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Rightward Scrambling as Rightward Remnant Movement

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Mahajan (1997) and Simpson and Bhattacharya (2003) analyze Indo-Aryan languages such as Hindi-Urdu and Bangla as SVO. We argue against this position, drawing on rightward scrambling in Hindi-Urdu to make this point. We propose an account of the phenomenon in terms of rightward remnant-VP movement. This account differs from proposals that posit rightward movement of individual arguments as well as from the antisymmetric proposals mentioned above, which treat rightward scrambling as argument stranding. Our rightward remnant movement analysis better captures two empirical properties of rightward scrambling that remain elusive in the other accounts: the correlation between linear order and scope, and restricted scope for rightward-scrambled *wh*-expressions.

Keywords: rightward movement, rightward scrambling, remnant movement, *wh*-scope, linear order, scope, Indo-Aryan languages, Hindi-Urdu

1 Rightward Scrambling in Hindi-Urdu

1.1 The Core Phenomenon

Hindi-Urdu has canonical SOV word order. Working within the framework of antisymmetry (Kayne 1994), Mahajan (1997) proposes that its underlying structure is SVO. This proposal is also advanced for Bangla, a closely related Indo-Aryan language, by Simpson and Bhattacharya (2003). In this article, we use the phenomenon of rightward movement to argue against this proposal.¹ We first present a non-antisymmetric account of the phenomenon, showing that an

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¹ We use the familiar terms *rightward movement* and *rightward scrambling* to refer to the phenomenon, without any commitment to the theoretical idea of A- or \bar{A} -movement of an argument to the right of the verb. As will become clear in the course of the discussion, we do not consider the ‘rightward-moved’ arguments to have undergone movement themselves.

antisymmetric account is not the only way to explain it. We then show that the antisymmetric account fails to capture some of the core properties of rightward movement.

It is well known that Hindi-Urdu has relatively free word order: phrases can appear to the left of their canonical position (leftward scrambling) as well as to the right (rightward scrambling). The properties of leftward scrambling have been closely scrutinized (Mahajan 1990, Dayal 1994, Kidwai 2000), but rightward scrambling remains poorly understood. The core properties of rightward scrambling, discussed by Mahajan (1997), are illustrated in (1)–(3). (1) establishes that any argument can appear to the right of the verb, (2) shows that more than one argument can do so, and (3) shows that arguments can appear between the verb and the auxiliary.²

(1) a. *O V Aux S*

Ram-ko dhyaan-se dekh-aa thaa Sita-ne.
 Ram-ACC care-with see-PFV be.PST Sita-ERG
 ‘Sita had looked at Ram carefully.’

b. *S V Aux O*

Sita-ne dhyaan-se dekh-aa thaa Ram-ko.
 Sita-ERG care-with see-PFV be.PST Ram-ACC
 ‘Sita had looked at Ram carefully.’

c. *S DO V Aux IO*

Sita-ne vah kitaab dii thii Ram-ko.
 Sita-ERG that book.F give.PFV.F be.PST.F Ram-DAT
 ‘Sita had given that book to Ram.’

(2) *DO V Aux S IO*

Vah kitaab dii thii Sita-ne Ram-ko.
 that book.F give.PFV.F be.PST.F Sita-ERG Ram-DAT
 ‘Sita had given that book to Ram.’

(3) *S DO V IO Aux*

Sita-ne kitaab bhej-ii Ram-ko thii.
 Sita-ERG book.F send-PFV.F Ram-DAT be.PST.F
 ‘Sita had sent the book to Ram.’

We turn now to two properties that distinguish rightward scrambling from leftward scrambling: the (in)ability of displaced arguments to take scope over arguments in their canonical position and the scope of *wh*-expressions.

1.2 Linear Order and Hierarchical Relations

In this section, we will demonstrate the first property of rightward scrambling that we would like to explain. As noted by Mahajan (1997), rightward scrambling, unlike leftward scrambling, does not amnesty weak crossover violations. The rightward-scrambled object quantifier in (4b) is unable

² The point made here for arguments holds for adjuncts also.

to bind a pronoun inside the subject phrase, whereas the leftward-scrambled quantifier in (4c) is able to do so. In this respect, the rightward-scrambled structure behaves like the canonical SOV structure in (4a).

(4) a. *SOV: Weak crossover configuration*

*[Us-ke_i bhaai-ne] [har ek aadmii-ko]_i maar-aa.
 he-GEN.OBL brother-ERG every one man-ACC hit-PFV

b. *SVO: No weak crossover amnesty*

*[Us-ke_i bhaai-ne] maar-aa [har ek aadmii-ko]_i.
 he-GEN.OBL brother-ERG hit-PFV every one man-ACC

c. *OSV: Weak crossover amnesty*

[Har ek aadmii-ko]_i [us-ke_i bhaai-ne] maar-aa.
 every one man-ACC he-GEN.OBL brother-ERG hit-PFV
 ‘His_i brother hit [every man]_i.’

The same point can be demonstrated with respect to reciprocal binding.³ As (5a) shows, an argument in object position cannot bind a reciprocal in subject position. (5b) establishes that binding possibilities remain unaffected by rightward scrambling. This is in contrast to (5c), where leftward scrambling creates new binding possibilities.

(5) a. *SOV*

??[Ek duusre-ke_i baccō]-ne [Anu aur Ramaa]-ko_i dekh-aa.
 each.other-GEN.OBL kids-ERG Anu and Ramaa-ACC see-PFV

b. *SVO*

??[Ek duusre-ke_i baccō]-ne dekh-aa [Anu aur Ramaa]-ko_i.
 each.other-GEN.OBL kids-ERG see-PFV Anu and Ramaa-ACC

c. *OSV*

[Anu aur Ramaa]-ko_i [ek duusre-ke_i baccō]-ne dekh-aa.
 Anu and Ramaa-ACC each.other-GEN.OBL kids-ERG see-PFV
 ‘[Each other’s]_i kids saw [Anu and Ramaa]_i.’

The difference between leftward and rightward scrambling can also be established on the basis of Condition C tests, where the results are the same as seen above with variable and reciprocal binding. We omit the examples here in the interests of conserving space. The generalization to be drawn from these examples is that in Hindi-Urdu, linear order of arguments is relevant for scope-sensitive phenomena.

Multiple rightward scrambling further attests to the significance of linear order. We demonstrate only the facts for variable binding, simply noting here that they also hold for reciprocal binding and Condition C effects. The first argument to the right of the verb can bind into the second, but the second cannot bind into the first.

³ Dayal (1994) argues against the possibility of leftward-scrambled arguments binding reflexives (see also Kidwai 2000), but the contrast in the binding of reciprocals in (5) is not contested.

(6) a. *VSO*

*Dekh-aa [us-ke_i bhaai]-ne [har ek aadmii]-ko_i.
 see-PFV he-GEN.OBL brother-ERG every one man-ACC

b. *VOS*

Dekh-aa [har ek aadmii]-ko_i [us-ke_i bhaai]-ne.
 see-PFV every one man-ACC he-GEN.OBL brother-ERG
 'His_i brother saw [every man]_i.'

On the basis of these facts, we can formulate the following generalization about the relationship between linear order and scope in Hindi-Urdu (see Mahajan 1997 for the original observation):⁴

- (7) Variable binding and pronominal coreference possibilities between coarguments (i.e., phrases thematically related to the same predicate) reflect linear order: if XP₁ and XP₂ are coarguments and XP₁ precedes XP₂, then XP₁ has scope over XP₂ at LF.

1.3 Restricted Scope of Rightward-Scrambled Wh-Expressions

So far, the syntactic effects of rightward scrambling seem to be conspicuous by their absence. However, rightward scrambling has a striking effect on the scope of *wh*-expressions. (8a), which has *wh*-in-situ, and (8b), where the *wh*-expression has been moved leftward, both allow normal question interpretations. But (8c), where the *wh*-expression occurs to the right of the verb, cannot be interpreted as a normal question; it is only acceptable as an echo question (Mahajan 1997).⁵

(8) a. *S O_{wh} V Aux*

Sita-ne dhyaan-se kis-ko dekh-aa thaa?
 Sita-ERG care-with who-ACC see-PFV be.PST
 'Who had Sita looked at carefully?'

b. *O_{wh} S V Aux*

Kis-ko Sita-ne dhyaan-se dekh-aa thaa?
 who-ACC Sita-ERG care-with see-PFV be.PST
 'Who had Sita looked at carefully?'

⁴ A reviewer notes that given leftness-based explanations of weak crossover (see Chomsky 1976, Higginbotham 1980), the failure of binding in (4b) and (5b) could be attributed to linear precedence alone and not necessarily to a failure of c-command. The reviewer further notes that given the acceptability of variable binding in the absence of surface c-command in cases like *[[Every student]_i's mother] loves him_i*, it is also not straightforward to conclude, from the possibility of binding as in (6b), that surface c-command holds. These considerations do not, however, affect our conclusion. This is because the observations concerning variable binding carry over to Condition C effects, and these are known to involve surface c-command. Moreover, as we demonstrate later using (22), Condition C effects in Hindi-Urdu are underdetermined by word order. Even with variable binding, it has been noted that the exceptions to the surface c-command requirement have surface c-command of the bound element by a DP that contains the binder QP (see Ruys 2000). There is no such container DP in (6a) and therefore the QP must itself surface-c-command the pronoun that it binds.

⁵ Dayal (1996) gives an example of *SVO_{wh}*, notated as acceptable, but that acceptability is contingent on the availability of a special interpretation, as mentioned above.

c. *S V Aux O_{wh}*

Sita-ne dhyaan-se dekh-aa thaa kis-ko?
 Sita-ERG care-with see-PFV be.PST who-ACC
 ‘Who had Sita looked at carefully?’

An important point to note in this connection is that rightward-scrambled *wh*-expressions are uninterpretable only if they cross the verb as well as the auxiliary. (8c) contrasts with (9), which can be interpreted as a standard request for information.

(9) *S V O_{wh} Aux*

Sita-ne dhyaan-se dekh-aa kis-ko thaa?
 Sita-ERG care-with see-PFV who-ACC be.PST
 ‘Who had Sita looked at carefully?’

This difference regarding the position of the auxiliary is worth emphasizing since the effect is specific to *wh*-scope. The effects with respect to linear order and scope, discussed in section 1.2, do not change regardless of whether the scrambled element ends up to the right of the auxiliary or whether it ends up to the right of the verb but before the auxiliary.

The facts discussed here are reminiscent of the effects of directionality on the scope of embedded *wh*-expressions in Hindi-Urdu. As discussed in Davison 1984, Mahajan 1990, Srivastav 1991, and Dayal 1996, finite complements obligatorily occur postverbally and *wh*-expressions inside them take narrow scope unless they have been overtly moved out of the embedded clause.

(10) a. *S V Aux [FiniteCP ... wh ...]*

Ram jaan-taa hai [ki kaun aa-yaa thaa].
 Ram.M know-IMPV.MSG be.PRS.3SG that who.M come-PFV.MSG be.PST.MSG
 ‘Ram knows who had come.’

(*not*: ‘Who is such that Ram knows that he / she had come?’)

b. *wh_i S V Aux [FiniteCP ... t_i ...]*

Kaun_i Ram jaan-taa hai [ki t_i aa-yaa thaa]?
 who.M Ram.M know-IMPV.MSG be.PRS.3SG that come-PFV.MSG be.PST.MSG
 ‘Who is such that Ram knows that he / she had come?’

Bangla and Marathi differ from Hindi-Urdu in allowing structures where the finite complement CP can appear in preverbal position. In this position, an embedded in-situ *wh*-expression can take scope outside the embedded clause (see Simpson and Bhattacharya 2003).

Nonfinite clauses in Hindi-Urdu canonically appear preverbally—not surprising if they are in fact gerunds (Srivastav 1991, Butt 1995, Dayal 1996), which—like other nominal phrases—canonically appear before the verb. They may also occur to the right of the verb. The scope of *wh*-expressions inside nonfinite complements follows the pattern seen with unembedded *wh*-expressions: as noted by Mahajan (1990), when the nonfinite clause is preverbal, *wh*-expressions inside it take matrix scope, but when it is postverbal, they do not.⁶

⁶ The order [S V O_{nonfinite} Aux] is degraded with or without embedded *wh*-expressions.

- (11) a. $S [_{Nonfinite} \dots wh \dots] V Aux$
 Ram-ne [kis-ko dekh-naa] caah-aa thaa?
 Ram-ERG who-ACC see-INF want-PFV be.PST
 ‘Who had Ram wanted to see?’
- b. $S V Aux [_{Nonfinite} \dots wh \dots]$
 *Ram-ne caah-aa thaa [kis-ko dekh-naa]?
 Ram-ERG want-PFV be.PST who-ACC see-INF

In this article, we do not provide a full analysis of *wh*-expressions inside finite or nonfinite complements, but we will touch upon them in our discussion of Simpson and Bhattacharya’s (2003) proposal in section 2. Our primary focus here is the interpretation of unembedded *wh*-expressions under leftward and rightward scrambling—that is, the contrast illustrated in (8) and (9), for which there are currently no explanations in the literature.

2 A Rightward Remnant Movement Approach

2.1 Remnant-VP Movement

Having laid out the properties of rightward scrambling that we are interested in explaining, we turn now to an account of the phenomenon. As Mahajan (1997) notes, the fact that linear order correlates with scope makes it implausible to treat rightward scrambling as the mirror image of leftward scrambling. This leads him to an antisymmetric treatment of Hindi-Urdu. The proposal we will make shows that the antisymmetric approach is not needed to account for the facts; instead, they can be explained in terms of rightward movement of VPs.

We make the following assumptions about the syntax of Hindi-Urdu. We take Hindi-Urdu to be an SOV language, allowing leftward movement of DPs to a range of specifier and/or adjoined positions (Mahajan 1990, Kidwai 2000). We follow Bhatt (2005) in not taking Case assignment and agreement to require movement. And we take it that verbs optionally move to an aspectual head above vP, moving over negation when it is present (Kumar 2006).

It was noted by Gambhir (1981) that verbs can move to the right in Hindi-Urdu. Our analysis of such structures is shown in (12a–b), where a VP moves to the right and attaches to the verbal spine.

- (12) a. *Order without rightward movement*
 Vo [[[hamaarii baatē] t_j] sun_j rahaa] thaa.
 he our.F talks.F hear PROG.MSG be.PST.MSG
 ‘He was listening to our conversation.’
- b. *Order with rightward movement and adjunction to verbal spine*
 [[Vo t_k thaa] [[[hamaarii baatē] t_j] sun_j rahaa]_k].
 he be.PST.MSG our.F talks.F hear PROG.MSG
 ‘He was listening to our conversation.’

Apparent cases of rightward scrambling of arguments can be seen as a straightforward generalization of this idea. The observed effect is due to the fact that rightward movement takes place after

V moves out of the VP into an aspectual projection. In (13a), the verb has moved out of the VP shell into an aspectual projection, yielding the canonical order. In (13b), only VP₂ moves leftward, leaving behind a trace inside VP₁. This gives rightward scrambling of the DO. Finally, (13c) illustrates how multiple scrambling takes place. Here the whole VP₁ moves to the right after V has moved out, preserving the canonical order of indirect and direct objects.⁷

- (13) a. *S IO DO V Aux*
 Ram-ne [_{VP₁} Sita-ko [_{VP₂} kitaab t_i]] dii_i thii.
 Ram-ERG Sita-DAT book.F give.PFV.F be.PST.FSG
 ‘Ram had given a book to Sita.’
- b. *S IO V Aux DO*
 [[Ram-ne [_{VP₁} Sita-ko t_j] dii_i thii] [_{VP₂} kitaab t_i]_j].
 Ram-ERG Sita-DAT give.PFV.F be.PST.FSG book.F
 ‘Ram had given a book to Sita.’
- c. *S V Aux IO DO*
 [[Ram-ne t_j dii_i thii] [_{VP₁} Sita-ko [_{VP₂} kitaab t_i]]_j].
 Ram-ERG give.PFV.F be.PST.FSG Sita-DAT book.F
 ‘Ram had given a book to Sita.’

We restrict rightward movement to verbal projections. Hence, orders like [S DO V Aux IO] cannot be derived directly from (13a)—there is no VP projection that exhaustively contains the IO. To derive the relevant order, we need to start with a structure in which the DO has already scrambled leftward over the IO, as shown in (14a). When VP₂, which contains a trace of the DO, moves rightward, we get the order [S DO V Aux IO], as shown in (14b).

- (14) a. *S DO IO V Aux*
 Ram-ne [_{VP₀} kitaab_i [_{VP₁} Sita-ko [_{VP₂} t_i t_j]]] dii_j thii.
 Ram-ERG book.F Sita-DAT give.PFV.F be.PST.FSG
 ‘Ram had given a book to Sita.’
- b. *S DO V Aux IO*
 [[Ram-ne [_{VP₀} kitaab_i t_k] dii_j thii] [_{VP₁} Sita-ko [_{VP₂} t_i t_j]]_k].
 Ram-ERG book.F give.PFV.F be.PST.FSG Sita-DAT
 ‘Ram had given a book to Sita.’

As we will show, this is crucial in explaining the correlation between linear order and scope relationships.

⁷ A reviewer wonders whether the rightward-moving remnant in (13b) needs to be larger than VP₂, given that VP₂ is not a maximal projection (little depends upon the details of node labeling; it is provided purely for convenience here). Indeed, if we allow only maximal projections to move, then we would need to rightward-move a larger maximal-projection remnant (vP or VP) that the subject and indirect object have already scrambled out of. Making this switch does not affect the predictions of the system. In this article, however, we do not restrict phrasal movement to maximal projections. We assume that the obligatory reconstruction property of verbal projections follows from their semantic type.

2.2 Deriving Scope Relationships

Huang (1993) has argued that remnant movement undergoes obligatory reconstruction to its base position. In the following examples, from Huang 1993:110, the fronted VPs are remnants because they contain the trace of the subject.

- (15) a. i. ?*[Criticize John_i]_j, he_i said I will not t_j.
 ii. *[Criticize John_i]_j, I said he_i will not t_j.
 b. i. ?*[How proud of John_i]_j does he_i think I should be t_j?
 ii. *[How proud of John_i]_j do you think he_i should be t_j?

By appealing to the obligatory reconstruction property of remnant movement, we can derive the generalization we formulated in (7) concerning the relationship between linear order of coarguments and scope. The configuration standardly assigned to a basic ditransitive structure with [S IO DO V Aux] order is shown in (16a), and the scope relations between the arguments are shown in (16b).

- (16) a. [XP₁ [_{VP₁} XP₂ [_{VP₂} XP₃ t_j]] V_j Aux]
 b. XP₁ > XP₂ > XP₃

Obligatory reconstruction of the rightward-moved remnant yields structures that are essentially identical to (16a), thus deriving the relevant generalization. We give the schematic derivations for two representative cases in (17a) and (17b).

- (17) a. XP₁ V Aux XP₂ XP₃ S V IO DO
 i. Structure: [[XP₁ t_i V_j Aux] [_{VP₁} XP₂ [_{VP₂} XP₃ t_j]]_i]
 ii. After reconstruction: [XP₁ [_{VP₁} XP₂ [_{VP₂} XP₃ t_j]] V_j Aux]
 b. XP₁ XP₃ V Aux XP₂ S DO V IO
 i. Structure: [[XP₁ [XP₃ t_i] V_j Aux] [_{VP₁} XP₂ [_{VP₂} t₃ t_j]]_i]
 ii. After reconstruction: [XP₁ [XP₃ [_{VP₁} XP₂ [_{VP₂} t₃ t_j]]] V_j Aux]

As we noted at the end of section 1.2, arguments lower in the base structure can appear to the left of rightward-moved arguments only if they have scrambled leftward prior to the rightward movement of the remnant that contains the postverbal argument. Reconstruction recreates the post-leftward-scrambling but pre-remnant movement (i.e., rightward-scrambling) configuration, accounting for the observed correlation between linear order and scope.

2.3 Deriving the Wh-Scope Effects

Let us now consider the repercussions of the proposal for the interpretation of *wh*-expressions. We assume, as proposed in Davison 1984, Mahajan 1990, Srivastav 1991, Dayal 1996, and elsewhere, that question formation in Hindi-Urdu involves covert movement at LF, be it a type of quantifier raising or *wh*-movement. For a proper interpretation to obtain, a *wh*-phrase needs to be in the c-command domain of C⁰[+wh]. Furthermore, it needs to be sufficiently local to the relevant C⁰[+wh] for covert movement to be an option.

It has been noted that remnant movement creates scope islands, blocking elements inside the remnant from taking scope outside it (see, e.g., Barss 1986, Lechner 1998, Sauerland 1998).

- (18) They had said that a policeman would stand in front of every bank that day . . .
 a. . . . and a policeman stood in front of every bank that day. ($\exists > \forall, \forall > \exists$)
 b. . . . and [stand in front of every bank], a policeman did that day. ($\exists > \forall, *\forall > \exists$)

Applying this insight to the proposed account of rightward scrambling, we have an immediate explanation for the ungrammaticality of (8c) as a normal question. The *wh*-expression on the right of the finite auxiliary is trapped inside the VP remnant. The structure is uninterpretable as a standard question because covert movement to C^0 is blocked.

To complete this explanation, we need to discuss cases like (9) (= (19)), where the *wh*-expression occurs between V and Aux and is able to move to C^0 , resulting in a well-formed question.

- (19) Sita-ne dhyaan-se dekh-aa kis-ko thaa?
 Sita-ERG care-with see-PFV who-ACC be.PST
 ‘Who had Sita looked at carefully?’

We analyze these cases as involving short-distance topicalization of the verbal complex after leftward scrambling of the direct object.⁸ The steps are shown in (20). Each step in (20) corresponds to an independently well-formed structure.

- (20) a. *Base structure*
 [S [Adv [DO_{wh} Participle]] Aux]
 b. *Leftward scrambling of DO*
 [S [Adv [DO_{wh-i} [t_i Participle]]] Aux]
 c. *Leftward scrambling of the participle*
 [S [Adv [[t_i Participle]_j [DO_{wh-i} t_j]]] Aux]
 d. *After wh-movement*
 [DO_{wh-i} [S [Adv [[t_i Participle]_j [t'_i t_j]]] Aux]]

To sum up the account, the rightward-scrambling phenomenon in Hindi-Urdu does not require an antisymmetric account. We have offered a viable account that analyzes movement to the right as movement of VP remnants rather than individual DPs. In the next section, we take a closer look at the proposals in Mahajan 1997 and Simpson and Bhattacharya 2003 that adopt an antisymmetric approach and show that they are unable to account for the facts considered here.

⁸ An alternative that we do not consider here but that could lead to a simpler analysis would allow for scrambling of the participle by itself (i.e., not as a remnant). See Müller 1996 for arguments against pursuing such an analysis for German. The Hindi-Urdu data are actually equivocal with respect to this question. For concreteness, we have adopted what we take to be the more conservative analysis.

3 Antisymmetric Accounts

3.1 Linearity and Scope

Mahajan (1997), who first observed the generalization about linear order and scope discussed in section 1.2, derives it as follows. He takes Hindi-Urdu to be underlyingly head-initial, the basic [S IO DO V Aux] order being derived by a sequence of leftward movements of arguments and clausal remnants. Rightward-scrambled orders are generated by stranding the rightward-positioned element while moving everything else higher. The chief problem with this proposal is that it does not, in fact, capture the scope relationships it intends to capture. To see this, consider the derivation of the [S IO V Aux DO] order.

- (21) a. [IO [V DO]]
 → IO, DO move to specifiers of the relevant Agr projections
 b. [IO_i [DO_j [t_i V t_j]]]
 → S is merged
 c. [S [IO_i [DO_j [t_i V t_j]]]]
 → Aux is merged
 d. [Aux [S [IO [DO V]]]]
 → S moves to Spec,Aux
 e. [S_i [Aux [t_i [IO [DO V]]]]]
 → DO moves to a position above the subject
 f. [DO_j [S_i [Aux [t_i [IO [t_j V]]]]]]
 → Aux moves to a higher head
 g. [Aux_k [DO_j [S_i [t_k [t_i [IO [t_j V]]]]]]]
 → the italicized remnant is fronted
 h. [[S_i [t_k [t_i [IO [t_j V]]]]]_l [Aux_k [DO_j t_l]]]
 (certain traces and many functional heads are suppressed for readability)

In (21h), neither S nor IO actually c-commands the DO. To capture the scope facts, an additional assumption is needed, which makes XPs in a fronted phrase c-command out of it. This would have to apply not only to the specifier of the fronted phrase but also to XPs more deeply embedded in the fronted phrase. This loosening of the notion of c-command is both conceptually and empirically problematic. XPs inside fronted phrases in Hindi-Urdu do not generally c-command out of the fronted phrase.

- (22) a. [Ram-kaa us-se_i cupke-cupke mil-naa]_j [Sita-kii mā:]-ko t_j katai pasand
 Ram-GEN her-INST secretly meet-INF Sita-GEN.F mother-DAT at.all like
 nahī: hai.
 NEG be.PRS
 ‘Sita’s_i mother does not like Ram’s meeting with her_i secretly at all.’
 b. [Use_i dā:ṭ-ne]-ko_j [Ram-kii mā:]-ne [us-kii ṭīicar]-se t_i
 he.DAT scold-INF.OBL-ACC Ram-GEN.F mother-ERG he-GEN.F teacher-INST
 kah-aa.
 say-PFV
 ‘Ram’s_i mother told his_i teacher to scold him_i,’

In fact, as shown by (23), which involves result clauses, there is no correlation between c-command and linear order once we consider two XPs that are not coarguments of the same predicate.

- (23) [Itne saare logō]-ne use_i tohfe diye [ki Ram_i
 so.many.MPL 'all'.MPL people.OBL-ERG he.DAT gifts.M give.PFV.MPL that Ram.M
 maalaamaal ho gayaa].
 rich be go.PFV.MSG
 'So many people gave him_i gifts that Ram_i became rich.'

Appealing to reconstruction of the remnant phrases in cases like (21) does not help. In fact, it makes things worse. Reconstruction of the remnant in this case would create a structure with the following incorrect scope configuration for the [S IO V Aux DO] order.

- (24) DO > S > IO
 (actual scope configuration: S > IO > DO)

In this section, we have shown that the antisymmetric analysis proposed by Mahajan (1997) does not account for the facts at issue, at least not without added complications. Simpson and Bhattacharya (2003) do not discuss the correlation between linear order and scope, but since they share Mahajan's antisymmetric assumptions, we believe that their account too would inherit the criticism concerning scope relationships.

3.2 *The Restriction on Wh-Scope*

We turn now to the second property of rightward scrambling discussed in this article: the inability of a rightward-scrambled *wh*-expression to take matrix scope. Mahajan (1997) does not focus on this restriction on *wh*-scope, though he mentions it in a footnote (p. 209, fn. 9). Simpson and Bhattacharya (2003) also mention this restriction in a footnote (p. 132, fn. 3) but do not provide an explanation. However, since their article is concerned with *wh*-scope out of finite clauses in Bangla, it is possible to extrapolate a potential analysis from their general account and a suggestion made in the footnote. We note that although they do not explicitly discuss Hindi-Urdu, the general tenor of their argumentation indicates that they intend their analysis of Bangla to carry over to Hindi-Urdu.

In addition to making their basic antisymmetric assumptions about Bangla syntax, Simpson and Bhattacharya argue that it has overt *wh*-movement, which is masked by movement of other elements to a Topic projection above CP, as demonstrated in (25).

- (25) *Derivation of [S O_{wh} V]*
 a. Base structure: SVO
 [S [V O_{wh}]]
 b. Movement for Case: SOV
 [S [O_{wh} [. . . V . . .]]]
 c. *Wh*-movement of O: OSV
 [O_{wh-i} [C⁰[+wh] [S [t_i [. . . V . . .]]]]]
 d. Topicalization of S: SOV
 [S [Top⁰ [O_{wh-i} [C⁰[+wh] [t_j [t_i [. . . V . . .]]]]]]]]

In Simpson and Bhattacharya's approach, [S V DO_{wh}] would be ruled out as a case of DO_{wh} not moving to Spec,CP. The question is whether it is possible to rule out a structure in which the requisite movement of DO_{wh} to Spec,CP takes place, followed by movements resulting in [S V DO_{wh}]. For example, if (25d) were followed by further movement of V to Top⁰, the result would incorrectly be predicted to be a well-formed question. So to make the explanation succeed, an additional assumption is needed that the highest the verb can move is to C⁰. This assumption seems to lead to a bind with sentences like (9), repeated here as (26), which have the order [S V DO_{wh} Aux] and still allow a question interpretation.

- (26) Sita-ne dhyaan-se dekh-aa kis-ko thaa?
 Sita-ERG care-with see-PFV who-ACC be.PST
 'Who had Sita looked at carefully?'

To handle cases like (26), the prohibition against moving a verb past C⁰ would have to be restricted to the finite verb. The participial verb could then be fronted past Spec,CP as long as the finite auxiliary stayed in C⁰ or lower.

The above discussion has shown that the distribution of *wh*-in-situ in Hindi-Urdu can be made to follow from the assumption that the finite verb can move as high as C⁰ at most, the assumption that Hindi-Urdu has overt *wh*-movement, and basic antisymmetry assumptions. This is not surprising, though, because the first two assumptions, which lack independent support, together essentially assert that a properly interpreted *wh*-word has to precede the finite auxiliary. This explanation leaves something to be desired. In contrast, in our proposal the restriction on *wh*-in-situ follows directly from our analysis of rightward movement as remnant movement. No additional stipulations are required.

We have shown, then, that not only is a non-antisymmetric analysis of the rightward-scrambling phenomenon tenable, it actually provides greater empirical coverage with respect to the correlation between word order and scope and a simpler analysis with respect to the distribution of *wh*-in-situ.

3.3 *Wh-Expressions inside Finite Complements*

We now turn briefly to the implications of the proposed remnant movement analysis for the scope of *wh*-expressions inside finite complements. Simpson and Bhattacharya (2003) rule out the possibility of a matrix question reading for sentences like (11a), [S V [_{CP} ... *wh* ...]], because no *wh*-movement has taken place. In order for the *wh*-element to take scope, the CP containing it must pied-pipe to Spec,CP. In our account, the structure involves extraposition of the CP from its preverbal base position; that is, the postverbal CP is trapped inside a verbal remnant. As discussed earlier, remnants are scope islands and so a *wh*-phrase inside a CP inside a remnant cannot covertly move out of the remnant. Covert movement of the *wh*-element after reconstruction is also not an option because reconstruction does not open up scope domains. The *wh*-element is effectively trapped inside the CP. In fact, Dayal (1996) considers the possibility of reconstructing extraposed CPs but discards it as problematic, citing the lack of principled

reasons for blocking subsequent *wh*-movement out of that CP. Given the present account of rightward scrambling, however, there may be reason to open up that line of explanation. We leave that for future study, since a full treatment of *wh*-phenomena outside finite clauses requires attention not only to cases like (11a), but also to cases involving partial *wh*-movement/scope marking ([S *wh* V [_{CP} . . . *wh* . . .]]), cases involving pair-list readings ([_{CP} . . . *wh* . . . V [_{CP} . . . *wh* . . . *wh* . . .]]), and structures containing an overt pronoun in preverbal position associated with the postverbal CP ([_{CP} S pron_i V [_{CP} . . . *wh* . . .]_i]).

4 Directions for Further Exploration

Having presented a system that is able to derive correlations between word order and scope and a constraint on *wh*-in-situ in Hindi-Urdu, we now examine two assumptions underlying this system. A central assumption is that nonverbal projections (DPs, PPs) cannot move to the right. This is an assumption our approach shares with antisymmetric approaches. However, unlike antisymmetric approaches, which rule out rightward movement altogether, ours allows rightward movement of verbal projections. A parallel assumption is that only DPs/PPs/participles (and not verbal projections that contain DPs/PPs) can undergo leftward movement. There seems to be no clear analogue of VP-topicalization in Hindi-Urdu. So Hindi-Urdu has XPs that can only undergo leftward movement and XPs that can only undergo rightward movement. At this point, it is unclear to us why the cut between the elements that can move to the left and the elements that can move to the right is the way it is. This is a puzzle we leave for future work. But together, the two assumptions yield the result that the movements of verbal projections allowed by the system do not lead to an introduction of new LF c-command relationships between arguments.⁹

Next, we turn to the crosslinguistic import of our proposal. Even though our proposal results from examining Hindi-Urdu data, it has direct application to the analysis of rightward movement

⁹ There is one additional step we need to derive this fact. We need to block iterated rightward movements of the following sort:

- (i) a. *Initial*
 XP_1 [_{VP₁} XP_2 [_{VP₂} XP_3 t_V]] V
 - b. *VP₂ is rightward-moved*
 $[[XP_1$ [_{VP₁} XP_2 t_i] V] [_{VP₂} XP_3 t_{V_i}]]
 - c. *VP₁ is rightward-moved*
 $[[[XP_1$ t_j V] [_{VP₂} XP_3 t_{V_i}]] [_{VP₁} XP_2 t_{j_i}]]
- Resulting word order: XP_1 V XP_3 XP_2
 Scope after reconstruction: $XP_1 > XP_2 > XP_3$

A derivation like (i) would allow us to generate structures that would not comply with the generalization in (7) regarding scope and linear order. But derivations like (i) are formally identical to the cases discussed by Müller (1996) and are ruled out by his Principle of Unambiguous Domination.

- (ii) *Unambiguous Domination*
 An α -trace must not be α -dominated.

In (i), both VP_1 and VP_2 undergo the same kind of movement, and since VP_2 is contained inside VP_1 , we end up with a violation of the Principle of Unambiguous Domination.

in other Indo-Aryan languages (see Deoskar 2006 for an extension to Marathi). Moreover, a reviewer points out that rightward movement in Turkish has properties similar to those noted for Hindi-Urdu (e.g., lack of new scope relations), and the inability of *wh*-phrases to scramble rightward (see Kornfilt 2005). It seems plausible, therefore, that the analysis proposed here could be extended to Turkish. More generally, rightward movement of remnants seems to be limited to loosely verb-final languages, being unavailable in rigidly verb-final languages such as Japanese, Korean, and the Dravidian languages, as well as in verb-initial and verb-medial languages. Leftward remnant movement (in the traditional sense) also seems restricted, being unavailable in Hindi-Urdu. An investigation of more fine-grained typological correlations of the crosslinguistic constraints on the movement of verbal remnants constitutes another direction for future work.

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