

# A crossover puzzle in Hindi scrambling

Stefan Keine

University of Southern California

(presenting joint work with Rajesh Bhatt)

## 1 Introduction

### • Background and terminology

#### 1. Inverse linking

A possessor may bind a pronoun c-commanded by its host DP (May 1977, Higginbotham 1980, Reinhart 1983). We will refer to this phenomena as *inverse linking* (see May & Bale 2006 for an overview).

- (1) a. [Everyone's<sub>1</sub> mother] thinks **he**<sub>1</sub> is a genius.  
 b. [No one's<sub>1</sub> mother-in-law] fully approves of **her**<sub>1</sub>.

#### 2. Crossover

Crossover arises if a DP moves over a pronoun that it binds and the resulting structure is ungrammatical (Postal 1971, Wasow 1972).

(2) *Strong crossover (SCO): pronoun c-commands trace*

- a. \*DP<sub>1</sub> ... pron<sub>1</sub> ... t<sub>1</sub>  
 b. \*Who<sub>1</sub> does she<sub>1</sub> like \_\_\_\_<sub>1</sub>?

(3) *Weak crossover (WCO): pronoun does not c-command trace*

- a. \*DP<sub>1</sub> ... [DP ... pron<sub>1</sub> ...] ... t<sub>1</sub>  
 b. \*Who<sub>1</sub> does [her<sub>1</sub> mother] like \_\_\_\_<sub>1</sub>?

#### 3. Secondary strong crossover (SSCO)

SSCO refers to ungrammatical configurations that involve strong crossover under inverse linking (van Riemsdijk & Williams 1981, Postal 1993, Safir 1999).

- (4) \*[Whose<sub>1</sub> mother]<sub>2</sub> do you think she<sub>1</sub> likes \_\_\_\_<sub>2</sub>?

#### 4. Condition C connectivity

A movement step displays Condition C connectivity if it reconstructs for

Condition C, i.e., if it does not amnesty a Condition C violation in the base position (see Lebeaux 1988, 2000, Chomsky 1993, Sauerland 1998, Fox 1999, Takahashi & Hulsey 2009).

- (5) a. \*He<sub>1</sub> thinks [John's<sub>1</sub> mother] is intelligent.  
 b. \*[John's<sub>1</sub> mother]<sub>2</sub> he<sub>1</sub> thinks \_\_\_\_<sub>2</sub> is intelligent.

### • Movement-type asymmetries

English A- and  $\bar{A}$ -movement differ w.r.t. several of these properties:

(6) *Weak crossover (WCO)*

- a. *A-movement*  
 Every boy<sub>1</sub> seems to his<sub>1</sub> mother [ \_\_\_\_<sub>1</sub> to be intelligent ]  
 b.  $\bar{A}$ -movement  
 \*Which boy<sub>1</sub> did his<sub>1</sub> mother say [ \_\_\_\_<sub>1</sub> is intelligent ]?

(7) *Secondary strong crossover (SSCO)*

- a. *A-movement*  
 [ Every boy's<sub>1</sub> mother ]<sub>2</sub> seems to him<sub>1</sub> [ \_\_\_\_<sub>2</sub> to be intelligent ]  
 b.  $\bar{A}$ -movement  
 \*[ Whose<sub>1</sub> mother ]<sub>2</sub> does he<sub>1</sub> think [ \_\_\_\_<sub>2</sub> is intelligent ]?

(8) *Condition C connectivity with possessors*

- a. *A-movement*  
 [ John's<sub>1</sub> mother ]<sub>2</sub> seems to him<sub>1</sub> [ \_\_\_\_<sub>2</sub> to be intelligent ]  
 b.  $\bar{A}$ -movement  
 \*[ John's<sub>1</sub> mother ]<sub>2</sub> he<sub>1</sub> thinks [ \_\_\_\_<sub>2</sub> is intelligent ]

- **Goal for today**

We examine and document the apparently paradoxical behavior of local scrambling in Hindi w.r.t. these properties.

- ▷ Scrambling is not subject to WCO → patterns like English A-movement
- ▷ Scrambling displays SSCO and Condition C connectivity → patterns like English  $\bar{A}$ -movement

- **Proposal**

This apparently paradoxical behavior indicates that WCO on the one hand and SSCO and Condition C connectivity on the other **have distinct sources**.

1. WCO is conditioned by the A- or  $\bar{A}$ -nature of the landing site.
2. SSCO and Condition C connectivity are conditioned by **the representation of the moved DP in its launching site**, specifically **whether the launching site has received case or not**.

- **English A-movement:**

movement of a non-case-marked DP to an A-position

- **English  $\bar{A}$ -movement:**

movement of a case-marked DP to an  $\bar{A}$ -position

- (9) (Hindi) scrambling involves movement of an already case-marked DP to an A-position.
- a. Because the movement targets an A-position, it is resilient to WCO.
  - b. Because the movement applies to a case-marked DP, it is subject to SSCO and Condition C connectivity.

- **SSCO, Condition C, and case**

To derive the connection between SSCO, Condition C connectivity, and case, we adopt Takahashi & Hulsey's (2009) *Wholesale Late Merge* account, which is crucially linked to case.

- As a result, (Hindi) scrambling behaves like A-movement w.r.t. the properties of the landing site (WCO) but like  $\bar{A}$ -movement w.r.t. the properties of the trace (SSCO and Condition C).

## 2 A scrambling puzzle

- **Goal**

We investigate the crossover properties of local (i.e., clausebounded) scrambling in Hindi (which we will simply refer to as “scrambling” in what follows).

- **Weak crossover**

A standard generalization about local scrambling in Hindi is that it is not subject to WCO (Mahajan 1990, Gurtu 1992, *et seq.*); see (10). In this respect, scrambling clearly behaves like English A-movement (6a).

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

- a. [ **us-kii**<sub>1/\*2</sub> behin-ne ] [ **har larke-ko**<sub>2</sub> ] dāāṭaa  
s/he-GEN sister-ERG every boy-ACC scolded  
'Her/his<sub>1/\*2</sub> sister scolded every boy<sub>2</sub>.'
- b. [ **har larke-ko**<sub>1</sub> ] [ **us-kii**<sub>1</sub> behin-ne ] \_\_\_<sub>1</sub> dāāṭaa  
every boy-ACC s/he-GEN sister-ERG scolded  
'For every boy *x*, *x*'s sister scolded *x*.'

- **Inverse linking**

Hindi allows for inverse linking: a possessor inside a DP may bind a pronoun c-commanded by the container DP.

(11) *Binding by possessor*

- [ **har larke-kii**<sub>1</sub> behin-ne ] **us-ko**<sub>1</sub> dāāṭaa  
every boy-GEN sister-ERG he-ACC scolded  
'For every boy *x*, *x*'s sister scolded *x*.'

- Incidentally, such inverse linking is possible even if the possessor demonstrably cannot move out of the container DP. While Hindi in principle allows possessor extraction, such extraction is not possible out of ergative subjects (12) or *ko*-marked objects (13).

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

- a. kal [ Ram-kii behin-ne ] Anu-ko dāāṭaa  
yesterday Ram-GEN sister-ERG Anu-ACC scolded  
'Yesterday, Ram's sister scolded Anu.'
- b. \*Ram-kii<sub>1</sub> kal [ \_\_\_<sub>1</sub> behin-ne ] Anu-ko dāāṭaa  
Ram-GEN yesterday sister-ERG Anu-ACC scolded

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

- a. us-ne [ Ram-kii behin-ko ] dāāṭaa  
 s/he-ERG Ram-GEN sister-ACC scolded  
 ‘S/he<sub>1</sub> scolded Ram’s<sub>2</sub> sister.’
- b. \*Ram-kii<sub>1</sub> us-ne [ \_\_\_<sub>1</sub> behin-ko ] dāāṭaa  
 Ram-GEN s/he-ERG sister-ACC scolded

• **Inverse linking and movement**

Inverse linking is in principle possible for derived structures as well. In (11), the object *har laṛke-kii behin-ko* ‘every boy’s sister-ACC’ scrambles over the subject, and it may bind the subject-internal pronoun *us-ke*.

(14) *Binding by possessor inside scrambled DP*

- [ har laṛke-kii<sub>1</sub> behin-ko ]<sub>2</sub> [ us-ke<sub>1</sub> dost-ne ] \_\_\_<sub>2</sub> dāāṭaa  
 every boy-GEN sister-ACC he-GEN friend-ERG scolded  
 ‘For every boy *x*, *x*’s friend scolded *x*’s sister.’

• **Secondary strong crossover**

Curiously, however, a possessor contained inside a scrambled DP may *not* bind a pronoun that is crossed by movement if this pronoun c-commands the launching site:

(15) *No binding by possessor if pronoun c-commands trace*

- \*[ har laṛke-kii<sub>1</sub> behin-ko ]<sub>2</sub> us-ne<sub>1</sub> \_\_\_<sub>2</sub> dāāṭaa  
 every boy-GEN sister-ACC he-ERG scolded  
 ‘For every boy *x*, *x* scolded *x*’s sister.’

• (15) constitutes a SSCO configuration similar to (7b). The ungrammaticality of (15) thus indicates that Hindi scrambling is subject to SSCO, like English  $\bar{A}$ -movement.

• **The puzzle**

1. Scrambling feeds variable binding (see (10) and (14));
2. Possessors may bind outside the host DP in the absence of movement (see (11));
3. The trace in (15) is not coindexed with the subject pronoun, so there is no transparent Condition B/C effect w.r.t. the trace.

(16) \* [ every boy’s<sub>1</sub> sister ]<sub>2</sub> ... him<sub>1</sub> ... t<sub>2</sub> ...

► **Why is (15) ungrammatical?**

• **Another way of framing the problem**

Scrambling can feed inverse linking (i.e., binding by a possessor inside the scrambled DP) only if the bound pronoun does not c-command the launching site (see (14) vs. (15)). No analogous restriction holds in the absence of scrambling.

▷ Looks like we are dealing with a constraint on scrambling.

• **Condition C connectivity with possessors**

Hindi scrambling is subject to Condition C connectivity with possessors. (17a) demonstrates that, unsurprisingly, a coindexed subject creates a Condition C violation for a possessor R-expression inside the object. (17b) shows that scrambling of the object over the subject does not obviate this Condition C violation.

(17) *Scrambling does not amnesty Condition C violations*

- a. \*us-ne<sub>1</sub> [ Sita-ke<sub>1</sub> bhaai-ko ] dāāṭaa  
 she-ERG Sita-GEN brother-ACC scolded  
 ‘She<sub>1</sub> scolded Sita’s<sub>1</sub> brother.’
- b. \* [ Sita-ke<sub>1</sub> bhaai-ko ]<sub>2</sub> us-ne<sub>1</sub> \_\_\_<sub>2</sub> dāāṭaa  
 Sita-GEN brother-ACC she-ERG scolded  
 ‘Sita’s<sub>1</sub> brother, she<sub>1</sub> scolded.’

• **Summary**

Hindi scrambling does not align with English A- or  $\bar{A}$ -movement with respect to the above properties.

(18)	English A-movement	Hindi scrambling	English $\bar{A}$ -movement
WCO	N	N	Y
SSCO	N	Y	Y
possessor Condition C connectivity	N	Y	Y

• **Questions**

1. How does scrambling relate to the A/ $\bar{A}$ -movement distinction (see, among many others, Webelhuth 1989, Mahajan 1990, Dayal 1994)?
2. Does scrambling constitute a third primitive type of movement, in addition to the standard A/ $\bar{A}$ -dichotomy, or can this constellation of properties be derived from other, independent properties of scrambling?

### 3 Proposal

- Drawing on Takahashi & Hulsey’s (2009) **Wholesale Late Merger** account of Condition C connectivity, we propose that the SSCO pattern in Hindi scrambling derives from the independent fact that scrambling does not feed case assignment.

- **Scrambling and case**

Hindi scrambling differs from English A-movement in that it is independent of case: scrambling never affects the case of the moving element, and it does not discriminate among DPs based on their case feature (Keine 2018).

(19) *Case connectivity: Accusative*

- a. Sita-ne Ram- $\{ko/*se/*kaa/*\emptyset\}$  dekhaa  
 Sita-ERG Ram- $\{ACC/*INSTR/*GEN/*\emptyset\}$  saw  
 ‘Sita saw Ram.’
- b. Ram- $\{ko/*se/*kaa/*\emptyset\}_1$  Sita-ne  $\text{---}_1$  dekhaa  
 Ram- $\{ACC/*INSTR/*GEN/*\emptyset\}$  Sita-ERG saw  
 ‘Sita saw Ram.’

(20) *Case connectivity: Instrumental*

- a. Pratap Sita- $\{se/*ko/*kaa/*\emptyset\}$  milaa hai  
 Pratap Sita- $\{INSTR/*ACC/*GEN/*\emptyset\}$  met AUX  
 ‘Pratap has met Sita.’
- b. Sita- $\{se/*ko/*kaa/*\emptyset\}_1$  Pratap  $\text{---}_1$  milaa hai  
 Sita- $\{INSTR/*ACC/*GEN/*\emptyset\}$  Pratap met AUX  
 ‘Pratap has met Sita.’

- We conclude that scrambling does not feed case assignment, hence that scrambling targets DPs whose case is already valued prior to scrambling (see Keine 2018 for additional arguments for this conclusion).

⇒ *In this respect, scrambling behaves like  $\bar{A}$ -movement and unlike A-movement.*

- **Proposal**

We propose that the independence of scrambling and case provides the key to understanding the mixed properties of scrambling in regard to WCO, SSCO, and Condition C connectivity. Specifically, we propose (21).

- (21) (Hindi) scrambling involves movement of an already case-marked DP to an A-position.
- Because the movement targets an A-position, it is resilient to WCO.
  - Because the movement applies to a case-marked DP, it is subject to SSCO and Condition C connectivity.

⇒ In other words, we propose that scrambling is A-movement that takes place after case has been assigned to a DP and that it is this combination of properties that underlies the apparently paradoxical properties of scrambling with respect to the A/ $\bar{A}$ -distinction.

#### 3.1 Weak crossover

- **Pronominal binding**

We take for granted, as is standard, that pronominal binding is possible only from A-positions, but not from  $\bar{A}$ -positions.

- **Possible implementations**

- van Riemsdijk & Williams (1981), Williams (2003):  
 Binding applies after A-movement, but before  $\bar{A}$ -movement
- Sauerland (1998, 2004), Ruys (2000), Keine & Poole (2018a,b):  
 A-movement creates  $\lambda$ -abstraction over  $e$ -type variables;  $\bar{A}$ -movement creates  $\lambda$ -abstraction over higher-typed variables.

- **Independent support**

I argue in Keine (2018, 2019) that the type of scrambling in Hindi investigated here lands in a TP-internal position.

- If scrambling targets an A-position, it follows that it is not subject to WCO.

- (22) [ **har larke-ko** ]<sub>1</sub> [ **us-kii**<sub>1</sub> behin-ne ]  $\text{---}_1$  ḍāāṭaa  
 every boy-ACC he-GEN sister-ERG scolded  
 ‘For every boy  $x$ ,  $x$ ’s sister scolded  $x$ .’

- (23) [every boy-ACC]  $\lambda x_e$ . [[  $x$ ’s sister-ERG ] scolded  $x$  ] → *no WCO*

### 3.2 Strong crossover and Condition C connectivity

- We propose that Takahashi & Hulsey's (2009) account of Condition C connectivity combined with (21) derives the result that scrambling behaves like  $\bar{A}$ -movement with respect to these properties.

#### 3.2.1 Late Merge

- 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  $\bar{A}$ -movement.

(24) [ Which picture that Mary<sub>1</sub> took during her recent trip ]<sub>2</sub> did she<sub>1</sub> show \_\_\_<sub>2</sub> to Alex?

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

(25) a. [ C [ she<sub>1</sub> show [ which picture ] to Alex ] ]  
 b. [ [ Which picture ] C [ she<sub>1</sub> show { [ which picture ] } to Alex ] ]  
 c. [ [ Which picture ] **that Mary<sub>1</sub> took during her recent trip** ] C [ she<sub>1</sub> show { [ which picture ] } to Alex ] ]

⇒ 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  $\bar{A}$ -movement, but not with A-movement.

(26) a. *A-movement*  
 [ **John's**<sub>1</sub> mother ]<sub>2</sub> seems to **him**<sub>1</sub> [ \_\_\_<sub>2</sub> to be intelligent ]  
 b.  *$\bar{A}$ -movement*  
 \* [ **John's**<sub>1</sub> mother ]<sub>2</sub> **he**<sub>1</sub> thinks [ \_\_\_<sub>2</sub> is intelligent ]

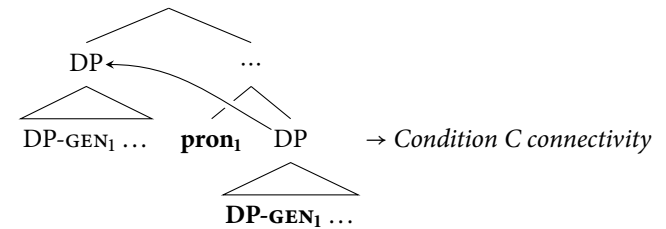
- Wholesale Late Merge (WLM)**

Takahashi & Hulsey (2009) extend Lebeaux's (1988, 2000) Late Merge account to this asymmetry:

- ▷ **English  $\bar{A}$ -movement**

$\bar{A}$ -movement 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.

(27) Takahashi & Hulsey's (2009) analysis of English  $\bar{A}$ -movement

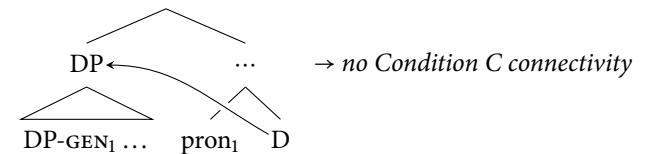


- ▷ **English A-movement**

Takahashi & Hulsey (2009) propose that A-movement has the option of late-merging the NP restrictor (so-called *Wholesale Late Merge*, 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.

(28) Takahashi & Hulsey's (2009) analysis of English A-movement



- **Restricting WLM**

To ensure that Condition C is obviated with possessors only under A-movement, the WLM derivation in (28) must only be available to A-movement.

- Takahashi & 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.

(29) *Restriction on WLM*

WLM cannot target a D after D has been assigned case.

- **English A-movement:** feeds case assignment → has access to a WLM derivation.
- **English  $\bar{A}$ -movement:** does not feed case assignment → WLM into an  $\bar{A}$ -moved DP would violate the Case Filter.

► **Consequence**

Only A-movement obviates Condition C violations with possessors.

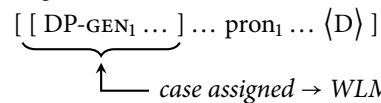
3.2.2 **Extension to Hindi scrambling**

- We proposed in (21) that scrambling is A-movement of an already case-marked DP. Takahashi & Hulseý's (2009) account predicts that in this case, the NP restrictor must be merged before scrambling applies (or else the Case Filter would be violated), just as in the case of  $\bar{A}$ -movement.

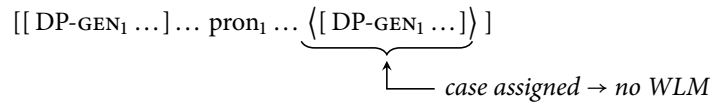
▷ **Condition C connectivity**

The obligatory presence of the NP restrictor then immediately results in Condition C connectivity with possessors. This contrast between English A-movement on the one hand and English  $\bar{A}$ -movement and Hindi scrambling on the other is schematized in (30) and (31), respectively.

(30) *English A-movement: no Condition C connectivity; no (S)SCO*



(31) *Scrambling/ $\bar{A}$ -movement: Condition C connectivity; (S)SCO*

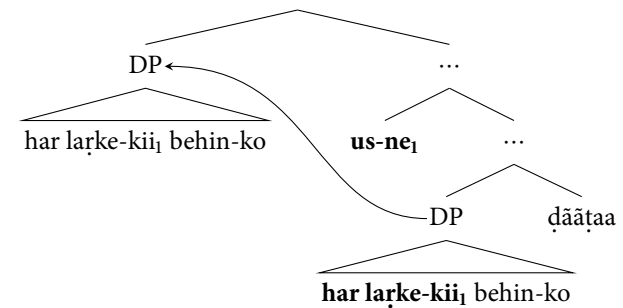


• **SSCO**

Assuming that quantified DPs qualify as R-expression under the binding theory, we also derive the observation, repeated here as (32), that scrambling is subject to SSCO, like English  $\bar{A}$ -movement and unlike English A-movement.

(32) \* [ **har larke-kii** behin-ko ]<sub>2</sub> **us-ne** \_\_\_\_\_<sub>2</sub> **ḍāāṭaa**  
 every boy-GEN sister-ACC he-ERG scolded  
 'For every boy *x*, *x* scolded *x*'s sister.'

(33) *Structure for (32): Condition C violation*

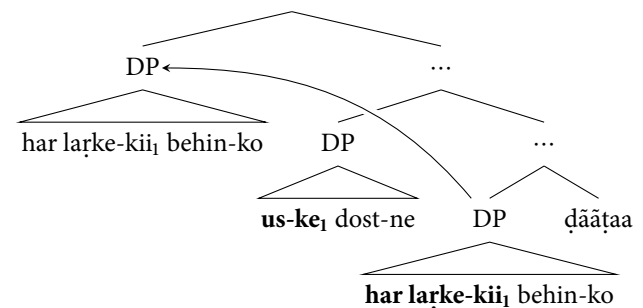


• **Consequences**

1. The ungrammaticality of (32) follows as a Condition C effect: The launching site contains the possessor, which behaves like an R-expression. Coindexation with a c-commanding QP leads to ungrammaticality.
2. In similar structures in which the pronoun does not c-command the launching site, no problem arises:

(34) [ **har larke-kii** behin-ko ]<sub>2</sub> [ **us-ke** dost-ne ] \_\_\_\_\_<sub>2</sub>  
 every boy-GEN sister-ACC he-GEN friend-ERG  
 ḍāāṭaa  
 scolded  
 'For every boy *x*, *x*'s friend scolded *x*'s sister.'

(35) *Structure for (34): No Condition C violation*



• **Summary**

We proposed that scrambling involves A-movement of a case-marked DP.

- ▷ Because it targets an A-position, it feeds pronominal binding → *no WCO*

- ▷ Because it targets case-marked DPs, its copy necessarily contains an NP restrictor → *Condition C connectivity* + SSCO

► **mixed A/ $\bar{A}$ -behavior**

### 3.2.3 Extension to reciprocals

- Our account extends to a restriction on the distribution of reciprocals. They may not be bound as a result of movement if the reciprocal c-commands the launching site.

(36) *Restriction on reciprocal binding*

- [ **Rina aur Mina** ]-ko<sub>1</sub> [ **ek duusre-kii**<sub>1</sub> maaō-ne ] \_\_\_<sub>1</sub>  
 Rina and Mina -ACC each other-GEN mothers-ERG  
 ḍāāṭaa  
 scolded  
 ‘Rina and Mina<sub>1</sub>, each other’s<sub>1</sub> mothers scolded.’
- \*[ **Rina aur Mina** ]-ko<sub>1</sub> **ek duusre-ne**<sub>1</sub> \_\_\_<sub>1</sub> ḍāāṭaa  
 Rina and Mina -ACC each other-ERG scolded  
 ‘Rina and Mina<sub>1</sub>, each other<sub>1</sub> scolded.’
- [ **Rina aur Mina** ]-ne<sub>1</sub> **ek duusre-ko**<sub>1</sub> ḍāāṭaa  
 Rina and Mina -ERG each other-ACC scolded  
 ‘Rina and Mina<sub>1</sub> scolded each other<sub>1</sub>.’

- This restriction now follows as a Condition C effect: The launching site contains a full copy, which incurs a Condition C effect if it is c-commanded by the reciprocal.

(37) \* [Rina and Mina]<sub>1</sub> ... each other<sub>1</sub> ... ⟨ [Rina and Mina]<sub>1</sub> ⟩ ...

## 4 Some implications

### 4.1 Typology of movement types

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

• **Three types of movement**

1. Pre-case, creates new binding options: English A-movement  
 → no WCO, no SSCO, no Condition C connectivity
  2. Post-case, creates new binding options: Hindi scrambling  
 → no WCO, but SSCO and Condition C connectivity
  3. Post-case, does not create new binding options: English  $\bar{A}$ -movement  
 → WCO, SSCO, and Condition C connectivity
- Our analysis does not treat scrambling as a third primitive type of movement with an arbitrary set of properties. Rather, we have explored the possibility that WCO on the one hand and SSCO and Condition C connectivity on the other are conditioned by independent properties of a movement type, which happen to largely correlate in English.
    - **WCO**  
 WCO is conditioned by the A/ $\bar{A}$ -nature of the landing site.
    - **SSCO + Condition C**  
 SSCO and Condition C connectivity are conditioned by case: movement gives rise to SSCO and Condition C connectivity if it applies to case-marked DPs. This is the case for English  $\bar{A}$ -movement, and Hindi scrambling demonstrates that it can also be the case for A-movement.

(38)

	English A-movement	Hindi scrambling	English $\bar{A}$ -movement	Scrambling'?
Type of landing site	A	A	$\bar{A}$	$\bar{A}$
WCO	N	N	Y	Y
(S)SCO	N	Y	Y	N
possessor Condition C connectivity	N	Y	Y	N
feeds 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 (38)):  $\bar{A}$ -movement that does feed 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?

• **Implications for the A/ $\bar{A}$ -nature of scrambling**

- Webelhuth (1989), Dayal (1994), 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  $\bar{A}$ -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.

**4.2 Comparison to a trace-based account of SCO**

• **Traditional account of SCO**

$\bar{A}$ -movement leaves behind a special trace (i.e., a variable) that is subject to Condition C and must hence be globally A-free.

(39) \*Who<sub>1</sub> does she<sub>1</sub> like t<sub>1</sub> <sup>$\bar{A}$</sup> ?

• **Account here**

On our account translates this standard treatment into a copy-theoretic framework. It retains the insight that SCO is due to Condition C, but not because A-movement leaves behind a special kind of trace, but because it leaves a full copy.

(40) \*Who<sub>1</sub> does she<sub>1</sub> like <who<sub>1</sub>>?

- Unlike the traditional treatment, a copy-theoretic conception extends to SSCO.

(41) \*[Whose<sub>1</sub> mother] does she<sub>1</sub> like <[whose<sub>1</sub> mother]>?

• **What about the moved element itself?**

If the full copy of a moved DP behaves like an R-expression, then why doesn't Hindi scrambling *always* result in a Condition C violation?

- (42) a. Anu-ko<sub>1</sub> Sita-ne \_\_\_\_\_<sub>1</sub> dekhaa  
 Anu-ACC Sita-ERG saw  
 'Anu, Sita saw.'
- b. **Anu-ko<sub>1</sub>** Sita-ne (**Anu-ko<sub>1</sub>**) dekhaa  
 Anu-ACC Sita-ERG saw

⇒ Condition C must be blind to higher copies, even if they are in an A-position.

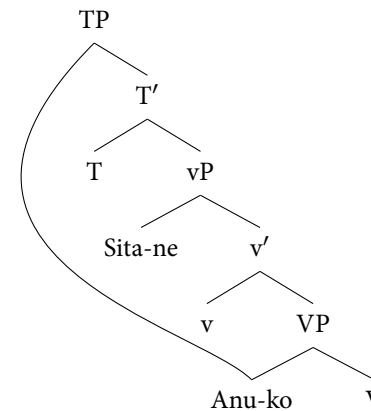
(43) **Revised Condition C**

An R-expression must be globally A-free w.r.t. distinct DPs, but does not have to be A-free w.r.t. higher occurrences of itself.

• **Deriving (43)**

We can make sense of this in a multidominance system. Assuming that scrambling targets SpecTP, such a system attributes to (42) the structure in (44).

(44) *Multidominance structure for (42)*



- Here the moving element occupies two positions at the same time. Under a standard conception of c-command (such as (45)), *Anu-ko* does not c-command itself.

(45) **C-command**

$\alpha$  c-commands  $\beta$  iff

- (i)  $\alpha \neq \beta$ ,
- (ii)  $\alpha$  does not dominate  $\beta$ , and
- (iii) every node that dominates  $\alpha$  also dominates  $\beta$ .



(46) *Condition C*  
An R-expression must be globally A-free.

(47) A DP is globally A-free if it is not c-commanded by a coindexed DP.

• **Consequence**

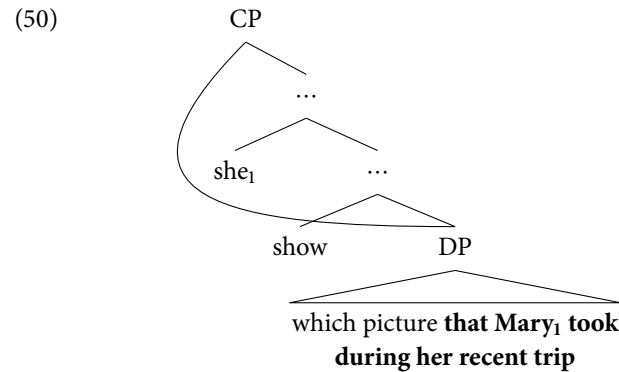
The only binding relationships that are relevant are the ones between a c-commanding pronoun and the 'trace' of the moved XP.

• **Improper movement**

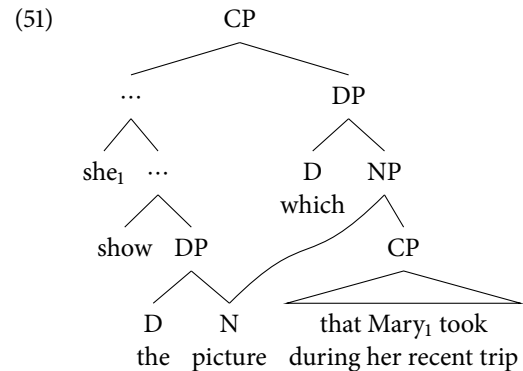
As far as we know, the only instance where the binding relationship between a moved element and its trace end up doing some work is as part of an explanation of why improper movement is ungrammatical (May 1979, Chomsky 1981).

(48) \*What<sub>1</sub> seems [ (that) t<sub>1</sub><sup>A</sup> Mary read t<sub>1</sub><sup>Ā</sup> ]?

- The moved DP *what* ends up in an A-position, from which it A-binds the variable left by the embedded  $\bar{A}$ -movement step. This results in a Condition C violation and a blocking of improper movement. Luckily for us, this is not the only way to block improper movement (Müller & Sternefeld 1993, Williams 2003, Abels 2007, Keine 2019).



- The puzzle also arises for Hindi scrambling, which shows Condition C amnesty with R-expressions inside relative clauses.
- To rescue the late-merge account, we adopt proposals by Johnson (2010) and Poole (2017), according to which only the NP part of a DP is shared across occurrences. This allows late merge of adjuncts. The following structure is simplified from Poole (2017).



### 4.3 Multidominance and Late Merge

- A multidominance conception of movement seems to undermine (Wholesale) Late Merge because late-merging material into the higher occurrence is identical to late-merging it into the lower occurrence. This should create Condition C connectivity.

(49) [ Which picture that Mary<sub>1</sub> took during her recent trip ]<sub>2</sub> did she<sub>1</sub> show \_\_\_<sub>2</sub> to Alex?

### 4.4 Taking stock

- Landing site of scrambling has A-properties → no WCO
- Launching site of scrambling has  $\bar{A}$ -properties due to case → SSCO + Condition C connectivity
- ▷ Scrambling can feed pronominal binding, but not if the pronoun c-commands the launching site

- Scrambling shows mixed A/ $\bar{A}$ -behavior that is not reducible to an ambiguity between typical A-movement and  $\bar{A}$ -movement.
- Our conclusion suggested a particular multidominance conception of movement.

#### Acknowledgments

We thank audiences at FASAL 8 (Wichita State University), UMass Amherst, and NELS 49 (Cornell). In particular, we thank Veneeta Dayal, Ashwini Deo, Bilge Palaz, Martin Salzmann, Giorgos Spathas, and Gary Thoms for comments, suggestions, and data.



Abels, Klaus. 2007. Towards a restrictive theory of (remnant) movement. In: *Linguistic Variation Yearbook 7*, ed. by Jeroen van Craenenbroeck & Johan Rooryck, Amsterdam: John Benjamins, pp. 53–120.

Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.

Chomsky, Noam. 1993. A minimalist program for linguistic theory. In: *The View from Building 20*, ed. by Ken Hale & Samuel Jay Keyser, Cambridge, MA: MIT Press, pp. 1–52.

Dayal, Veneeta Srivastav. 1994. Binding facts in Hindi and the scrambling phenomenon. In: *Theoretical Perspectives on Word Order in South Asian Languages*, ed. by Miriam Butt, Tracy Holloway King & Gillian Ramchand, Stanford: CSLI, pp. 237–262.

Fox, Danny. 1999. Reconstruction, binding theory, and the interpretation of chains. *Linguistic Inquiry* 30: 157–196.

Gurtu, Madhu. 1992. *Anaphoric Relations in Hindi and English*. New Delhi: Munshiram Manoharlal.

Higginbotham, James. 1980. Pronouns and bound variables. *Linguistic Inquiry* 11: 679–708.

Johnson, Kyle. 2010. Towards deriving differences in how *wh* movement and QR are pronounced, Ms., University of Massachusetts, Amherst. To appear in *Lingua*.

Keine, Stefan. 2018. Case vs. positions in the locality of A-movement. *Glossa* 3: 138.

Keine, Stefan. 2019. Selective opacity. *Linguistic Inquiry* 50: 13–62.

Keine, Stefan & Ethan Poole. 2018a. Interpreting long scrambling in Hindi-Urdu. In: *Proceedings of the 48th Annual Meeting of the North East Linguistic Society (NELS 48)*, Vol. 2, ed. by Max Nelson & Sherry Hucklebridge, Amherst, MA: GLSA, pp. 105–118.

Keine, Stefan & Ethan Poole. 2018b. Not all reconstruction effects are syntactic, Ms., University of Southern California and University of California, Los Angeles.

Lebeaux, David. 1988. Language acquisition and the form of the grammar. Ph.D. dissertation, University of Massachusetts, Amherst, MA.

Lebeaux, David. 2000. *Language Acquisition and the Form of the Grammar*. Amsterdam: John Benjamins.

Mahajan, Anoop. 1990. The A/A-bar distinction and movement theory. Ph.D. dissertation, MIT, Cambridge, MA.

May, Robert. 1977. The grammar of quantification. Ph.D. dissertation, MIT, Cambridge, MA.

May, Robert. 1979. Must Comp-to-Comp movement be stipulated? *Linguistic Inquiry* 10: 719–725.

May, Robert & Alan Bale. 2006. Inverse linking. In: *The Blackwell Companion to Syntax*, Vol. II, ed. by Martin Everaert & Henk van Riemsdijk, Oxford: Blackwell, pp. 639–667.

Müller, Gereon & Wolfgang Sternefeld. 1993. Improper movement and unambiguous binding. *Linguistic Inquiry* 24: 461–507.

Poole, Ethan. 2017. Movement and the semantic type of traces. Ph.D. dissertation, University of Massachusetts, Amherst, MA.

Postal, Paul. 1971. *Cross-Over Phenomena*. New York: Holt, Rinehart and Winston.

Postal, Paul. 1993. Remarks on weak crossover effects. *Linguistic Inquiry* 24: 539–556.

Reinhart, Tanya. 1983. *Anaphora and Semantic Interpretation*. London: Croom Helm.

Ruys, Eddy. 2000. Weak crossover as a scope phenomenon. *Linguistic Inquiry* 31: 513–539.

Safir, Ken. 1999. Vehicle change and reconstruction in  $\bar{A}$ -chains. *Linguistic Inquiry* 30: 587–620.

Sauerland, Uli. 1998. On the making and meaning of chains. Ph.D. dissertation, MIT, Cambridge, MA.

Sauerland, Uli. 2004. The interpretation of traces. *Natural Language Semantics* 12: 63–127.

Takahashi, Shoichi & Sarah Hulsey. 2009. Wholesale late merger: Beyond the A/ $\bar{A}$  distinction. *Linguistic Inquiry* 40: 387–426.

van Riemsdijk, Henk & Edwin Williams. 1981. NP structure. *The Linguistic Review* 1: 171–218.

Wasow, Thomas. 1972. Anaphoric relations in English. Ph.D. dissertation, MIT, Cambridge, MA.

Webelhuth, Gert. 1989. Syntactic saturation phenomena and the modern Germanic language. Ph.D. dissertation, University of Massachusetts, Amherst.

Williams, Edwin. 2003. *Representation Theory*. Cambridge, MA: MIT Press.

## Appendix A: Scrambling in Turkish

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

(52) *Scrambling feeds binding*

**Her** **çocuğ-u<sub>1</sub>** [**pro<sub>1/2</sub>** kardeş-i] \_\_\_<sub>1</sub> azarladı.  
 every child-acc sibling-POSS scolded  
 ‘For every child  $x$ , { $x$ ’s/somebody else’s} sibling scolded  $x$ .’

(53) *Binding by possessors*

[**Her** **çocuğ-un<sub>1</sub>** kardeş-u] **onu<sub>1/2</sub>** azarladı.  
 every child-GEN sibling-POSS him/her scolded  
 ‘For every child  $x$ ,  $x$ ’s sibling scolded { $x$ /someone else}.’

(54) *Scrambling + binding by possessor*

[**Her** **çocuğ-un<sub>1</sub>** kardeş-i-ni ]<sub>2</sub> [**pro<sub>1/2</sub>** arkadaş-ı] \_\_\_<sub>2</sub>  
 every child-GEN sibling-POSS-ACC friend-POSS  
 azarladı.  
 scolded  
 ‘For every child  $x$ ,  $x$ ’s friend scolded  $x$ ’s sibling.’  
 (*unbound readings and binding by the  $j$  index also possible*)

(55) *No binding if pronoun c-commands trace*

[**Her** **çocuğ-un<sub>1</sub>** kardeş-i-ni ]<sub>2</sub> **o<sub>1/2</sub>** \_\_\_<sub>2</sub> 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.).

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

a. WCO

\*[ I mitera **tu<sub>1</sub>** ] ajapai (to) **kathe pedhi<sub>1</sub>**.  
 the mother his loves the every boy  
 ‘His mother loves every boy.’

b. *Clitic doubling → no WCO*

[ I mitera **tu<sub>1</sub>** ] **to-ajapai** (to) **kathe pedhi<sub>1</sub>**.  
 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<sub>1</sub> to-ajapai** [ i mitera **tu<sub>1</sub>** ].  
 the every boy him-loves the mother his  
 ‘For every boy  $x$ ,  $x$ ’s mother loves  $x$ .’

(57) *Binding by possessors*

?[ I mitera (tu) **kathe mathiti<sub>1</sub>** ] **ton<sub>1</sub>-ajapai** poli.  
 the mother the every student him-loves very  
 ‘Every student’s mother loves him a lot.’

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

a. WCO

\*Vathmolojise [ o dhaskalos **tu<sub>1</sub>** ] [ to jrpto (tu) **kathe**  
 graded the teacher his the exam the every  
**mathiti<sub>1</sub>** ].  
 student  
*intended:* ‘For every student  $x$ ,  $x$ ’s teacher graded  $x$ ’s exam.’

b. *Clitic doubling → no WCO*

?**To-vathmolojise** [ o dhaskalos **tu<sub>1</sub>** ] [ to jrpto (tu) **kathe**  
 it-graded the teacher his the exam the every  
**mathiti<sub>1</sub>** ].  
 student  
 ‘For every student  $x$ ,  $x$ ’s teacher graded  $x$ ’s exam.’

c. *Clitic doubling + fronting → no WCO*

[ To jrpto (tu) **kathe mathiti<sub>1</sub>** ] **to-vathmolojise** [ o  
 the exam the every student it-graded the  
 dhaskalos **tu<sub>1</sub>** ].  
 teacher his  
 ‘For every student  $x$ ,  $x$ ’s teacher graded  $x$ ’s exam.’

(59) *No binding if pronoun c-commands trace*

\* [ tin kori (tu) **kathe anthropu<sub>1</sub>** ] tin-ajapai *pro*<sub>1</sub>.  
the daughter the every man her-loves

*intended*: 'For every man  $x$ ,  $x$  loves  $x$ 's daughter.'