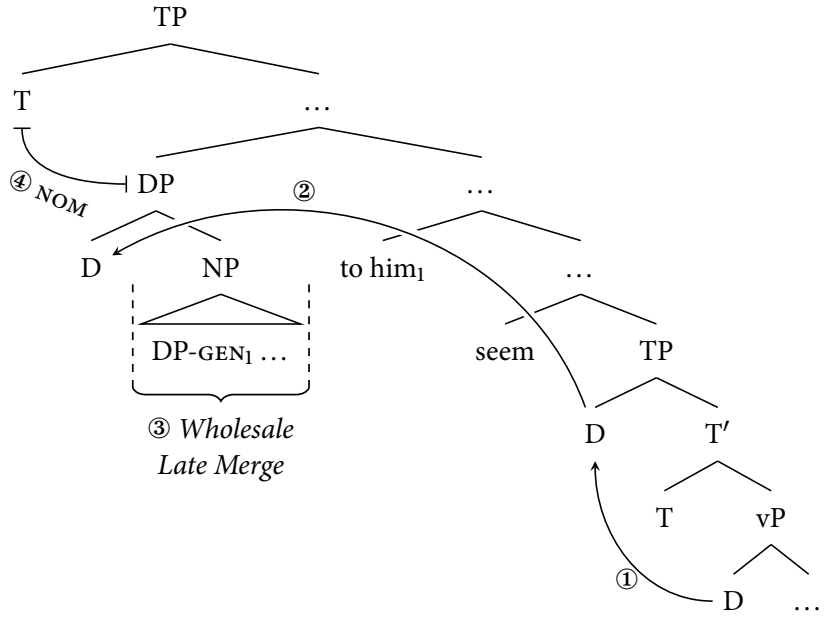
  (59) *Takahashi and Hulsey's (2009) restriction on Wholesale Late Merge*
  The NP restrictor is subject to the Case Filter. Wholesale Late Merge therefore cannot target a D after this D has been assigned Case.

- ***English A-movement***
  Nominative case is assigned by finite T in English. Assuming that a raising subject may undergo intermediate movement to vP (Sauerland 2003), it is possible for a raising subject to move over the experiencer before being assigned Case. This enables WLM.

[6] Takahashi and Hulsey's (2009) account assumes a framework in which nominal licensing is accomplished by abstract Case. We might be able to preserve Takahashi and Hulsey's (2009) analysis without making such a commitment (Ethan Poole, p.c.). We assume, as is standard, that nominative case in English is assigned by finite T (see, e.g., Preminger 2020 for this claim in a framework that eschews abstract Case). We can then stipulate (i).

(i) The case of the NP restrictor must match the case of the D.

(60) *WLM in A-movement*




- ***English Ā-movement***
  Ā-movement takes place after Case has been assigned. If WLM applied to the landing site of Ā-movement, the Case Filter would be violated.

➽ ***Consequence***
Only A-movement obviates Condition C violations with possessors.

– – – – – – – – – – – – – – – – – – – – – – – – – –

### *5.2.2. Extension to Hindi scrambling*

- Takahashi and Hulsey (2009) emphasize that on their account, the availability of WLM is not conditioned by the A/Ā-landing site, but rather by Case/case. This aspect of their proposal is crucial for our analysis of Hindi.

- ***Late Merge in Hindi:***
  Like English, Hindi allows Late Merge with adjuncts. (61) illustrates this for relative clauses.

(61) *No Condition C connectivity with relative clauses*

a. * **us-ne$_1$** kal [vo kitaab jo **Ram-ko$_1$** pasand thii ] bec dii
s/he-ERG yesterday that book REL Ram-DAT like AUX sell give
*Intended:* 'He$_1$ sold the book that Ram$_1$ liked yesterday.'

b. [vo kitaab jo **Ram-ko$_1$** pasand thii ]$_2$ **us-ne$_1$** kal ___$_2$ bec dii
that book REL Ram-DAT like AUX s/he-ERG yesterday sell give
'The book that Ram$_1$ liked, he$_1$ sold yesterday.'

- But recall that we get Condition C connectivity with possessors:

(62) *[ **Sita-ke$_1$** bhaaii-ko ]$_2$ **us-ne$_1$** ___$_2$ ḍããṭaa
Sita-GEN brother-ACC she-ERG scolded
*Intended:* 'Sita's$_1$ brother, she$_1$ scolded.'

- Assuming that Condition C connectivity with possessors requires WLM (just as in English), it is specifically WLM (rather than Late Merge in general) that is ruled out with scrambling.

➽ *Why does Hindi scrambling not allow WLM?*

- ***The role of case/licensing:***
It is uncontroversial that scrambling is not necessary for nominal licensing. That is, a nominal is licensed before it undergoes scrambling.

▹ This also holds for the distribution of case. Scrambling never affects the case of the scrambled DP. A DP receives case before it undergoes scrambling.

(63) *Case connectivity: Accusative*

a. Sita-ne Ram-{ko/*se/*kaa/*∅} dekhaa
Sita-ERG Ram-{ACC/*INSTR/*GEN/*∅} saw
'Sita saw Ram.'

b. Ram-{ko/*se/*kaa/*∅}$_1$ Sita-ne ___$_1$ dekhaa
Ram-{ACC/*INSTR/*GEN/*∅} Sita-ERG saw
'Sita saw Ram.'

(64) *Case connectivity: Instrumental*

a. Pratap Sita-{se/*ko/*kaa/*∅} milaa hai
Pratap Sita-{INSTR/*ACC/*GEN/*∅} met AUX
'Pratap has met Sita.'

b. Sita-{se/*ko/*kaa/*∅}$_1$ Pratap ___$_1$ milaa hai
Sita-{INSTR/*ACC/*GEN/*∅} Pratap met AUX
'Pratap has met Sita.'

➽ So it seems clear that scrambling applies *after* nominal licensing and case assignment.

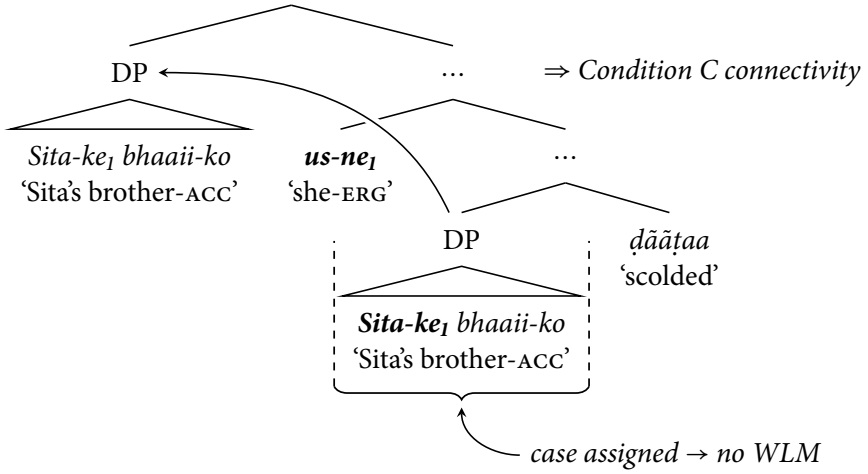
- ***Consequences for WLM:***
Because WLM is possible only until a DP is licensed/receives case, Takahashi and Hulsey's (2009) account predicts this link:

▹ Since scrambling does not feed case assignment, it follows that it is not possible for scrambling to feed WLM.

▹ ***Condition C connectivity***
The obligatory presence of the NP restrictor then immediately results in Condition C connectivity with possessors:

(65) *[ **Sita-ke$_1$** bhaaii-ko ]$_2$ **us-ne$_1$** ___$_2$ ḍããṭaa
Sita-GEN brother-ACC she-ERG scolded
*Intended:* 'Sita's$_1$ brother, she$_1$ scolded.'

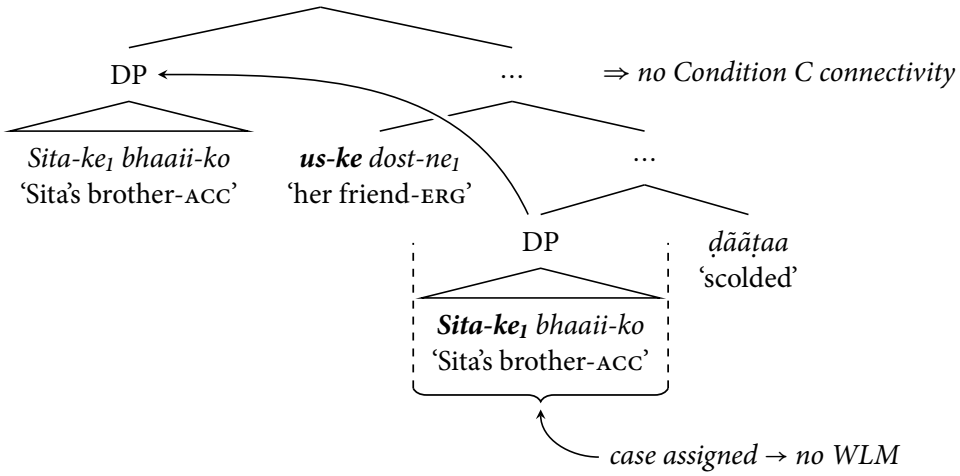
(66) *Structure of (65)*




- If the pronoun does not c-command the launching site, Condition C is respected:

(67) [ **Sita-ke$_1$** bhaaii-ko ]$_2$ [ **us-ke$_1$** dost-ne ] ___$_1$ ḍããṭaa
Sita-GEN brother-ACC she-GEN friend-ERG scolded
'Sita's$_1$ brother, her$_1$ friend scolded.'

(68) *Structure of (65)*

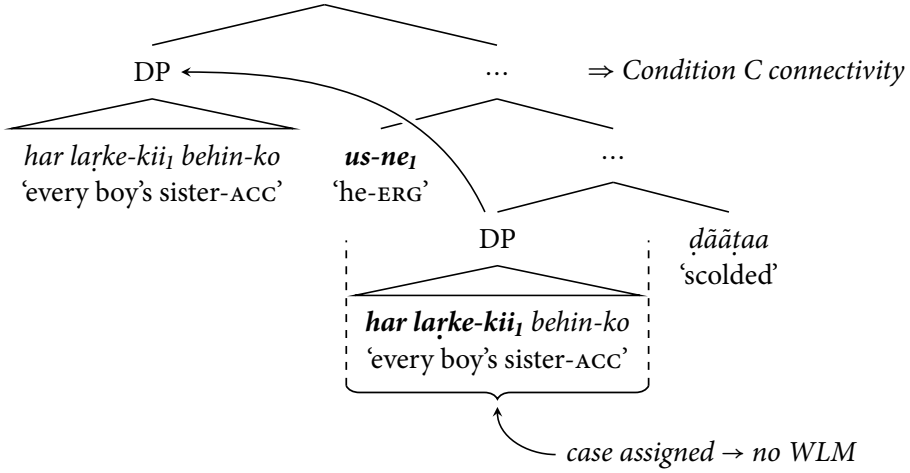



▷ ***SSCO and SWCO:***
Assuming that quantified DPs are R-expressions and hence subject to Condition C, this account extends straightforwardly to SSCO effects. It also derives the difference between SSCO and SWCO.

(69) *SSCO*

*[ **har** **laṛke-kii$_1$** behin-ko ]$_2$ **us-ne$_1$** ___$_2$ ḍããṭaa
every boy-GEN sister-ACC he-ERG scolded
*Intended:* 'For every boy *x*, *x* scolded *x*'s sister.'

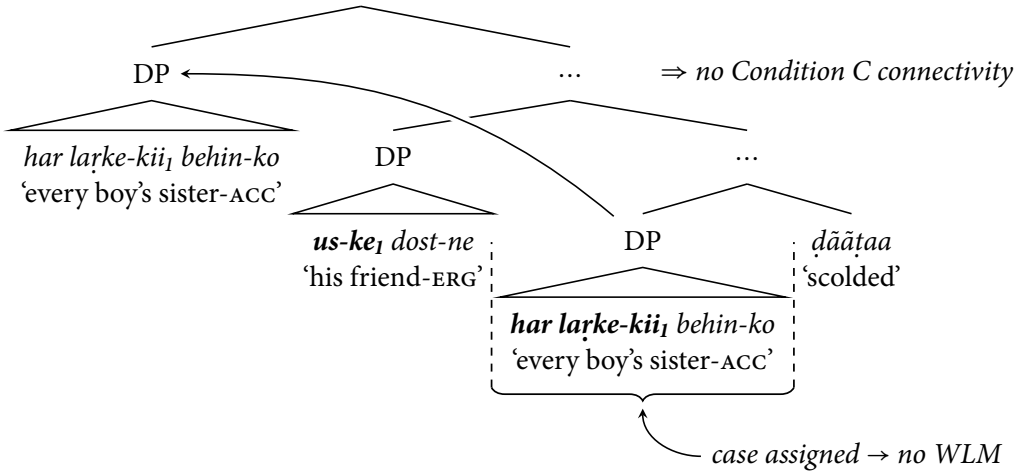
(70) *Structure of (69)*




(71) *No SWCO*

[ **har** **laṛke-kii$_1$** behin-ko ]$_2$ [ **us-ke$_1$** dost-ne ] ___$_2$ ḍããṭaa
every boy-GEN sister-ACC he-GEN friend-ERG scolded
'For every boy *x*, *x*'s friend scolded *x*'s sister.'

(72) *Structure of (71)*




- As far as the **landing site** is concerned, binding is possible in both (70) and (72). (70) is ungrammatical because its **launching site** gives rise to a Condition C violation.

- ***Conclusion:***
  - ▹ Local scrambling can lead to pronominal binding from its **landing site**, and this is why there is no (S)WCO.
  - ▹ But a second constraint is that the **launching site** does not give rise to a Condition C effect w.r.t. the pronoun. If the pronoun c-commands the launching site (i.e., in (S)SCO contexts), Condition C is violated and binding hence impossible.

  ➽ SSCO tracks properties of the launching site; (S)WCO tracks properties of the landing site. In Hindi, they diverge.

  - ▹ SSCO reduces to a Condition C effect.

---

## 5.3. Extension to reciprocal binding

- Our account of SSCO extends to another puzzle in Hindi. The reciprocal pronoun *ek duusre* can be bound by a local c-commanding antecedent or a possessor:

(73) *Reciprocal binding*

a. [**Rina aur Mina**]-**ne**$_1$ [**ek duusre-ke** dostõ-ko ] ḍããṭaa
Rina and Mina -ERG each other's friends-ACC scolded
'Rina and Mina$_1$ scolded each other's$_1$ friends.'

b. [**Rina aur Mina**]-**ne**$_1$ **ek duusre-ko**$_1$ ḍããṭaa
Rina and Mina -ERG each other-ACC scolded
'Rina and Mina$_1$ scolded each other$_1$.'

- Local scrambling may feed reciprocal binding (Bhatt and Dayal 2007, Bhatt 2016, Keine 2018), but only if the reciprocal is embedded within another DP (Kidwai 2000, Bhatt 2016):

(74) *Reciprocal binding and scrambling*

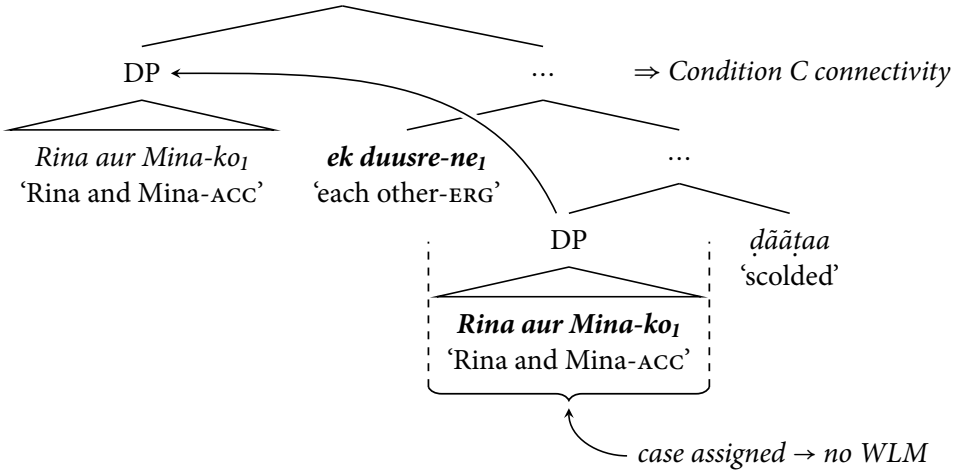
a. [**Rina aur Mina**]-**ko**$_1$ [**ek duusre-kii**$_1$ maaõ-ne ] ___$_1$ ḍããṭaa
Rina and Mina -ACC each other-GEN mothers-ERG scolded
'Rina and Mina$_1$, each other's$_1$ mothers scolded (them).'

b. *[**Rina aur Mina**]-**ko**$_1$ **ek duusre-ne**$_1$ ___$_1$ ḍããṭaa
Rina and Mina -ACC each other-ERG scolded
*Intended:* 'Rina and Mina$_1$, each other$_1$ scolded (them).'

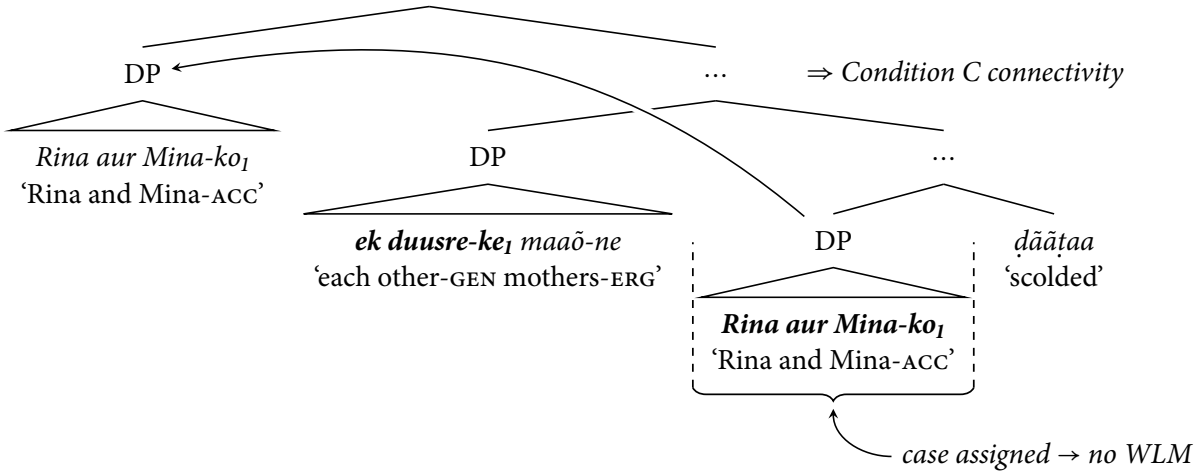
- Conflicting conclusions have been drawn from the data points in (74).
  - ▹ Bhatt and Dayal (2007) and Bhatt (2016) conclude from (74a) that scrambling lands in an A-position, which enables binding.
  - ▹ Kidwai (2000) concludes from (74b) that scrambling does *not* land in an A-position because otherwise binding should be possible.

- We can make sense of this apparent conflict once we focus on the properties of the launching site.
  - ▹ Scrambling lands in an A-position but it leaves behind a full copy. If the reciprocal is unembedded, it c-commands this full copy, giving rise to a Condition C violation (75).

(75) *Structure of (74b)*




(76) *Structure of (74a)*




## 5.4. Delaying licensing

- ***Prediction***
  In configurations in which case assignment is delayed to a structurally higher head, we expect WLM to be possible up until the point at which this head is merged into the structure. In this case, SSCO and Condition C connectivity should be obviated.

- ***Hindi passives***
  Hindi has passivization in which the internal argument may be licensed by finite T (pace Mahajan 1995).

- While Hindi has DOM, certain objects (like pronouns) cannot occur in the null-marked ("nominative") case form in object position:

  (77) *Active sentence: Object pronoun must bear -ko*
  Ram-ne **mujh-ko/*mãĩ** bagiice-mẽ dekhaa thaa
  Ram-ERG me-ACC/*I.NOM orchard-LOC see AUX
  'Ram had seen me in the orchard.'

- Under passivization, these pronouns may appear in the nominative case form but they do not have to (Bhatt 2005).

  (78) *Passive sentence: -ko is possible but not required*

  a. **mãĩ** bagiice-mẽ dekhii gayii thii
  I.FEM.NOM orchard-LOC see PASS AUX
  'I had been seen in the orchard.'

  b. **mujh-ko** bagiice-mẽ dekhaa gayaa thaa
  I-ACC orchard-LOC see PASS AUX
  'I had been seen in the orchard.'

- Importantly, nominative case on such elements depends on finite T. If a passive configuration occurs in a nonfinite clause, nominative is impossible.[7]

  (79) *Infinitival passive sentence: -ko is required*
  [**mujh-ko/*mãĩ** bagiice-mẽ dekhaa jaanaa] acchii baat hai
  me-ACC/*I.NOM orchard-LOC see PASS good thing is
  'For me to be seen in the orchard is a good thing.'

- Animate quantificational DPs likewise depend on licensing from finite T in passives:

  (80) **har laṛkii** bagiice-mẽ dekhii gayii thii
  every girl orchard-LOC see PASS AUX
  'Every girl was seen in the orchard.'

  (81) *[**har laṛkii** bagiice-mẽ dekhaa jaa-naa ] acchii baat hai
  every girl orchard-LOC see PASS-INF good thing is
  *Intended:* 'For every girl to be seen in the orchard is a good thing.'

- ***Conclusion***
  Such subjects depend on licensing by finite T (Bhatt 2007).

- ***Prediction***
  In such cases, SSCO effects should be obviated because WLM becomes possible until finite T is merged.

[7] The pronoun in (79) may also bear genitive case but this is not relevant for our purposes. What matters is that nominative is ruled out.

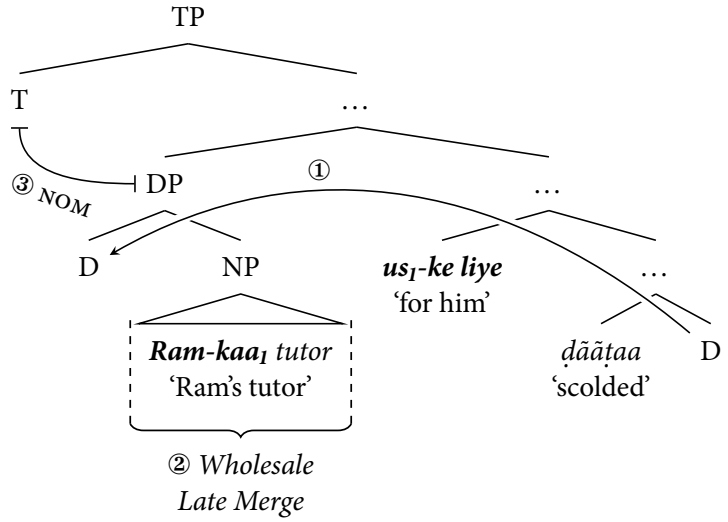
1. ***Case 1: WLM in passives***
Animate QP subjects of passives may bind into adjuncts. Both SWCO and SSCO seems completely obviated:

(82) *No SWCO effect*
[**har** **chaatr-kaa$_1$** tutor]$_2$ [**us$_1$-ke** dostõ-ke liye] ___$_2$ ḍ̃ãạ̃taa gaayaa
every student-GEN tutor s/he-GEN friends-for scold PASS
'For every student $x$, $x$'s tutor was scolded for $x$'s friends.'

(83) *No SSCO effect*
[**har** **chaatr-kaa$_1$** tutor]$_2$ **us$_1$-ke liye** ___$_2$ ḍ̃ãạ̃taa gaayaa
every student-GEN tutor s/he-for scold PASS
'For every student $x$, $x$'s tutor was scolded for $x$.'

(84) *No Condition C connectivity*
[**Ram-kaa$_1$** tutor]$_2$ **us$_1$-ke liye** ___$_2$ ḍ̃ãạ̃taa gaayaa
Ram-GEN tutor s/he-for scold PASS
'Ram's$_1$ tutor was scolded for him$_1$.'

(85) *WLM in (84)*




▹ We then get contrastive pairs like (86), where SSCO is obviated in passive clauses but not in active clauses.

(86) a. *Active clause → internal argument licensed in-situ → no WLM → SSCO*
*Ram-ne [**har** **mãã-kii$_1$** tasviir]$_2$ **us$_1$-ke liye** ___$_2$ banaayii
Ram-ERG every mother-GEN picture s/he-for make
*Intended:* 'For every mother $x$, Ram took $x$'s picture for $x$.'

b. *Passives clause → internal argument licensed by T → WLM → no SSCO*
[**har** **mãã-kii$_1$** tasviir]$_2$ **us$_1$-ke liye** ___$_2$ banaayii gaayii
every mother-GEN picture s/he-for make PASS
'For every mother $x$, $x$'s picture was taken for $x$.'

▹ ***Caveat***

The lack of a Condition C effect in (84) is striking but we should note that it also obtains if the subject bears *-ko*. This is not unproblematic because in this case the subject is presumably licensed in a lower position and WLM should be unavailable. We do not know what to make of this.

(87) [ **Ram-kaa$_1$** tutor-ko ]$_2$ **us$_1$-ke liye** ___ $_2$ ḍããṭaa gaayaa
Ram-GEN tutor-ACC s/he-for scold PASS
'Ram's$_1$ tutor was scolded for him$_1$.'

**2.** ***Case 2: Small clauses***

Hindi has small-clause structures like (88), in which a nominative DP cooccurs with a dative DP. As in the passives, the nominative DP can surface only in the presence of finite T (89).

(88) Sita Sangita-ko acchii lagtii hai
Sita Sangita-DAT good seem AUX
'Sita seems good to Sangita.'

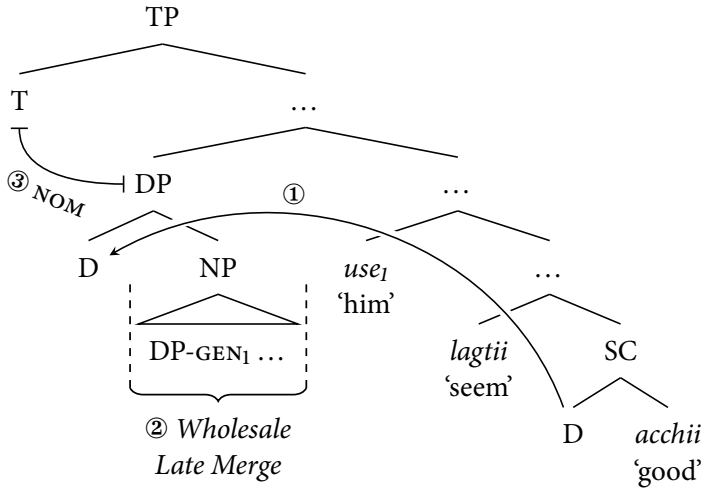
(89) [ (*Sita) sab-ko acchaa lagnaa ] mere-liye mahatvapuurn hai
Sita all.day good seem-INF me-for important is
'(*Sita's) seeming good all day is important to me.'

The movement of a nominative QP over a matrix dative DP may feed binding (90), at least marginally. While the corresponding SSCO structure in (91) is degraded, it is better than the SSCO violations we saw above.

(90) *No SWCO*
[ **har laṛke-kii$_1$** beṭii ]$_2$ [ **us-kii$_1$** behin-ko ] ___ $_2$ acchii lagtii hai
every boy-GEN daughter s/he-GEN sister-DAT good seem AUX
'For every boy *x*, *x*'s daughter seems to *x*'s sister to be good.'

(91) *SSCO amelioration*
?(?) [ **har laṛke-kii$_1$** beṭii ]$_2$ **use$_1$** ___ $_2$ acchii lagtii hai
every boy-GEN daughter him.DAT good seem AUX
'For every boy *x*, *x*'s daughter seems to *x* to be good.'

(92) *WLM in (91)*




(93) *No Condition C connectivity*
[ **Ram-kii$_1$** beṭii ]$_2$ **use$_1$** ___$_2$ acchii lagtii hai
Ram-GEN sister him.DAT good seem AUX
'Ram's$_1$ sister seems to him$_1$ to be good.'

- ***Conclusion***
  While there are some puzzles left to resolve, there is some empirical support for connecting WLM to the locus of nominal licensing.

## 6. Summary: Crossover asymmetries

- We investigated an apparently paradoxical constellation of properties of Hindi scrambling relative to the A/$\bar{\text{A}}$-distinction: scrambling behaves like A-movement in not being subject to WCO, but like $\bar{\text{A}}$-movement in being subject to Condition C connectivity and (S)SCO.

- We proposed that WCO and SCO have distinct sources:
  - (S)WCO is conditioned by the landing site of movement.
  - (S)SCO and Condition C connectivity are conditioned by the launching site of movement.

- ***Three types of movement:***

  **1.** *English A-movement:*
  TP-internal landing site → no (S)WCO
  pre-case → no SSCO, no Condition C connectivity

2. *Hindi local scrambling:*
   TP-internal landing site → no (S)WCO
   post-case → SSCO, Condition C connectivity
3. *English wh-movement, Hindi long scrambling:*
   CP landing site → (S)WCO
   post-case → SSCO, Condition C connectivity

- Our analysis does not treat scrambling as a third primitive type of movement with an arbitrary set of properties. Rather, WCO on the one hand and SSCO and Condition C connectivity on the other are conditioned by independent properties of a movement type.

(94)

| | *English A-movement* | *Hindi local scrambling* | *English $\bar{A}$-movement* | *Scrambling′?* |
|---|---|---|---|---|
| Landing site | TP | TP | CP | CP |
| $\beta_n$-operator possible? | Y | Y | N | N |
| (S)WCO | N | N | Y | Y |
| (S)SCO | N | Y | Y | (Y) |
| possessor Condition C connectivity | N | Y | Y | N |
| may feed case | Y | N | N | Y |

- ***A fourth type of movement?***
  As it stands, our account gives rise to the expectation that there might also be a fourth movement type (*scrambling′* in (94)): Movement that lands in CP but feeds case assignment is predicted to not allow binding from the landing site, but it should show Condition C obviation with respect to the launching site. Is this the case (one relevant example might be Mongolian, see Fong 2019)?

- ***A- and $\bar{A}$-positions?***
  Our analysis does make reference to A- vs. $\bar{A}$-positions. The relevant properties follow from the syntactic context of the relevant position (phase edge; location of case assigner relative to position).
  - ▹ This naturally accommodates movement types like scrambling, whose properties do not cleanly align with A- or $\bar{A}$-movement.
  - ▹ To what extent can we rethink the properties of A- vs. $\bar{A}$-positions as determined by their context (see Keine 2019, 2020 for a proposal about locality, and Safir 2019 for a particularly ambitious and general proposal)?

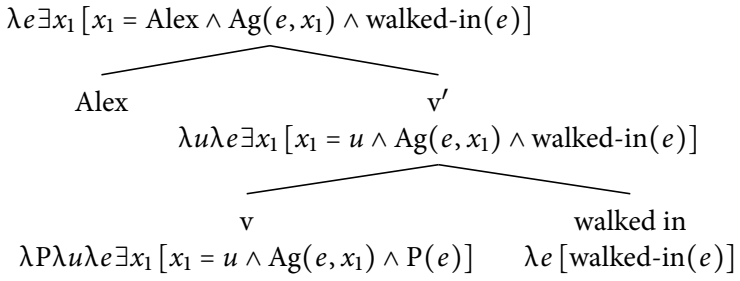
- ***Implications for the A/$\bar{A}$-nature of scrambling:***
  - ▹ Webelhuth (1989), Dayal (1994a), and others: scrambling targets a mixed position that simultaneously has A- and $\bar{A}$-properties.
  - ▹ Mahajan (1990): scrambling can be either A- or $\bar{A}$-movement (but not simultaneously both), and that surface scrambling configurations are ambiguous as to the movement type involved.

- From one perspective, the evidence here argues for treating scrambling as a third type of movement that cannot be reduced to either English A- or $\bar{\text{A}}$-movement, thus providing support for Webelhuth's and Dayal's position.
- However, by recognizing that WCO and (S)SCO correlate with different aspects of a movement type, we obtain a more fine-grained typology of movement that obviates the need to postulate a new type of movement as a theoretical primitive.
- Our account predicts that scrambling in other languages should behave like Hindi scrambling if it shares the relevant properties. See the appendices for preliminary supporting evidence from Turkish and Greek.

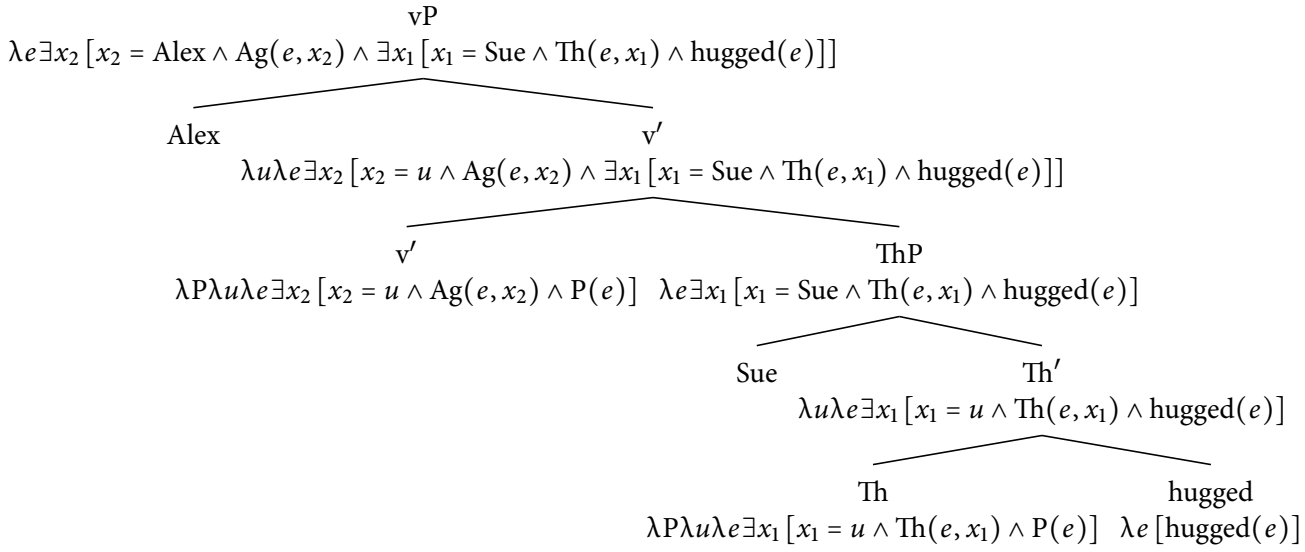
## 7. More on WCO

- ***Pronominal binding and discourse referents:***
  Building on Büring's (2004) proposal, Chierchia (2017, 2020) develops a semantics in which pronouns may only be bound by discourse referents (DRs) and DRs are introduced in positions that *affect* a DP (as a first approximation, Θ-positions).

(95)




(96)



- QPs undergo QR but because pronouns can only be anteceded by discourse referents, a moved QP can take scope from its landing site without being able to bind pronouns from it.

(97) a. Every student walked in.

b. every student$_1$ [ $t_1$ v [ walked in ] ]

c. $\forall u\,[\text{student}(u) \rightarrow \exists e \exists x_1\,[u = x_1 \wedge \text{Ag}(e, x_1) \wedge \text{walked-in}(e)]]$

(98) a. Everyone$_1$ saw their$_1$ advisor.

b. $\forall u \exists e \exists \text{x}_1\,\big[u = x_1 \wedge \text{Ag}(e, x_1) \wedge \exists x_2\,\big[\text{x}_1\text{'s advisor} = x_2 \wedge \text{Th}(e, x_2) \wedge \text{saw}(e)\big]\big]$

(99) a. * Their$_1$ advisor saw everyone$_1$.

b. everyone$_1$ [ their$_1$ advisor saw $t_1$ ]

c. $\forall u \exists e \exists x_2\,\big[\text{x}_1\text{'s advisor} = x_2 \wedge \text{Ag}(e, x_2) \wedge \exists \text{x}_1\,[u = x_1 \wedge \text{Th}(e, x_1) \wedge \text{saw}(e)]\big]$

- So WCO is conditioned by whether a position introduces a discourse referent. What positions introduce discourse referents?

(100) *Affectedness*

a. Derived predicates [ DP$_i$ $\phi$ ] where $\lambda_i$ $\phi$ does not semantically condition the dislocated DP cannot introduce discourse referents.

b. Derived predicates that semantically condition the dislocated DP may introduce discourse referents.

(101) "To 'semantically condition' a constituent means to impose on it tangible requirements that go beyond the lexical meaning of the DP. This happens if, e.g., the predicate assigns to its DP argument a new theta role, or turns it into a topic, or assigns generic force to it, or the like (none of which are done by QR or wh- movement). For now, this list must be left open ended; but in time we may be able to arrive at interesting and constrained typologies. The case of wh-movement is very telling in this connection. Wh-movement is driven by a specific head, the interrogative Comp, which has an unmistakable semantic effect on its TP sister (namely, that of turning it into a question) but doesn't affect the semantics of the moved DPs: the latter are simply indefinites quantified into the question meaning." (Chierchia 2020:71)

- ***Consequence:***
WCO obviation requires a discourse referent, which in turn requires that the displaced DP is "affected" in the above sense.

- At first glance, this would seem to extend to scrambling nicely: local scrambling clearly has discourse effects (hence plausibly introduces a discourse referent) and obviates WCO.

- But such an analysis would need to resolve a number of problems:

1. **WCO obviation without affectedness:**
While Chierchia (2017, 2020), building on Rizzi (2005) and Rizzi and Shlonsky (2007), argues that the

English subject position sometimes imposes an 'aboutness' requirement, this is not always required, yet we get WCO obviation.

2. **Effect of scrambling not uniform:**
   As discussed by, e.g., Kidwai (2000), the effect of scrambling is not uniform. For example, scrambling of a weak indefinite DP requires it to be focused. But scrambling of a definite DP does not.

3. **Scrambling affects other elements:**
   In some cases, scrambling of $DP_1$ affects the interpretation of a nonscrambled $DP_2$. For example, OSV structures are licensed by placing focus on the preverbal subject (Kidwai 2000, Dayal 2003).

   (102) faislaa$_1$ [$_F$ ham] ___$_1$ karte hãĩ
   decisions we do AUX
   'WE make the decisions.'

4. **Local vs. long scrambling:**
   The difference between local and long scrambling w.r.t. WCO needs to be implemented as differences in the introduction of a discourse referent. While local and long scrambling differ in their information-structural effect, it is not clear that long scrambling lacks one altogether.

- Thus, while Chierchia's (2017, 2020) offers a novel and insightful way of thinking about what conditions WCO, some nontrivial problems need to be resolved before this account extends to scrambling. This seems like a promising project but we will not pursue it here.

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## Appendix A: Scrambling in Turkish

- The following data are due to Bilge Palaz (p.c.).

(103) *Scrambling feeds binding*
**Her** **çocuğ-u$_1$** [***pro*$_{1/2}$** kardeş-i] ___$_1$ azarladı.
every child-acc sibling-POSS scolded
'For every child $x$, {$x$'s/somebody else's} sibling scolded $x$.'

(104) *Binding by possessors*
[**Her** **çocuğ-un$_1$** kardeş-u] **onu$_{1/2}$** azarladı.
every child-GEN sibling-POSS him/her scolded
'For ever child $x$, $x$'s sibling scolded {$x$/someone else}.'

(105) *Scrambling + binding by possessor*
[**Her** **çocuğ-un$_1$** kardeş-i-ni]$_2$ [***pro*$_{1/2}$** arkadaş-ı] ___$_2$ azarladı.
every child-GEN sibling-POSS-ACC friend-POSS scolded
'For every child $x$, $x$'s friend scolded $x$'s sibling.'
(*unbound readings and binding by the j index also possible*)

(106) *No binding if pronoun c-commands trace*
[**Her** **çocuğ-un$_1$** kardeş-i-ni]$_2$ **o$_{*1/2}$** ___$_2$ azarladı.
every child-GEN sibling-POSS-ACC he/she scolded
'For every child $x$, he/she scolded $x$'s sibling.'
*NOT*: 'For every child $x$, $x$ scolded $x$'s sibling.'

## Appendix B: Greek

- The following data are due to Giorgos Spathas (p.c.). Also see Iatridou (1995) for relevant discussion.

(107) *Clitic doubling (+ fronting) feeds binding*

a. *WCO*
*[I mitera **tu$_1$**] ajapai (to) **kathe pedhi$_1$**.
the mother his loves the every boy
'His mother loves every boy.'

b. *Clitic doubling → no WCO*
[I mitera **tu$_1$**] **to**-ajapai (to) **kathe pedhi$_1$**.
the mother his him-loves the every boy
'For every boy *x*, *x*'s mother loves *x*.'

c. *Clitic doubling + fronting → no WCO*
(To) **kathe pedhi$_1$** **to**-ajapai [i mitera **tu$_1$**].
the every boy him-loves the mother his
'For every boy *x*, *x*'s mother loves *x*.'

(108) *Binding by possessors*
?[I mitera (tu) **kathe mathiti$_1$**] **ton$_1$**-ajapai poli.
the mother the every student him-loves very
'Every student's mother loves him a lot.'

(109) *Clitic doubling (+ scrambling) feeds binding if pronoun does not c-command trace*

a. *WCO*
*Vathmolojise [o dhaskalos **tu$_1$**] [to jrapto (tu) **kathe mathiti$_1$**].
graded the teacher his the exam the every student
*intended:* 'For every student *x*, *x*'s teacher graded *x*'s exam.'

b. *Clitic doubling → no WCO*
?**To**-vathmolojise [o dhaskalos **tu$_1$**] [to jrapto (tu) **kathe mathiti$_1$**].
it-graded the teacher his the exam the every student
'For every student *x*, *x*'s teacher graded *x*'s exam.'

c. *Clitic doubling + fronting → no WCO*
[To jrapto (tu) **kathe mathiti$_1$**] **to**-vathmolojise [o dhaskalos **tu$_1$**].
the exam the every student it-graded the teacher his
'For every student *x*, *x*'s teacher graded *x*'s exam.'

(110) *No binding if pronoun c-commands trace*
*[tin kori (tu) **kathe anthropu$_1$**] **tin**-ajapai *pro*$_1$.
the daughter the every man her-loves
*intended:* 'For every man *x*, *x* loves *x*'s daughter.'