Rightward Scrambling as Rightward Remnant Movement\textsuperscript{1}

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1 Abstract

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 anti-symmetric proposals mentioned above which treat rightward scrambling as argument stranding. Our rightward remnant movement analysis is shown to better capture two empirical properties of rightward scrambling that remain elusive in the other accounts. One is the correlation between linear order and scope. The other is restricted scope for rightward scrambled \textit{wh}-expressions.

Keywords: rightward movement, rightward scrambling, remnant movement, \textit{wh}-scope, linear order, scope, Indo-Aryan languages, Hindi-Urdu
2 Rightward Scrambling in Hindi-Urdu

2.1 The Core Phenomenon

Hindi-Urdu has a canonical SOV word order. Working within the framework of anti-symmetry (Kayne (1994)), Mahajan (1997) proposes that its underlying structure is SVO. This position is reiterated for Bangla, a closely related Indo-Aryan language, by Simpson and Bhattacharya (2003). In this paper we use the phenomenon of rightward movement to argue against this position. We first present a non-antisymmetric account of the phenomenon, showing that an anti-symmetric account is not the only way to account for the phenomenon at hand. 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 positions (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 somewhat poorly understood. The core properties of rightward scrambling, discussed in Mahajan (1997), can be illustrated with the examples in (1-3). (1) establishes that any argument can appear to the right, (2) shows that more than one argument can do so, while (3) shows that arguments can appear between the verb and auxiliary:3

(1) a. O V Aux S:

\begin{Verbatim}
Ram-ko dhyaan-se dekh-aa thaa Sita-ne.
\end{Verbatim}

‘Sita had looked at Ram carefully.’

b. S V Aux O:

\begin{Verbatim}
Sita-ne. dhyaan-se dekh thaa Ram-ko.
\end{Verbatim}
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 than book to Ram.’

(3) S DO V IO Aux:
Sita-ne kitaab bhej-ii Ram-ko thii
Sita-ERG book.F senf-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, namely the (in)ability of displaced arguments to take scope over arguments in their canonical position and the scope of \( wh \)-expressions.

2.2 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 to bind a pronoun inside the subject phrase while 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], 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],
he-GEN.OBL brother-ERG hit-PFV every one man-ACC

c. OSV: weak crossover amnesty

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

‘His_i brother hit [every man],’

The same point can be demonstrated with respect to reciprocal binding. 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 baccô]-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 baccô]-ne dekh-aa [Anu aur Ramaa]-ko_i
each.other-GEN.OBL kids-ERG see-PFV Anu and Ramaa-ACC
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.

Turning to multiple rightward scrambling, we see further evidence of 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 not the other way around:

(6)  

a. VSO

*dekh-aa [us-ke, bhaai]-ne [har ek aadmii]-ko,  
see-PFV he-GEN.OBL brother-ERG every one brother-ACC

b. VOS

dekh-aa [har ek aadmii]-ko, [us-ke, bhaai]-ne  
see-PFV every one brother-ACC he-GEN.OBL brother-ERG

‘His, brother saw every man,.’

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):
(7) Variable binding/pronominal coreference possibilities between co-arguments (i.e. phrases thematically related to the same predicate) reflect linear order: if \( XP_1 \) and \( XP_2 \) are co-arguments and \( XP_1 \) precedes \( XP_2 \), then \( XP_1 \) has scope over \( XP_2 \) at LF.

### 2.3 Restricted Scope of Rightward Scrambled Wh

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 for 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)).

(8) a. Subj \( O_{wh} \) V Aux:

\[
\begin{align*}
\text{Sita-ne} & \quad \text{dhyaan-se} & \quad \text{kis-ko} & \quad \text{dekh-aa thaa} \\
\text{Sita-ERG} & \quad \text{care-with} & \quad \text{who-ACC see-PFV be-PST} \\
\text{‘Who had Sita looked at carefully?’}
\end{align*}
\]

b. \( O_{wh} \) Subj V Aux:

\[
\begin{align*}
\text{kis-ko} & \quad \text{Sita-ne} & \quad \text{dhyaan-se} & \quad \text{dekh-aa thaa} \\
\text{who-ACC Sita-ERG} & \quad \text{care-with} & \quad \text{see-PFV be-PST} \\
\text{‘Who had Sita looked at carefully?’}
\end{align*}
\]

c. Subj V Aux \( O_{wh} \):

\[
\begin{align*}
\text{Sita-ne} & \quad \text{dhyaan-se} & \quad \text{dekh-aa thaa} & \quad \text{kis-ko} \\
\text{Sita-ERG} & \quad \text{care-with} & \quad \text{see-PFV be-PST who-ACC} \\
\text{‘Who had Sita looked at carefully?’}
\end{align*}
\]

An important point to note in this connection is the fact 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) Subj 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 with respect to 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 2.2, do not change regardless of whether scrambling is to the right of the auxiliary or whether it is 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. Subj V Aux $[FiniteCP.... wh ....]$:

Ram jaan-taa hai [ki kaun aa-yaa thaa]
Ram.M know-IMPFV.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. $wh_i$ Subj V Aux $[FiniteCP.... t_i ....]$:

kaun$ _i$ Ram jaan-taa hai [ki t$ _i$ aa-yaa
who.M Ram.M know-IMPFV.MSG be.PRS.3SG that come-PFV.MSG

7
Bangla and Marathi differ from Hindi-Urdu in allowing for structures where the finite complement CP can appear in pre-verbal position. In this position, an embedded in-situ $wh$-expression can take scope out of the embedded clause (see Simpson and Bhattacharya (2003)).

Non-finite clauses in Hindi-Urdu canonically appear pre-verbally, not surprising if they are in fact gerunds (Srivastav (1991), Butt (1995), and Dayal (1996)), which like other nominal phrases canonically appear pre-verbally. They may also occur to the right of the verb. The scope of $wh$-expressions inside non-finite complements follows the pattern seen with unembedded $wh$-expressions: as noted in Mahajan (1990), when the non-finite clause occurs in preverbal position, $wh$-expressions inside it take matrix scope, but not when the non-finite clause is postverbal:7

(11) a. Subj $\left[_{\text{nonfinite}} wh \ldots\ldots\right]$ V Aux:

\[
\begin{align*}
\text{Ram-ne} & \quad \text{[kis-ko dekh-naa] caah-aa thaa} \\
\text{Ram-ERG} & \quad \text{who-ACC see-INF want-PFV be.PST}
\end{align*}
\]

‘Who had Ram wanted to see?’

b. Subj V Aux $\left[_{\text{nonfinite}} wh \ldots\ldots\right]$:

\[
\begin{align*}
*\text{Ram-ne caah-aa thaa} & \quad \text{[kis-ko dekh-naa]} \\
\text{Ram-ERG} & \quad \text{want-PFV be.PST who-ACC see-INF}
\end{align*}
\]

In this paper we do not provide a full analysis of $wh$-expressions inside finite or non-finite complements, but we will touch upon them in our discussion of Simpson and
Bhattacharya (2003)'s proposal in section 3. Our primary focus in this paper 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.

3 A Rightward Remnant Movement Approach

3.1 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 noted by Mahajan (1997), 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 that we will make shows that the antisymmetric approach is not needed to account for the facts, which 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) and 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 present (Kumar (2006)).

It was noted by Gambhir (1981) that rightward movement of verbs is possible. Our analysis of such structures is shown below in (12a, b), where a VP moves to the right and attaches to the verbal spine:

(12) a. order without rightward movement:
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 VP$_2$ moves leftward, leaving behind a trace inside VP$_1$. This gives us rightward scrambling of the DO. Finally, (13c) illustrates how multiple scrambling takes place. Here the whole VP$_1$ moves to the right after V has moved out, preserving the canonical order of indirect and direct objects.\(^8\)

(13) a. S IO DO V Aux:

\[
\text{Ram-ne} \quad [_{VP_1} \text{Sita-ko} \quad [_{VP_2} \text{kitaab } t_j] \text{ dii}_i \quad \text{thii}]
\]
\[\text{Ram-ERG} \quad \text{Sita-DAT} \quad \text{book.F} \quad \text{give.PFV.F be.PST.FSG}\]

‘Ram had given a book to Sita.’

b. S IO V Aux DO:

\[
[[\text{Ram-ne} \quad [_{VP_1} \text{Sita-ko } t_j] \text{ dii}_i \quad \text{thii}] \quad [_{VP_2} \text{kitaab } t_j]_j]
\]
\[\text{Ram-ERG} \quad \text{Sita-DAT} \quad \text{give.PFV.F be.PST.FSG} \quad \text{book.F}\]

‘Ram had given a book to Sita.’

c. S V Aux IO DO:
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 VP$_2$, 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 $t_j$ dii, thii] $[VP_1$ Sita-ko $[VP_2$ kitaab $t_t]]]$

Ram-ERG give.PFV.F be.PST.FSG Sita-DAT book.F

‘Ram had given a book to Sita.’

(b)  S DO V Aux IO:

[[Ram-ne $[VP_0$ kitaab $t_t$ dii, thii] $[VP_1$ Sita-ko $[VP_2$ t_t $t_j]]]]$

Ram-ERG book.F Sita-DAT give.PFV.F be.PST.FSG

‘Ram had given a book to Sita.’

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

3.2 Deriving Scopal Relationships

It has been argued by Huang (1993) that remnant movement undergoes obligatory reconstruction to its base position. In the following, from Huang (1993):110, the fronted VPs are remnants because they contain the trace of the subject:
(15)  a.  i.  *[Criticize John], he said that I will not tj.
   ii.  *[Criticize John], I said he will not tj.

b.  i.  *[How proud of John] does he think I should be tj?
   ii.  *[How proud of John] do you think he should be tj?

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

(16)  a.  [XP1 [VP1 XP2 [VP2 XP3 tj]] Vj Aux]
   b.  XP1 >> XP2 >> XP3

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

(17)  a.  XP1 V Aux XP2 XP3  
   i.  Structure: [[XP1 tj Vj Aux] [VP1 XP2 [VP2 XP3 tj]]j]
   ii.  After Reconstruction: [XP1 [VP1 XP2 [VP2 XP3 tj]] Vj Aux]
   b.  XP1 XP3 V Aux XP2  
   i.  Structure: [[XP1 [XP3 tj] Vj Aux] [VP1 XP2 [VP2 t3 tj]]j]
   ii.  After Reconstruction: [XP1 [XP3 [VP1 XP2 [VP2 t3 tj]]] V Aux]

As we noted at the end of section 2.2, arguments lower in the base structure can only appear to the left of rightward moved arguments if they have scrambled leftwards prior to
the rightward movement of the remnant that contains the postverbal argument. Reconstruction, as we can see, recreates the post-leftward scrambling but pre-remnant movement (i.e. rightward scrambling) configuration, accounting for the observed correlation between linear order and scope.

3.3 Deriving the Wh-Scope Effects

Let us now consider the repercussions of the proposal for the interpretation of wh-expressions. We assume, following Davison (1984), Mahajan (1990), Srivastav (1991), Dayal (1996), and others, that question formation in Hindi-Urdu involves covert movement at LF, be it a type of Quantifier Raising or Wh-movement. In order for a proper interpretation to obtain, a wh-phrase needs to be in the c-command domain of C₀[+wh] to enter into an Agree relationship with it. 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 Barss (1986), Lechner (1998), and Sauerland (1998), for example):

(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). 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 C₀ is blocked.
To complete this explanation we need to discuss cases like (9 = 19), where the \textit{wh}-expression occurs between V and Aux and is able to move to C\textsuperscript{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 did Sita look at carefully?’

We analyze these cases as involving short-distance topicalization of the verbal complex after leftward scrambling of the direct object.\textsuperscript{9} The steps are shown in (20). Each step in (20) corresponds to an independently well-formed structure.

(20) a. base structure:

[Subj [Adv [ wh-DO Participle]] Aux]

b. leftward scrambling of DO:

[Subj [Adv [wh-DO\textsubscript{i} [t\textsubscript{i} Participle]]] Aux]

c. leftward scrambling of the Participle:

[Subj [Adv [[t\textsubscript{i} Participle\textsubscript{j} [wh-DO\textsubscript{i} t\textsubscript{j}]]] Aux]]

d. after \textit{wh}-movement:

[wh-DO\textsubscript{i} [Subj [Adv [[t\textsubscript{i} Participle\textsubscript{j} [t’\textsubscript{i} t\textsubscript{j}]]] Aux]]

To sum up the account, the rightward scrambling phenomenon in Hindi-Urdu does not require an antisymmetric analysis. We have offered a viable analysis of rightward scrambling which 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.
4 Antisymmetric Accounts

4.1 Linearity and Scope

Mahajan (1997), who first observed the generalization about linear order and scope, discussed in section 2.2, derives it in the following way. He takes Hindi-Urdu to be underlyingly head-initial, with 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 primary problem with this proposal is that it does not, in fact, capture the appropriate scopal relationships it intends to capture. To see this, consider the derivation of ‘[S IO V Aux DO]’ order:

\[(21)\]

a. \([I O [V DO]]\)
   \[\rightarrow IO, DO move to specifiers of the relevant Agr projections\]

b. \([IO_t [DO_j [t_i V t_j]]] \]
   \[\rightarrow Subject is merged\]

c. \([Subj [IO_t [DO_j [t_i V t_j]]]] \]
   \[\rightarrow Aux is merged\]

d. \([Aux [Subj [IO [DO V]]]] \]
   \[\rightarrow Subj moves to [Spec,Aux]\]

e. \([Subj_i [Aux [t_i [IO [DO V]]]]] \]
   \[\rightarrow DO moves to a position above the subject\]

f. \([DO_j [Subj_i [Aux [t_i [IO [t_j V]]]]]] \]
   \[\rightarrow Aux moves to a higher head\]

g. \([Aux_k [DO_j [Subj_i [t_k [t_i [IO [t_j V]]]]]]] \]
   \[\rightarrow the boldfaced remnant is fronted\]

h. \([[Subj_i [t_k [t_i [IO [t_j V]]]]]_{k} [Aux_k [DO_j [t_j]]]] \]

In (21h) neither S nor IO actually c-command 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-sei cupke-cupke mil-naa]j [Sita-kii maa:]ko tij katai
   Ram-GEN her-INSTR secretly meet-INF Sita-GEN.F mother-DAT at.all
   pasand nahii hai
   like Neg be.PRS
   'Sita’s mother does not like Ram’s meeting with her secretly at all.'

   b. [usei da:t-ne]-koj [Ram-kii maa:]ne [us-kii tiicar]-se tij
   he.DAT scold-INF.OBL-ACC Ram-GEN.F mother-ERG he-GEN.F teacher-INST
   kah-aa
   say-PFV
   'John’s mother told his teacher to scold him.'

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

(23) [itne saare logo]-ne usei tohfe diye [ki Ram
   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 gifts that Ram 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 scopal configuration for the ‘[S IO V Aux DO]’ order.

(24) \( DO >> Subj >> IO \)

(Actual Scope Configuration: \( Subj >> IO >> DO \))

In this section we have shown that the antisymmetric analysis proposed in 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 scopal relationships.

4.2 The Restriction on Wh-Scope

We turn now to the second property of rightward scrambling discussed in this paper, namely the impossibility of a rightward scrambled \( wh \) to take matrix scope. Mahajan (1997) does not focus on this restriction on \( wh \)-scope though he mentions the restriction in a footnote (pg. 209, fn. 9). Simpson and Bhattacharya (2003) also mention this restriction in a footnote (pg. 132, fn. 3) but do not provide an explanation. However, since their paper 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 aforementioned 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.

Simpson and Bhattacharya, in addition to the basic antisymmetric assumptions about
Bangla syntax, argue that it has overt \textit{wh}-movement, which is masked by movement of other elements to a Topic projection above CP, as demonstrated below.

(25) Derivation of [S Wh-Obj V]

a. Base Structure: SVO

\[\text{[Subj [V Wh-Obj]]}\]

b. Movement for Case: SOV

\[\text{[Subj [Wh-Obj [.... V....]]]}\]

c. \textit{Wh}-movement of Object: OSV

\[\text{[Wh-Obj, [C^{0}[+wh] [Subj [t_i [.... V....]]]]]}\]

d. Topicalization of Subject: SOV

\[\text{[Subj, [Top^{0} [Wh-Obj, [C^{0}[+wh] [t_j [t_i [.... V....]]]]]]]}\]

In their approach, [S V \textit{wh}-DO] would be ruled out as a case of \textit{wh}-DO not moving to [Spec,CP]. The question is whether it is possible to rule out a structure in which there is requisite movement of \textit{wh}-DO to [Spec,CP] with further movements resulting in [S V \textit{wh}-DO]. For example, if (25d) were followed by further movement of V to Top^0, the result would incorrectly be predicted to be a well-formed question. So to make the explanation go through, an additional assumption is needed that the highest that the verb can move to is C^0. This assumption seems to lead to a bind with sentences like (9), repeated here as (26), which have a [S V \textit{wh}-DO Aux] order and still allow for a question interpretation.

(26) Sita-ne dhyaan-se dekh-aa kis-ko thaa

\begin{verbatim}
Sita-ERG care-with see-PFV who-ACC be.PST
\end{verbatim}

‘Who did Sita look at carefully?’

To handle cases like (26), the prohibition against moving a verb past C^0 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 C^0 or lower.
The above discussion has shown that the distribution of *wh*-in-situ in Hindi-Urdu can be made to follow from the assumptions that the finite verb can move as high as \(C^0\) at most, that Hindi-Urdu has overt *wh*-movement, and basic antisymmetric assumptions. But this is not surprising because the first two assumptions, for which there is lack of independent support, together essentially assert that a properly interpreted *wh*-word has to precede the finite auxiliary. The depth of 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.

### 4.3 *Wh*-Expressions inside Finite Complements

We now briefly turn to the implications of the remnant movement analysis we have proposed for the scope of *wh*-expressions inside finite complements. Simpson and Bhat-tacharya (2003) rule out the possibility of a matrix question reading for sentences like (11a), \([SV [CP \ldots \text{wh} \ldots ]]\), because no *wh*-movement has taken place. In order for the *wh* 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 i.e. 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* after reconstruction is also not an option due to the fact that reconstruction does not open up scope domains. The *wh* is effectively trapped inside the CP. In fact, Dayal (1996) had considered the possibility of reconstructing extra-
posed CPs but discarded it as problematic due to the lack of principle reasons for blocking subsequent \textit{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, however, for the future since a full treatment of \textit{wh}-phenomena out of finite clauses requires attention not only to cases like (11a), but also to cases involving partial \textit{wh}-movement/scope marking: [\text{Subj \textit{wh} V [\text{CP}...\textit{wh}...]]}, cases involving pair-list readings: [\text{CP}... \textit{wh}....V [\text{CP}...\textit{wh}...\textit{wh}...]], as well as structures in which there is an overt pronoun in pre-verbal position associated with the postverbal CP: [\text{CP Subj pron, V [\text{CP}....\textit{wh}...]]}.

5 Directions for Further Explorations

Having presented a system which is able to derive correlations between word order and scope and a constraint of \textit{wh} in-situ in Hindi-Urdu, we now examine a set of assumptions underlying this system. A central assumption for us is that non-verbal projections (DPs, PPs) cannot move to the right. This is an assumption we share with antisymmetric approaches. However, unlike antisymmetric approaches which rule out rightward movement altogether, we allow for 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 analog of VP-topicalization in Hindi-Urdu. So we have 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 something that we leave for future work. But together it yields 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.\footnote{10}

Next we turn to the crosslinguistic import of our proposal. Even though our proposal
is motivated on the basic of Hindi-Urdu data, it has direct application to the analysis of rightward movement in other Indo-Aryan languages (see Deoskar (2006) for an extension to Marathi). And a reviewer points out to us that rightward movement in Turkish has properties similar to those noted for Hindi-Urdu e.g. lack of new scope relations, and the impossibility of rightward scrambling of wh-phrases (cf. Kornfilt (2005)). It seems plausible therefore that the analysis proposed here could be extended to Turkish. More generally, the availability of rightward movement of remnants seems to be limited to loosely verb final languages, being unavailable in the rigidly verb final languages such as Japanese, Korean, and the Dravidian languages as well as in verb-initial and verb-medial languages. The distribution of 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.

References


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1 We would like to thank our classes at MIT and Harvard respectively in the Spring of 2003 where we first started thinking about this material. The first author thanks Danny
Fox for an important suggestion and thanks Josef Bayer, Miriam Butt, Uli Lutz, Bernhard Schwarz, Junko Shimoyama, Luis Vicente, and audiences at the University of Massachusetts at Amherst, Leiden University, and the University of Konstanz for much helpful discussion.

2 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 A-bar 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 themselves have undergone movement.

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

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

5 A reviewer notes that given leftness based explanations of WCO (cf. Chomsky (1976), Higginbotham (1980)), the failure of binding in (4/5b) 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],’s mother] loves him,’ a conclusion of surface c-command from the possibility of binding as in (6b) is also not straightforward. 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 in (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.

6 Dayal (1996) has an example of \(\text{SVO}_{wh}\) as acceptable but that acceptability is contingent on the availability of a special interpretation, as noted above.

7 The order ‘\(\text{S V O}_{\text{nonfinite}} \text{Aux}\)’ is degraded with or without embedded \(\text{wh}\)-expressions.

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

9 An alternative that we do not consider here but which 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 is actually equivocal with respect to this question. For concreteness, we have adopted what we take to be the more conservative analysis.

10 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:

\[
\text{XP}_1 [V_{P1} \text{XP}_2 [V_{P2} \text{XP}_3 t_v]] V
\]

b. \(\text{VP}_2\) is rightward moved:
c. VP₁ is rightward moved:

\[
[[[XP₁ t_j V] [VP₂ t_V]] [VP₁ t_i]]
\]

Resultant Word Order: XP₁ V XP₃ XP₂

Scope after reconstruction: XP₁ > XP₂ > XP₃

A derivation like (i) would allow us to generate structures that would not comply with the Linear Order-Scope Generalization. But derivations like (i) are formally identical to the cases discussed in Müller (1996) and are ruled out by his Principle of Unambiguous Domination:

ii. **Unambiguous Domination:**

An \( \alpha \)-trace must not be \( \alpha \)-dominated.

In (i), both VP₁ and VP₂ undergo the same kind of movement and since VP₂ is contained inside VP₁, we end up with a violation of the Principle of Unambiguous Domination.