

## A secondary crossover effect in Hindi and the typology of movement

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**Claim:** A long-standing observation about scrambling has been that it exhibits both A- and A'-properties. Broadly speaking, there are two lines of approaches, with important implications for the typology of movement types: On the one hand, Webelhuth (1989) and Srivastav Dayal (1994) argue that scrambling targets a mixed position that simultaneously has A- and A'-properties. On the other hand, Mahajan (1990) argues that scrambling can be either A- or A'-movement (but not simultaneously both), and that surface scrambling configurations are ambiguous as to the movement type involved. Here, we present new evidence that argues for treating scrambling as a third type of movement that cannot be reduced to either English A- or A'-movement, thus providing support for Webelhuth's and Srivastav Dayal's position. We relate the special properties of scrambling as opposed to English A-movement to its case properties.

**A crossover paradox:** Clause-internal scrambling (henceforth 'scrambling') in Hindi is not subject to weak crossover (WCO), as shown in (1). In the absence of scrambling, binding of the pronoun is impossible in (1). In this respect, scrambling patterns like A-movement.

- (1) **har larke-ko<sub>1</sub> [uskii<sub>1</sub> behin-ne ] t<sub>1</sub> dāāṭaa**  
every boy-ACC his sister-ERG scolded  
'For every boy *x*, *x*'s sister scolded *x*.' (local scrambling can feed pronominal binding)

An independent property of Hindi is that possessors can bind out of their container DP (like in English):

- (2) [ **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*. (binding by possessor/inverse linking)

Scrambling is also able to give rise to inverse linking akin to (2): If the scrambled DP contains a possessor, this possessor may bind a pronoun from the landing site. There is hence again no WCO:

- (3) [ **har larke-kii<sub>1</sub> behin-ko ]<sub>2</sub> [uske<sub>1</sub> dost-ne ] t<sub>2</sub> dāāṭaa**  
every boy-GEN sister-ACC his friend-ERG scolded  
'For every boy *x*, *x*'s friend scolded *x*'s sister.' (binding by possessor inside scrambled DP)

Surprisingly, however, scrambling may not give rise to inverse linking if the pronoun c-commands the launching site, as shown in (4), which is ungrammatical on a bound reading.

- (4) \*[ **har larke-kii<sub>1</sub> behin-ko ]<sub>2</sub> us-ne<sub>1</sub> t<sub>2</sub> dāāṭaa**  
every boy-GEN sister-ACC he-ERG scolded  
'For every boy *x*, *x* scolded *x*'s sister.' (no binding by possessor if pronoun c-commands trace)

The impossibility of binding in (4) is surprising in light of (1)–(3): (i) Scrambling is not subject to WCO and hence able to feed pronominal binding ((1),(3)). (ii) Possessors may bind outside of their host DP in the absence of movement (2). (iii) The trace is not coindexed with the subject pronoun in (4), so there is no transparent Condition B/C effect w.r.t. the trace. The illformedness of (4) is thus unexpected. We propose that (4) can be understood as a secondary strong crossover (SSCO) effect, such as (5).

- (5) \*[ **Whose<sub>1</sub> mother ]<sub>2</sub> does he<sub>1</sub> think [ t<sub>2</sub> is intelligent ]?** (SSCO with A'-movement)  
(cf. strong crossover: \*Who<sub>1</sub> does he<sub>1</sub> think is intelligent?)

Crucially, however, only A'-movement is subject to SSCO in English; A-movement is not (6):

- (6) [ **Every boy's<sub>1</sub> mother ]<sub>2</sub> seems to him<sub>1</sub> [ t<sub>2</sub> to be a genius ]. (no SSCO with A-movement)**

On a treatment of scrambling that categorizes it as either A- or A'-movement (Mahajan 1990), this state of affairs yields a paradox: The absence of WCO in (1) entails that scrambling must be able to be A-movement, but the presence of SSCO in (4) implies that it cannot be A-movement, but instead can only be A'-movement (given the SSCO facts in (5) and (6)). This suggests that such a treatment is insufficient.

**Proposal:** A mixed classification of scrambling enables a more successful account. In a nutshell, we propose that scrambling behaves like A-movement w.r.t. binding from its landing site, but like A'-movement w.r.t. connectivity to its launching site, and that this constellation of facts can be derived from the relationship to case assignment. We adopt an account of (S)SCO in terms of Condition C connectivity. On such an account, the ungrammaticality of (4) and (5) follows from the presence of a copy in the launching site. This copy contains the possessor that is coindexed with the c-commanding pronoun, creating a Condition C violation, as shown in (7).

- $$(7) \text{ } ^*[ \text{DP-GEN}_1 \dots ] \dots \text{pron}_1 \dots \langle [ \text{DP-GEN}_1 \dots ] \rangle \rightsquigarrow (4), (5)$$

Evidence for this analysis comes from the fact that scrambling does not obviate Condition C violations with possessors (8), and in this respect it stands in clear contrast to English A-movement (9).

- (8) a. \***us-ne**<sub>1</sub> [ **Sita-ke**<sub>1</sub> bhaaii-ko ] dāāṭaa      b. \* [ **Sita-ke**<sub>1</sub> bhaaii-ko ]<sub>2</sub> **us-ne**<sub>1</sub> t<sub>2</sub> dāāṭaa  
          she-ERG   Sita-GEN brother-ACC scolded      Sita-GEN brother-ACC she-ERG scolded

- (9) [**John's**<sub>1</sub> mom]<sub>2</sub> seems to **him**<sub>1</sub> [<sub>t<sub>2</sub></sub> to be very intelligent]

Why is English A-movement not subject to SSC0 and Condition C connectivity (see (6), (9))? Takahashi & Hulsey (2009) propose that A-movement, but not A'-movement, has the option of late-merging the NP restrictor to the landing site of movement. If the restrictor is late-merged, the launching site only contains a D head. Because the possessor is hence only present in the landing site, the pronoun does not incur a Condition C violation in (6) and (9), as shown in (10). As a result, no SSC0 arises with A-movement.

- $$(10) \text{ } ^*[ \text{DP-GEN}_1 \dots ] \dots \text{pron}_1 \dots \langle \text{D} \rangle \rightsquigarrow (6), (9)$$

Against this background, an account of the observation that scrambling is subject to SSC0 (4) and Condition C connectivity (8b) requires that, in contrast to English A-movement, scrambling does not have access to the derivation in (10), but must leave a full copy as in (7). What conditions the presence of a lower copy? We propose that it is possible to derive this difference from independent differences between the two movement types w.r.t. case. Takahashi & Hulsey (2009) propose that late merge of the NP is possible only up until the position in which the DP receives case. Unlike English A-movement, Hindi scrambling never feeds case assignment. Given these case properties, this account therefore predicts that scrambling does not have access to late merge of the NP. Assuming that the possessor cannot be late-merged on its own (Safir 1999), Condition C connectivity w.r.t. the possessor is then derived.

- (11) *English A-movement:*

$$[ [\underbrace{\text{DP-GEN}_1 \dots}_{\text{case assigned} \rightarrow \text{NP merger}} ] \dots \text{pron}_1 \dots \langle \text{D} \rangle ] \rightarrow \text{Condition C obviation} \rightarrow \text{no (S)SCO}$$

- (12) *Scrambling/A'-movement*:

$$[[ \text{DP-GEN}_1 \dots ] \dots \text{pron}_1 \dots \underbrace{\langle [ \text{DP-GEN}_1 \dots ] \rangle}_{\text{case assigned} \rightarrow \text{NP merger}} ] \rightarrow \text{Condition C connectivity} \rightarrow (S)SCO$$

Our account thus converts the standard treatment of SCO (i.e., that A'-traces are variables) into a copy-theoretic framework. Because A'-movement, like scrambling, does not feed case, it leaves a full copy, creating Condition C connectivity. By contrast, A-movement leaves a D head, which, after Trace Conversion, is not different from a pronoun in the relevant respects, hence not subject to Condition C (note that A'-movement always leaves behind a complex trace, even when what is moving is an interrogative pronoun like *who*). This account retains the insight that SCO is due to Condition C, but not because of the type of the trace, but because of status of the copies involved.

**Consequences:** (i) Our proposal has the consequence that scrambling allows binding from the landing site and at the same time shows Condition C reconstruction, arguing that the two are in principle independent. As a result, it is possible for certain movement types to pattern like A-movement w.r.t. one and like A'-movement w.r.t. the other. (ii) Because scrambling lands in an A-position but leaves a full copy that is subject to Condition C, it follows that Condition C must be evaluated only w.r.t. DPs that are distinct from the moving element. This can plausibly be derived from a re-merge model of movement. (iii) Our account supports the view that movement can have mixed A/A'-properties. It also predicts that, all else being equal, there might also be a fourth movement type, which does not allow binding from the landing site, but does show Condition C obviation w.r.t. the launching site (i.e., the mirror image of scrambling, *scrambling'* in (13)). Whether such a movement type exists is an open question.

- |                                    | <i>A-movement</i> | <i>Scrambling</i> | <i>A'-movement</i> | <i>Scrambling'?</i> |
|------------------------------------|-------------------|-------------------|--------------------|---------------------|
| 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                   |