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Reconsidering Rightward Scrambling: Postverbal Constituents in Hindi-Urdu

Emily Manetta

In the most recent account of rightward displacement in Hindi-Urdu, Bhatt and Dayal (2007) claim that all postverbal constituents are derived via rightward movement of a remnant VP. In this article, I argue that the remnant-VP approach does not allow us to make distinctions between the positioning requirements of DPs and CPs. I propose an account of rightward scrambling (following Mahajan 1988) that captures the correlation in Hindi-Urdu between scope and linear order, and I claim that finite complement CPs do not undergo scrambling, but are instead obligatorily aligned to the right edge of their containing clause at the level of PF.

Keywords: scrambling, rightward, complement clause, Hindi-Urdu, remnant

1 Introduction

1.1 Overview

Unmarked word order is verb-final in Hindi-Urdu, but a number of constituent types can appear to the right of the verb. Noun phrases may and finite complement clauses must appear postverbally ((1)–(2)).

- (1) Siita-ne Mohan-ko dikhaa-ii ek kitaab. S IO V DO
Sita-ERG Mohan-DAT show-PFV a book
'Sita showed a book to Mohan.'
- (2) a. Siita-ne kah-aa thaa ki Mohan aay-aa thaa. S V Aux CP
Sita-ERG say-PFV AUX.PST that Mohan come-PFV AUX.PST
'Sita said that Mohan had come.'
- b. *Siita-ne [_{CP} ki Mohan aay-aa thaa] kah-aa thaa. *S CP V Aux

Although a great deal of work has been done on leftward scrambling in Hindi-Urdu (e.g., Mahajan 1990, Kidwai 2000), much less attention has been paid to rightward movement. The most recent

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account (Bhatt and Dayal 2007) proposes that the sentences in (1) and (2a) are derived via the rightward movement of a remnant VP. In this article, I argue that the remnant-VP approach does not allow us to make important distinctions between the positioning requirements of DPs and CPs, or to derive all and only the grammatical combinations of postverbal constituents. I suggest that we consider the notion that individual noun phrases can move to the right (Mahajan 1988), and I propose a more complete account of rightward argument scrambling that can capture the correlation in Hindi-Urdu between scope and linear order.¹ Under this approach, rightmost finite complement CPs as in (2a) do not undergo scrambling, but are instead obligatorily aligned to the right edge of their containing clause at the level of PF. The account developed in this article also offers an alternative explanation for additional phenomena with which Bhatt and Dayal (2007) are concerned: the restricted scope of both postverbal *wh*-phrases and *wh*-phrases embedded in postverbal CPs in Hindi-Urdu.

1.2 *The Remnant-VP Approach*

There have been three core types of approaches to deriving the word order in sentences like (1) and (2a). The first type, proposed by Mahajan (1988), assumes that these constituents move independently to the right of the verb and attempts to use the properties of constructions with postverbal constituents to diagnose the nature of this movement. The second type, also proposed by Mahajan (1997a,b) (for Bangla, see also Simpson and Bhattacharya 2003), employs an antisymmetric account (Kayne 1994), deriving the postverbal positioning via massive leftward movement that strands the postverbal element. I will not substantively address the antisymmetric account of postverbal constituents (Mahajan 1997a,b) here; for detailed discussion, see Bhatt and Dayal 2007. The third approach, advanced by Bhatt and Dayal (2007), proposes that both (1) and (2a) exhibit rightward remnant-VP movement. That is, the verb (and possibly other constituents) moves out of the VP, then the VP moves rightward, causing any elements remaining within the VP to appear to the right of the verb. In this article, I argue that the remnant-VP approach does not provide the range of tools needed to differentiate and order different kinds of postverbal material, and I propose returning to the original intuition that Hindi-Urdu has a process of rightward scrambling akin to leftward scrambling.

In this most recent proposal to account for the sentences and (1) and (2a), Bhatt and Dayal (2007) claim that the only type of projection that can move rightward in Hindi-Urdu is a remnant VP. Postverbal DPs and CPs are derived when they are contained within some size of verbal projection remnant that is moved rightward past the verb. Specifically, Bhatt and Dayal first assume that the verb raises rightward out of the vP and into a higher Asp(ect) head (following Kumar 2006). Then some level of the verbal projection containing the trace of the moved verb (the remnant VP) moves rightward and adjoins above and to the right of the verb and any auxiliary, as in (3).

¹ Although other types of constituents may be found displaced both rightward and leftward in Hindi-Urdu (Kidwai 2000), here I will discuss only rightward argument scrambling, as do Bhatt and Dayal (2007).

2.2 Elements Stranded by Rightward Movement

As it stands, the remnant-VP approach is unable to generate certain constructions because of the relatively large constituent (verbal-projection-sized) moving rightward. In particular, cases in which postverbal DPs strand relative clauses and quantifiers in their base position cannot be easily derived.

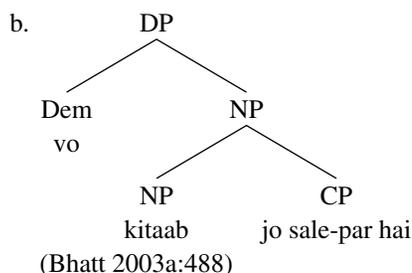
In addition to other types of relative and correlative clauses, Hindi-Urdu has English-style postnominal relative clauses that can appear adjacent to their head noun, or in a postverbal position.

(8) Ve log [jo zyaada chai pii-te heN] kam so paa-te heN.
 those people REL more tea drink-HAB AUX less sleep able-HAB AUX
 ‘Those people [who drink a lot of tea] aren’t able to sleep well.’

(9) Ve log kam so paa-te heN [jo zyaada chai pii-te heN].
 those people less sleep able-HAB AUX REL more tea drink-HAB AUX
 ‘Those people aren’t able to sleep well [who drink a lot of tea].’
 (Subbarao 1984:102–103, cited in Bhatt 2003b:4)

A number of previous accounts have proposed the structure in (10a–b) for English-style postnominal relative clauses in Hindi-Urdu, with the extraposed version in (10c) (for justification of this structure, both syntactic and semantic, see Srivastav 1991, Dayal 1996, Bhatt 1997, 2003a,b).³

(10) a. [_{DP} Vo [_{NP} kitaab [_{CP} jo sale-par hai]]] achchii hai.
 that book.F REL sale-on AUX good.F AUX
 ‘The book which is on sale is good.’



c. [_{DP} Vo [_{NP} kitaab]] achchii hai [_{CP} jo sale-par hai].
 that book.F good.F AUX REL sale-on AUX

³ My claim here is that it is only the English-style externally headed relative clauses (which are postnominal) that will be problematic to derive under the remnant-VP proposal. Correlative clauses (which are prenominal) have been analyzed as adjoined either to the DP (Bhatt 2003b) or to the IP (Srivastav 1991), but because (if moved at all) they are typically displaced to the left, their analysis is not directly relevant here.

Under the remnant-VP approach, it is hard to see how (10c) could be derived from a base-generated structure like (10a–b). In order to arrive at a remnant VP that exhaustively contained the relative clause CP, the demonstrative *vo* ‘that’ in Spec,DP as well as the noun *kitaab* ‘book’ would need to scramble independently to the left out of the relevant verbal projection dominating the DP (they do not form a constituent). An alternative derivation, in which the CP scrambles leftward within the VP (assuming leftward scrambling is available for relative clauses) and then the DP containing the trace of the CP scrambles leftward over the CP (leaving a verbal projection exhaustively containing the relative clause), violates the Principle of Unambiguous Domination (Müller 1996) assumed by Bhatt and Dayal under the remnant-VP account for unrelated reasons (Bhatt and Dayal 2007:299n9).⁴

Since according to Bhatt and Dayal all rightward movement in Hindi-Urdu is remnant-VP movement, it is hard to see how relative clause extraposition can be derived, given the basic assumptions above. As a reviewer points out, there are other ways of understanding relative clause extraposition, including the account proposed by Fox and Nissenbaum (1999). Under this approach, the head nominal is moved to the right edge of the clause, and the relative clause is then late-adjoined to the top copy of the moved nominal. Only the bottom copy of the head nominal is pronounced, providing the appearance of discontinuity between the head nominal and the relative clause. However, Bhatt and Dayal’s account cannot admit this approach, since in their view only remnant VPs and no other types of constituents (certainly not DPs) may move to the right.⁵ We will return to a second puzzle concerning postverbal relative clauses below.

Short and intermediate leftward scrambling can strand quantifiers in Hindi-Urdu (as in (11)) (Déprez 1990, Dayal 1994, Bhatt 2003b). Quantifiers can also be stranded by postverbal DPs, as in (12) (Déprez 1990).

- (11) a. *Base order: S IO [QP Q DO-NP] V*
 Raam-ne Mohan-ko [saarii kitabeeN] lauṭaa dii
 Ram-ERG Mohan-DAT all books return give.PFV
 ‘Ram returned all the books to Mohan.’

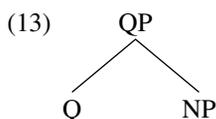
⁴ The Principle of Unambiguous Domination (Müller 1996) states that an α -trace must not be α -dominated. In other words, in a derivation yielding the configuration ... [A ... t_i ...]_j ... B_i ... t_j ... , movement of B and movement of A may not be of the same type. In this case, as well as in the case concerning quantifier stranding discussed in the text below, both movements would be leftward scrambling (of the same type) and would therefore be banned. Bhatt and Dayal (2007:299n9) rely on this principle to prevent multiple rightward-scrambling remnant VPs when the second contains the trace of the first.

⁵ Crucially, Fox and Nissenbaum’s (1999) approach requires that we assume a framework in which there is no distinct ‘covert’ movement. The difference between ‘covert’ and ‘overt’ movement is a phonological one: in the case of overt movement, the phonology dictates that the top copy be pronounced; and in the case of covert movement, that the bottom copy be pronounced. For this reason, Bhatt and Dayal’s restriction of rightward movement to remnant VPs, under Fox and Nissenbaum’s approach, means that this would be the only type of constituent that could undergo either ‘overt’ or ‘covert’ movement to the right. Even if we could suggest that the remnant VP can be voided of all other material but the head noun, be moved to the right, host the late adjunction of the relative clause, and then have only its bottom copy pronounced, there is still another hurdle to implementing the Fox and Nissenbaum–style approach. Fox and Nissenbaum claim that late adjunction is only for adjunct CPs and that ‘complement extraposition can be derived only by rightward extraction of the EC [extraposed constituent] from the source NP’ (1999:18). Since, as a reviewer points out, Hindi-Urdu nominal complement CPs can also appear extraposed to the right edge of the clause, we would still require an account of this rightward movement and would be back to the same challenges pointed out for (10c) in the text.

- b. *Short scrambling: S DO-NP_i IO [QP Q t_i] V*
 Raam-ne kitabeeN_i Mohan-ko [saarii t_i] laūṭaa dii
 Ram-ERG books Mohan-DAT all return give.PFV
- c. *Intermediate scrambling: DO-NP_i S IO [QP Q t_i] V*
 KitabeeN_i Raam-ne Mohan-ko [saarii t_i] laūṭaa dii.
 books Ram-ERG Mohan-DAT all return give.PFV
 (Bhatt 2003b:23)

- (12) *Postverbal: S IO [QP Q t_i] V DO-NP_i*
 Raam-ne Mohan-ko [saarii t_i] laūṭaa dii kitabeeN_i.
 Ram-ERG Mohan-DAT all return give.PFV books
 (Déprez 1990:23)

Assuming the structure of a quantified phrase in (13) (Bresnan 1973, Barwise and Cooper 1981, Giannakidou and Rathert 2009),⁶ it is unexpected under the remnant-VP proposal to see quantifiers stranded by postverbal DPs as in (12).



Again, in order to arrive at a verbal projection that exhaustively contains the noun phrase *kitabeeN* ‘books’ that could then be scrambled rightward, the quantifier alone would need to scramble leftward, leaving the NP within a verbal projection. Following the stranding approach to quantifier float in which it is not the quantifier that moves independently, but instead the noun phrase, this option seems undesirable (see, e.g., Sportiche 1988, Shlonsky 1991, Mahajan 1994, Bhatt 2003b). The alternative derivation in which the noun phrase scrambles leftward (within the VP) and then the entire QP containing the NP-trace scrambles over it would once again violate the Principle of Unambiguous Domination.⁷ In either case, under the remnant-VP approach quantifier stranding by a postverbal noun phrase becomes problematic to derive.

⁶ For present purposes, a DP analysis of quantifiers (in which the quantifier is a D head with an NP complement) would yield the same problematic results (e.g., Matthewson 1998, Gillon 2009).

⁷ A reviewer asks whether a potentially licit derivation would arise if first the NP and then the remnant QP underwent distinct types of leftward movement (A-movement or \bar{A} -movement), creating the configuration necessary for rightward remnant-VP movement without violating the Principle of Unambiguous Domination. However, though this derivation might in principle be available in some configurations, in others it clearly is not. For instance, in the case of (12), in which the rightward-scrambled word order is S IO [QP Q t_i] V DO-NP_i, we would have to assume that the DO-NP first leftward-scrambled to a position below the IO (short scrambling, which is unambiguously A-movement in Hindi-Urdu (Mahajan 1990, 1994, Bhatt 2003b)). The remnant QP would then also have to leftward-scramble to some location above the leftward-scrambled DO but *still* below the IO. This is again short scrambling (A-movement), and the Principle of Unambiguous Domination is unavoidably violated. I am making no particular claim here concerning what types of leftward movement may strand quantifiers in Hindi-Urdu, or about what types of leftward movement a remnant QP may undergo. Instead, I have demonstrated that although it may be possible to construct a configuration in which the leftward movement of the NP stranding the quantifier could be of a type distinct from that of the subsequent leftward movement of the remnant QP, there certainly exist configurations such as that in (12) that are not amenable to this strategy.

Another approach to quantifier float in which the quantifier is analyzed as an adverbial, adjoined to a higher projection (i.e., VP) and discontinuous from the noun over which it quantifies, might arguably fare even worse under the remnant-VP approach. These accounts explain the effects of quantifier float by requiring that the adverbial quantifier c-command a trace of the moved DP (Junker 1995, Doetjes 1997). In the remnant-VP account, the rightward-moved constituent is a remnant VP, not a DP, in a sentence like (12). For this reason, there would be no DP-trace for the quantifier to bind since the DP has not moved. It seems that neither approach to quantifier float can adequately capture (12) given the assumptions of the remnant-VP account.

2.3 Overgeneration

A third type of empirical concern with the remnant-VP approach involves overgeneration when multiple types of constituents appear postverbally. In particular, there is no clear way to prohibit orders in which extraposed relative clauses modifying indirect objects precede direct objects postverbally, yet these orders are ungrammatical. In general, extraposed relative clauses must follow nominals scrambled rightward, irrespective of the grammatical role of the relative clause's head noun (note, in particular, the contrast between (16) and (17)).

- (14) Raam-ne vah kitaab dii Mohan-ko jo Siita-ne S DO V IO RC_{DO}
 Ram-ERG that book give.PFV Mohan-DAT REL Sita-ERG
 khariid-ii thii.
 buy-PFV AUX
 'Ram gave Mohan the book that Sita bought.'
- (15) *Raam-ne vah kitaab dii jo Siita-ne khariid-ii thii Mohan-ko. *S DO V RC_{DO} IO
- (16) Raam-ne us aadmii-ko dii kitaab jis-ko parhnaa S IO V DO RC_{IO}
 Ram-ERG that man-ACC give.PFV book REL.DAT reading
 pasand hai.
 like AUX
 'Ram gave a book to that man who likes reading.'
- (17) *Raam-ne us aadmii-ko dii jis-ko parhnaa pasand hai kitaab. *S IO V RC_{IO} DO

The remnant-VP account provides a clear way to derive the grammatical structures in (14) and (16). In the case of (14), the direct object need only scramble outside of the VP layer containing the indirect object (scrambling away from the relative clause it heads). The remnant-VP then moves rightward, producing the postverbal order IO RC_{DO}. Slightly more complex is the derivation of (16), in which the direct object must scramble over the indirect object and then the indirect object scrambles outside the VP layer containing the direct object, stranding the relative clause it heads. The remnant VP then moves rightward, producing the postverbal order DO RC_{IO}. However, there is no simple way to prevent the ungrammatical orders in (15) and (17). That is, there is no particular reason to assume that this sequence cannot take place in (15): the direct object and the relative clause it heads scramble leftward over the indirect object, the direct object strands the

relative clause it heads, and then the remnant VP moves rightward.⁸ Even more problematic is (17), which features the relative clause headed by the indirect object and the direct object postverbally in their base order. It is difficult to imagine how we could prevent the derivation of (17) under this account.

At the root of this overgeneration is the assumption that the basic order of constituents within the VP (S IO DO), is always one of the available configurations of postverbal constituents as well. For nominals, this assumption is unproblematic. However, it is becoming clear that Hindi-Urdu handles clauses, whether relative clauses or complement clauses, somewhat differently from the way it handles nominals. That is, their positioning requirements in the postverbal field are not identical. Under the remnant-VP account, we have no obvious way to refer to DPs and clauses distinctly, nor do we have a mechanism to regulate or constrain relative orders of constituents established by leftward scrambling within the VP itself.

3 Rightward Movement as Rightward Scrambling

In this section, I present a new account of rightward movement in Hindi-Urdu. The core departure from the remnant-VP approach is the claim that postverbal DPs and CPs arrive at their surface positions via two different mechanisms. This allows us to understand why CPs obligatorily appear on the right edge, but DPs only optionally appear postverbally, creating sentences with marked information structure. It also allows us to state the positioning requirements of CPs and DPs separately, generating all and only the grammatical postverbal strings. The account of rightward scrambling of DPs below relies heavily on the literature on leftward scrambling in Hindi-Urdu, as well as crosslinguistically (Mahajan 1990, Miyagawa 1997, 2001, Grewendorf and Sabel 1999, Ko 2007).

3.1 Postverbal DPs

In Hindi-Urdu, in which unmarked word order is SOV, DPs may optionally appear to the right of the verb. Any number of DPs may appear postverbally, in any order.

- (18) Siita-ne Raam-ko dekh-aa. SOV
 Sita-ERG Ram-ACC see-PFV
 ‘Sita saw Ram.’

⁸ A reviewer proposes an additional set of assumptions that might allow us to bar (15) under the remnant-VP approach. If we assume that leftward scrambling of the direct object over the indirect object is in fact object shift to a left specifier of vP, and if we further stipulate that remnant VPs may not move rightward when the containing vP has a left edge (an extra specifier), then there would be no derivation that could arrive at (15). In order to strand the relative clause, the direct object would need to scramble leftward into the object-shift position (left specifier of vP), and in so doing would create the situation in which remnant-VP movement is blocked. The problem with this additional set of assumptions is that it would seem to also block the simple rightward scrambling of the indirect object in the order S DO V IO under the remnant-VP account. Once again, the direct object would need to scramble leftward over the indirect object to Spec,vP, but then the remnant, containing only the indirect object, would be blocked from moving rightward given the assumptions above. This proposal also will not block the derivation of (17) under the remnant-VP account, since in (17) no object shift is required (the postverbal constituents are in their base order).

- | | |
|--------------------------------|-----|
| (19) Siita-ne dekh-aa Raam-ko. | SVO |
| (20) Raam-ko dekh-aa Siita-ne. | OVS |
| (21) Dekh-aa Siita-ne Raam-ko. | VSO |
| (22) Dekh-aa Raam-ko Siita-ne. | VOS |

The variants in (19)–(22) have a marked information structure (for a diverse range of discourse functions attributed to rightward scrambling, see Gambhir 1981 and Butt and King 1996).

In Hindi-Urdu, there is a direct correlation between scope and linear order, including rightward-scrambled DPs. In other words, postverbal DPs appear to be c-commanded by all preverbal DPs, and in structures with multiple postverbal DPs each DP appears to be c-commanded by those to its left.

Rightward-scrambled quantifiers are unable to bind pronouns in preverbal positions (in (24)), although leftward scrambling seems to amnesty weak crossover violations (in (25)).

- | | |
|---|-----|
| (23) *Us-ke _i bhaai-ne har ek aadmii-ko _i maar-aa.
he-GEN.OBL brother-ERG every one man-ACC hit-PFV | SOV |
| (24) *Us-ke _i bhaai-ne maar-aa har ek aadmii-ko _i .
he-GEN.OBL brother-ERG hit-PFV every one man-ACC | SVO |
| (25) 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 .'
(Mahajan 1997b:189) | OSV |

Postverbal arguments cannot bind reciprocals in preverbal positions (in (27)), although leftward-scrambled nominals can bind reciprocals to their right (in (28)).

- | | |
|--|-----|
| (26) ???[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 | SOV |
| (27) ???[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 | SVO |
| (28) [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 .'
(Bhatt and Dayal 2007:289) | OSV |

In the unmarked word order, an indirect object pronoun c-commands a coreferential R-expression within the direct object, creating a Condition C violation (in (29)). If the direct object is scrambled leftward over the indirect object, the violation disappears (in (31)). However, if the direct object is scrambled to the right, the violation remains, indicating that the indirect object still c-commands the direct object in this configuration (in (30)).

- (29) *Siita-ne use_i tumhaaraa Raam-ko_i likhaa hua khat dikhaay-aa. S IO DO V
 Sita-ERG him you.GEN Ram-DAT written AUX letter show-PFV
- (30) *Siita-ne use_i dikhaay-aa tumhaaraa Raam-ko_i likhaa hua khat. S IO V DO
 Sita-ERG him show-PFV you.GEN Ram-DAT written AUX letter
- (31) Siita-ne tumhaaraa Raam-ko_i likhaa hua khat use_i dikhaay-aa. S DO IO V
 Sita-ERG you.GEN Ram-DAT written AUX letter him show-PFV
 ‘Sita showed a letter written by you to Ram_i to him_i.’
 (Mahajan 1997b:195, 198)

When multiple DPs appear postverbally, material in the DP immediately to the right of the verb seems to c-command material in the DP or DPs to its right.

- (32) *Dekh-aa [us-ke_i bhaai]-ne [har ek aadmii]-ko_i. VSO
 see-PFV he-GEN.OBL brother-ERG every one man-ACC
- (33) Dekh-aa [har ek aadmii]-ko_i [us-ke_i bhaai]-ne. VOS
 see-PFV every one man-ACC he-GEN.OBL brother-ERG
 ‘His_i brother saw [every man]_i.’
 (Bhatt and Dayal 2007:290)

The reciprocal-binding and weak crossover effects pattern with the pronominal-binding facts shown here (see Mahajan 1997a,b for full presentation of these data).

Overall, the generalization is that the hierarchical structure determining scope reflects surface linear precedence in Hindi-Urdu. That is, ‘‘If XP₁ and XP₂ are coarguments and XP₁ precedes XP₂, then XP₁ has scope over XP₂ at LF’’ (Bhatt and Dayal 2007:290).

Now that we have examined the basic facts of structures containing postverbal DPs in Hindi-Urdu, we can turn to a new account of rightward movement. Any successful account must address (a) how DPs arrive in the postverbal position, (b) how their order with respect to other postverbal material is constrained, and (c) how phenomena understood to be conditioned by c-command (variable binding, reciprocal binding, Condition C effects) are appropriately handled at the interpretive interface.

Previous approaches to the syntax of postverbal DPs have yielded mixed results. Mahajan (1988) first proposed an account that assimilated rightward scrambling to common approaches to leftward scrambling; however, this analysis did not account for many of the binding and Condition C effects discussed here, nor did it account for the relative positioning of DPs with respect to postverbal CPs (Bhatt and Dayal 2007). Antisymmetric accounts of postverbal DPs (Mahajan 1997a,b; see also Simpson and Bhattacharya 2003), though not examined in detail here, are also unable to account for the correlation between linear order and scope (see Bhatt and Dayal 2007 for discussion). Finally, I claim here that the most recent approach employing rightward remnant-VP movement (Bhatt and Dayal 2007) makes incorrect predictions with respect to positioning requirements of postverbal material, postverbal constituent ordering, and the potential to strand certain constituents.

The new account I propose here will return in spirit to Mahajan's (1988) original approach to postverbal DPs: that rightward movement shares the basic properties of leftward scrambling in Hindi-Urdu. This marks a significant break with the basic assumption underlying both the remnant-VP and antisymmetric approaches: that rightward scrambling is far more restricted than leftward scrambling. Instead, I suggest here that the best way to account for the wide range of postverbal DPs and their orders is to allow individual DPs to scramble rightward (see Kural 1997, Ko and Choi 2009). Under this approach, we do not need to stipulate which types of constituents can move to the right and which can move to the left.

This account will suggest that the scope and variable-binding effects of rightward movement are due to obligatory reconstruction of rightward-scrambled DPs to their pre-rightward-movement position (recall that remnant-VP reconstruction is also obligatory in Bhatt and Dayal's account). The correlation between surface linear order and scope in Hindi-Urdu will be seen to follow as a natural consequence of the probe-goal interaction.

3.2 *The Mechanisms of Rightward Scrambling*

I propose to treat rightward DP-scrambling as feature-driven movement resulting from a probe-goal interaction, akin to many approaches to leftward scrambling (e.g., Miyagawa 1997, 2001, Grewendorf and Sabel 1999, Ko 2007). Rightward scrambling is driven by an EPP feature that causes a maximal projection to undergo Move to the rightward specifier of the head bearing it (for concreteness, I will call this feature EPP-R). Just as with any head possessing an EPP feature, a head with EPP-R must probe its domain and interact with an appropriate, accessible goal, prompting that goal to undergo a rightward instance of Move. Just as in familiar accounts of leftward scrambling, the optionality of rightward scrambling is attributed to whether or not the relevant heads in the numeration happen to possess the probe responsible for rightward scrambling (Ko 2007, Ko and Choi 2009).⁹

I will assume that the architecture of the grammar is such that a derivation proceeds phase by phase (Chomsky 2001, 2008). For present purposes, the relevant phases are defined by the functional heads *v* and *C*, and the complement of a phase-defining head undergoes Spell-Out and is transferred to the interfaces when the next higher phase head is introduced (Chomsky 2001). Only material on the phase edge (in the phase-defining head and its specifiers) remains accessible to interact with probes in the next-higher phase. I will assume here that the probe responsible for rightward scrambling appears on the T(ense) head (for similar approaches to leftward scrambling, see Miyagawa 1997, Ko 2007). Since at the point where the T head is introduced, the *vP* phase

⁹ It is not new to suggest that individual noun phrases move rightward and adjoin to a higher projection to create postverbal orders (Mahajan 1990, Kural 1997, Ko and Choi 2009), nor is it new to suggest that there is movement rightward to rightward specifiers, in particular in predicate-initial languages (e.g., Guilfoyle, Hung, and Travis 1992, Doherty 1996, Polinsky and Potsdam 2002, McCloskey 2005, Potsdam 2006). What is new here is assimilating the account of rightward movement in postverbal orders with the account of leftward scrambling as EPP-driven movement (e.g., Miyagawa 1997, 2001, Grewendorf and Sabel 1999, Ko 2007).

has not yet been spelled out, the probe responsible for rightward scrambling will be able to access any DP within vP (Chomsky 2001).¹⁰

The analysis must account for the fact that scope and variable-binding facts appear to be consistent with the surface linear order of the constituents. This means that the order in which postverbal DPs appear must reflect their relative hierarchical positions at their point of interpretation. The remnant-VP account captures the relevant facts by requiring reconstruction of the remnant VP at LF, arriving at post-leftward-scrambling but pre-rightward-movement structure. The account presented here will rely on the same process of reconstruction. I will assume that each rightward-scrambled DP is obligatorily reconstructed to its pre-rightward-movement position (Jones 1992, Sauerland 1999; see also Mahajan 1994, Kidwai 2000). However, as the DP may have scrambled leftward before moving to the right, its position at LF may not be its base position (this must also be true in the remnant-VP account).

In both the remnant-VP account and the account presented here, leftward scrambling (both short scrambling, within vP, and intermediate scrambling, beyond the vP) must precede rightward scrambling. Those constituents that undergo intermediate leftward scrambling must move outside of the domain of the probe responsible for rightward scrambling, and as a result will precede both the verb and any postverbal constituents in linear order. In this case, the probe responsible for intermediate leftward scrambling must also be on the T head, but accessed first, prior to the probe responsible for rightward scrambling, in the sense of Müller 2010 (see also Manetta 2006, 2011). Just as in the remnant-VP approach, short leftward scrambling may reorder constituents within the domain of the probe responsible for rightward scrambling, permitting orders of postverbal DPs that diverge from the base order.

If we understand rightward scrambling to be the result of a probe-goal relation, it is the most prominent accessible goal in the c-command domain of the head with matching (nondistinct) features that will first move to the right. The schematic in (34) walks through the derivation of a simple case of rightward scrambling of the subject as in (20), repeated here. With a derived linear order in which the subject appears postverbally, the object will take scope over the subject following reconstruction. Therefore, the object must have undergone leftward intermediate scrambling over the subject prior to the rightward scrambling of the subject.

- (20) Raam-ko dekh-aa Siita-ne. OVS
 Ram-ACC see-PFV Sita-ERG
 ‘Sita saw Ram.’

- (34) a. *Base order: SOV*
 [_{VP} Siita-ne [_{VP} Raam-ko dekh-aa] v]
 b. *Leftward scrambling of object to Spec,TP (verb is in Asp⁰): OSV*
 [_{TP} Raam-ko [[_{VP} Siita-ne [_{VP} t_O V]] dekh-aa] T]¹¹

¹⁰ Importantly, the domain of the probe on a head α does not include the specifier of α (see Ko 2007 for discussion).

¹¹ The traces to indicate the positions of the scrambled arguments at various points in the derivation are given purely for ease of exposition.

- c. *Rightward scrambling of subject to Spec,TP (verb is in Asp⁰): OVS*
 [[_{TP} Raam-ko [[_{VP} t_S . . . t_O] dekh-aa] T] Siita-ne]
- d. *LF representation following reconstruction to pre-rightward-scrambling position: OSV*
 [_{CP}[_{TP} Raam-ko [[_{VP} Siita-ne [_{VP} V] v] dekh-aa] T] C]

In (34b), the verb has moved to the right into the Asp head (as assumed by Bhatt and Dayal (2007) and Kumar (2006)), and the direct object *Raam-ko* has scrambled leftward to Spec,TP. In (34c), the subject scrambles rightward, following a probe-goal interaction with the T head. The subject now appears rightmost in linear order, following the verb in the Asp head (as well as any tensed auxiliaries found in the T head). Finally, (34d) shows that obligatory reconstruction will recreate the pre-rightward-scrambling but post-leftward-scrambling order, in this case correctly predicting that the object should c-command the subject. Notice that c-command relations at LF correlate with linear surface order.

I will return to the derivation of more complex postverbal strings below, but first let us reexamine the data that were challenging for the remnant-VP approach. The optionality of rightward scrambling for DPs (as opposed to required postverbal positioning for CPs) finds a clear explanation here: the EPP-R feature driving rightward scrambling is optionally assigned. In this way, the optionality of leftward and rightward scrambling receives the same account.¹² Although we have not yet examined in detail the way in which CPs are obligatorily aligned to the right edge of the clause at PF, it is already plain that the rightward-scrambling account begins to provide the means to state the positioning requirements of CPs and DPs separately. Let us now turn to one of the other challenges for the remnant-VP approach: quantifier stranding.

As I mentioned in section 2, quantifiers can be stranded by postverbal noun phrases.¹³

- (35) *Postverbal: S IO [_{QP} Q t_i] V DO-NP_i*
 Raam-ne Mohan-ko [saarii t_i] lauṭaa dii kitabeeN_i.
 Ram-ERG Mohan-DAT all return give.PFV books
 ‘Ram returned all the books to Mohan.’

Under the remnant-VP approach, it is unclear how we could arrive at a remnant VP containing only the direct object (without the quantifier), and therefore it would be difficult to derive (35). However, under the rightward-scrambling approach proposed here, the individual noun phrase can scramble to the right independently. In fact, given that we have analyzed rightward scrambling as an operation akin to leftward scrambling, we would expect to find quantifier stranding in the case of rightward movement just as we do in the case of leftward movement.

¹² As in Ko 2007, the assignment of the EPP/EPP-R feature to a head is optional, though the operation triggered by that EPP feature is not.

¹³ Although I have been referring in this section to the rightward scrambling of DPs, I will gloss over whether the complement of Q in Hindi-Urdu is a DP or an NP (see, e.g., Giannakidou and Rathert 2009). This distinction is not crucial here.

3.3 Multiple Postverbal DPs

A closer examination indicates that more is required to constrain the rightward-scrambling account. Consider (19), repeated here.

- (19) Siita-ne dekh-aa Raam-ko. SVO
 Sita-ERG see-PFV Ram-ACC
 ‘Sita saw Ram.’

A derivation of (19) under the account presented here, which follows the procedure in (34), will establish upon reconstruction the appropriate c-command relations.

- (36) a. *Base order: SOV*
 $[_{VP} \text{ Siita-ne } [_{VP} \text{ Raam-ko dekh-aa } v]$
 b. *Leftward scrambling of subject to Spec,TP (verb is in Asp⁰): SOV*
 $[_{TP} \text{ Siita-ne } [[_{VP} t_S [_{VP} \text{ Raam-ko } V] v] \text{ dekh-aa}] T]$
 c. *Rightward scrambling of object to Spec,TP (verb is in Asp⁰): SVO*
 $[[_{TP} \text{ Siita-ne } [[_{VP} t_S \dots [t_O V] v] \text{ dekh-aa}] T] \text{ Raam-ko}]$
 d. *LF following reconstruction to pre-rightward-scrambling position: SOV*
 $[_{CP}[_{TP} \text{ Siita-ne } [[_{VP}[_{VP} \text{ Raam-ko } V] v] \text{ dekh-aa}] T] C]$

However, nothing in this account so far precludes deriving (19) from a sentence that had undergone short leftward scrambling of object over subject prior to rightward scrambling (meaning that both DPs remain within the domain of the probe responsible for rightward scrambling). Reconstruction would then produce the pre-rightward-scrambling but post-leftward-scrambling order OSV, but this interpretation is in fact not available. The only interpretation of sentences of the form in (19) is one in which the subject takes scope over the object (see (23)–(33)). Similarly, nothing yet prevents a derivation of the OVS surface word order in (20) in which the subject is simply scrambled rightward while the object stays in its base-generated position. Such a derivation would, upon reconstruction, arrive at an interpretation in which the subject takes scope over the object, but once again this interpretation is not available for the surface order OVS.

Importantly, the remnant-VP account exhibits a version of the same problem: by scrambling multiple remnant VPs to the right, it is possible to derive a surface linear order $XP_1 > V > XP_3 > XP_2$ from a structure that would produce the LF representation $XP_1 > XP_2 > XP_3 > V$. Bhatt and Dayal (2007:299n9) must explicitly block this option using the Principle of Unambiguous Domination (Müller 1996). However, we have seen above that this principle also seems to block other, licit derivations within the remnant-VP account, such as those with extraposed relative clauses and stranded quantifiers.

In the rightward-scrambling account pursued here, the solution to this problem is to make an additional requirement that the probe responsible for rightward scrambling must scramble rightward every DP remaining in its domain. This means that the only derivation that can arrive at the surface order in (20) is the one in (34), and for (19), the one in (36). This requirement also

accounts for the way in which the multiple postverbal DPs are interpreted.¹⁴ Consider the derivation of (37) schematized in (38).

- (37) Ek kitaab dikhaa-ii Mohan-ko Siita-ne. DO V IO S
 a book show-PFV Mohan-DAT Sita-ERG
 ‘Sita showed a book to Mohan.’
- (38) a. *Base order: S IO DO V*
 $[_{VP} S [_{VP} IO DO Verb] v]$
 b. *Leftward (short) scrambling of IO over S: IO S DO V*
 $[_{VP} IO [_{VP} S [_{VP} t_{IO} DO Verb] v]]$
 c. *Leftward (intermediate) scrambling of DO to Spec,TP: DO IO S V*
 $[_{TP} DO [[_{VP} IO [_{VP} S [_{VP} t_{IO} t_{DO} V] v]] Verb] T]$
 d. *Rightward scrambling of IO to Spec,TP: DO S V IO*
 $[[_{TP} DO [[_{VP} t_{IO} [_{VP} S [_{VP} t_{IO} t_{DO} V] v]] Verb] T] IO]_{TP}$
 e. *Rightward scrambling of S to outer Spec,TP: DO V IO S*
 $[[[_{TP} DO [[_{VP} t_{IO} [_{VP} t_S [_{VP} t_{IO} t_{DO} V] v]] Verb] T] IO]_{TP} S]_{TP}$
 f. *LF representation following reconstruction to pre-rightward-scrambling position: DO IO S V*
 $[_{CP}[_{TP} DO [[_{VP} IO S [_{VP} V] v] Verb] T] C]$

Understanding rightward scrambling as a probe-goal relation in which less deeply embedded constituents are accessed first, followed by more deeply embedded constituents, makes the relative order of postverbal constituents obligatorily isomorphic to their preverbal scope relations. The additional requirement that the probe responsible for rightward scrambling must interact with every DP remaining in its domain derives the fact that preverbal constituents must always take scope over postverbal constituents. We are therefore able to constrain the derivations of (19), (20), and (37) to arrive at the only available interpretation upon reconstruction.¹⁵

The requirement that all goals remaining in the domain of the probe responsible for rightward scrambling must scramble rightward deserves further exploration. There are two questions: first, how is this requirement implemented formally, and second, from what more basic principles does it emerge? Probes that interact with multiple goals have been extensively explored in the domain of *wh*-movement and focus movement. In languages in which multiple instances of *wh*- or focus

¹⁴ I am indebted to an anonymous reviewer for the insights that led to this approach.

¹⁵ An alternative approach to the analysis presented here is one framed in terms of the transderivational economy account proposed by Bobaljik (2002), Wurmbrand (2008), and Bobaljik and Wurmbrand (to appear). Under this approach, although EPP-motivated rightward scrambling operates freely in Hindi-Urdu, a high-ranked economy condition is at work that values PF-LF isomorphism, punishing candidates in which PF linear order is not isomorphic to LF scope. Such an evaluation occurs over a candidate set of competing PF structures to represent a given structure at LF (though note that, following the recommendations in Sells 2003, we must assume the LF representation is an object that may have been derived from a range of potential numerations). This account must also crucially include the verb in the computation of isomorphism in the comparison of a given PF-LF pair. Under the PF-LF isomorphism account, the fact that leftward scrambling seems to have the potential to create new scoping possibilities but rightward scrambling does not is attributed to the fact that leftward scrambling never alters the precedence relations of constituents with respect to the verb, but rightward scrambling does. However, I leave further elaboration of this line of analysis to future work.

phrases appear to occupy multiple specifiers of the same head, mechanisms like Attract-All (Bošković 1999) and Multiple Move (Hiraiwa 2001, 2005, 2010) have provided ways of formalizing this process. In this case, the probe responsible for rightward scrambling in Hindi-Urdu must bear an EPP-R feature with the property [multiple] such that it causes any matching goals (presumably goals with a D feature) within its *c*-command domain to undergo Move into a rightward Spec,TP. These instances of Move must obey the Extension Condition (Chomsky 1993), such that the DP first in linear order in the preverbal field must remain first in linear order in the postverbal field.

The question of why this particular probe should require multiple instances of Move then to some extent becomes part of a larger question of why any probe (such as in the case of Japanese long-distance scrambling or Bulgarian multiple *wh*-focus movement) should have this property (see Hiraiwa 2010 for a way of linking this notion to Cyclic Spell-Out and Parallel Derivation). However, we can also ask whether there is something in the nature of the rightward-scrambling movement itself that might underlie the requirement that any matching goal must undergo Move. The limited discussion of the discourse function of rightward scrambling in Hindi-Urdu (Gambhir 1981, Butt and King 1996, Dayal 2003) has noted that while a DP displaced to the left may serve as focus, topic, or link (in the sense of Valluví 1992), DPs displaced to the right are interpreted as discourse-old and frequently seem to be “backgrounded.” This observation provides some grounding both for the shared requirement among existing accounts of Hindi-Urdu postverbal constituents that leftward short and intermediate scrambling precede rightward displacement (Bhatt and Dayal 2007), and for the restriction that all matching goals within the domain of the rightward-scrambling probe move rightward. Assuming that DPs possessing particular features corresponding to the discourse effects that prompt intermediate leftward scrambling (e.g., focus) first move leftward, the DPs remaining in the domain of a rightward-scrambling probe will be those not receiving such special interpretations. These DPs may then be scrambled rightward when the rightward-scrambling probe is present, and will be interpreted as discourse-old (in addition to other possible interpretations such as continuing topic or backgrounded topic). While the larger question of why certain probes prompt any matching goals in their domain to undergo the operation Move remains, this analysis of rightward scrambling more accurately captures the motivation for the marked displacement of DPs to the right edge. Under the remnant-VP approach, the rightward movement of the remnant VP cannot be easily tied to properties of the DPs contained within it (recall that the remnant can potentially contain no DPs at all—simply an embedded CP). The account presented here, on the other hand, formalizes the observation that it is not just any DP that appears postverbally, but instead DPs amenable to particular interpretations (e.g., as backgrounded topic). In this way, we open up the opportunity to consider leftward and rightward DP-scrambling, which both exhibit information-structural effects, as similar syntactic phenomena in Hindi-Urdu.

3.4 Summary

In this section, I have introduced an account of rightward DP-movement as rightward scrambling. Returning to and elaborating upon the rightward-scrambling approach of Mahajan (1988) has enabled us to understand the positioning requirements of postverbal DPs, as well as the correlation

between scope and linear order in Hindi-Urdu. Now we will turn to postverbal CPs, constructing an approach that will account for the contrasts with postverbal DPs explored in section 2.

4 Finite Complement CPs

4.1 A PF Account

The status of finite complement CPs in Hindi-Urdu is a matter of long-standing debate.¹⁶ They represent a surprising exception in the head-final language since they must appear to the right of the selecting verb.

- (39) a. Siita-ne kah-aa thaa ki Mohan aay-aa thaa. S V Aux CP
 Sita-ERG say-PFV AUX.PST that Mohan come-PFV AUX.PST
 ‘Sita said that Mohan had come.’
- b. *Siita-ne [_{CP} ki Mohan aay-aa thaa] kah-aa thaa. *S CP V Aux

Interestingly, this debate has not centered on the atypical postverbal positioning of the CP complement or the relationship of complement CPs to the matrix clause. Instead, claims about the base-generated and derived position of finite complement CPs in Hindi-Urdu revolve around the interpretation of embedded *wh*-phrases.

Hindi-Urdu is a language traditionally understood to exhibit *wh*-in-situ. Since *wh*-phrases that take scope over a single clause in Hindi-Urdu need not move to a clause-initial position (i.e., Spec,CP) in overt syntax, it has been assumed that they move to this position at LF (e.g., Mahajan 1990, Dayal 1996, Lahiri 2002). Given the possibility of covert movement, we would assume that embedded *wh*-phrases could take scope over the matrix clause, but this turns out to be impossible.

- (40) Siita jaantaa hai ki Ravii-ne kis-ko dekh-aa.
 Sita know AUX that Ravi-ERG who-ACC see-PFV
 ≠ ‘Who does Sita know that Ravi saw?’

Previous analyses therefore required some mechanism for preventing covert movement of an embedded *wh*-phrase to the matrix Spec,CP at LF. Strategies included base-generating apparent complement clauses in adjoined positions (Dayal 1994) or base-generating the clause as the sister to a (possibly null) complement DP and then right-adjoining the clause during the course of the derivation (Lahiri 2002). The remnant-VP proposal (Bhatt and Dayal 2007) represents another effort in this family of approaches. Under this account, although the remnant VP is reconstructed

¹⁶ Nonfinite clauses typically appear preverbally, and for this reason have frequently been treated as gerunds (Srivastav 1991, Butt 1995, Dayal 1996). They may also occur postverbally. As Bhatt and Dayal (2007) point out, it is then unsurprising that *wh*-phrases inside preverbal nonfinite clauses receive matrix *wh*-question readings, but those in postverbal position pattern with unembedded *wh*-phrases in that they do not take matrix scope (Mahajan 1990, Bhatt and Dayal 2007). The account of postverbal *wh*-material presented in section 5 effortlessly accommodates these facts.

to its base-generated complement position, the remnant itself is a scope island, and therefore an embedded *wh*-phrase cannot move out of it at LF to arrive at the matrix Spec,CP.¹⁷

In this article, I will adopt the position taken in Manetta 2010, that apparent finite CP complements are base-generated as true complements of the selecting verb and remain in this position throughout the syntactic derivation.¹⁸ In Manetta 2010, I present a number of arguments indicating that the material in the matrix clause c-commands material in finite CP complements in the narrow syntax, and that it must also do so at LF.¹⁹ Crucially, in Manetta 2010 I also provide a new account of why embedded *wh*-phrases do not take matrix scope. I discuss this approach briefly in section 5 of this article. For now, it is important to establish that there are ways of accounting for embedded *wh*-scope and *wh*-dependencies in Hindi-Urdu that do not require that complement clauses be adjuncts of any type, whether during the syntactic derivation or in the interpretive component.

The task then becomes to account for just the one surprising fact about finite complement CPs in Hindi-Urdu: that they appear to the right of the selecting verb. In fact, it is not enough just to say that finite complement CPs appear postverbally. They must appear at the right edge of their containing finite clause.

(41) a. V_{CP} (Aux) CP

Mona-ne *kah-aa* (thaa) [_{CP} ki vo ayegii].
 Mona-ERG say-PFV AUX.PST that she come.FUT.F
 ‘Mona (had) said that she will come.’

¹⁷ This prompts us to ask how the embedded *wh*-phrases could ever be interpreted with matrix scope under the remnant-VP approach, as they are in the case of *wh*-expletive constructions. Since the remnant VP is a scope island and as Bhatt and Dayal point out, “covert movement of the *wh*-element after reconstruction is also not an option because reconstruction does not open up scope domains” (2007:298), we are left with no way to arrive at matrix scope. Note that Bhatt and Dayal do not make any claims that the remnant-VP approach accounts for long-distance *wh*-dependencies in Hindi-Urdu; but for a complete account, see Manetta 2010.

¹⁸ A reviewer asks how facts concerning the clausal expletive *yeh* ‘it’ can be accounted for under this view.

(i) Raam-ne *yeh kah-aa ki Siita ayegii*.
 Ram-ERG EXPL say-PFV that Sita come.FUT.F
 ‘Ram said (it) that Sita will come.’

In Manetta 2010, following Simpson (2000), I provide an account for both the clausal expletive *yeh* and the *wh*-expletive *kyaa* that claims that these expletives are generated in the specifier of a functional head below vP (in the Manetta 2010 account, this head is Asp) and have an uninterpretable accusative case and an uninterpretable D feature. The expletive enters into an Agree relation with the v head and undergoes Move to Spec,vP. The assumption that the expletive requires case (Simpson 2000) prevents *yeh* and *kyaa* from cooccurring or from occurring with a (non-CP) verbal complement that requires case.

¹⁹ A reviewer asks how the reflexive binding facts of Hindi-Urdu are handled in an account that assumes that finite CP complements are not adjoined but are base-generated (and remain) in complement position. In essence, subject-oriented monomorphemic reflexives in Hindi-Urdu can be bound long-distance across nonfinite clause boundaries but not across finite clause boundaries. A coherent account of reflexive binding in the current phase-based theoretical framework can be found in Srishti 2006. This account essentially follows the assumptions underlying Bhatt’s (2005) treatment of long-distance agreement, in which nonfinite clauses are not made up of a finite T head (much less a CP projection) and therefore are transparent to interactions with material in the finite containing clause.

- b. $V_{CP} V_{matrix} Aux CP$
 MaiN [*kah-naa*] *chaah*taa huN [_{CP} ki Billu paagal hai].
 I say-*INF* want AUX that Billu crazy AUX
 ‘I want to say that Billu is crazy.’
- c. $V_{CP} V_{embedded} V_{matrix} Aux CP$
 Yusuf [[Renu-se *keh-ne*]-kii *koshish kar-naa*] *chaah*taa hai [_{CP} ki vo
 Yusuf Renu-*INSTR* say-*INF-GEN* try do-*INF* want AUX that he
 us-se *pyaar kartaa* hai].
 her-with love do AUX
 ‘Yusuf wants to try to tell Renu that he loves her.’
 (Bhatt 2003b:15–16)

Notably, the CP cannot appear in many positions in which a postverbal DP is licit, including between the main verb and the auxiliary, or preceding a postverbal DP.

- (42) a. $*V_{CP} CP Aux$
 b. $*V_{CP} Aux_1 CP Aux_2$
 c. $*V_{CP} V_{matrix} CP Aux$
 d. $*V_{CP} CP DP$
- (43) a. $??G$ itaa-ne kah-aa thaa [_{CP} ki Raam aay-aa hai] Mohan-ko.
 Gita-*ERG* say-*PFV* AUX.*PST* [that Ram come-*PFV* AUX] Mohan-*DAT*
 ‘Gita had said to Mohan that Ram came.’
- b. Gita-ne kah-aa thaa Mohan-ko [_{CP} ki Raam aay-aa hai].
 (Mahajan 1997a:113)

In contrast to postverbal DPs, I propose that the finite complement CP is obligatorily aligned to the right edge of its containing clause at PF. This proposal is modeled on the approach to extraposition argued for by Truckenbrodt (1995, 1999), Selkirk (2000), and Göbbel (2007, 2009).²⁰ In this view, the input to Gen is the base-generated structure, in which the finite CP is in the complement position to the left of the verb. The output of Gen includes a linear order in which that CP remains in place, and one in which the right edge of the CP is positioned at the right edge of its containing clause, corresponding in the prosodic structure to the right edge of the intonational phrase.²¹ A high-ranked alignment constraint—specifically, $ALIGNR(CP, iP)$ —will be violated by the former candidate, and so the latter will emerge as the winner.

²⁰ For an analysis in which this constraint is used to align extraposed complement CPs in K’ichee’ to the right edge of the clause, see Henderson, to appear.

²¹ Patil et al. (2008) demonstrate through experimental work on the prosodic structure of Hindi-Urdu that it is safe to assume that the intonational phrase corresponds to the clause. According to their analysis, each constituent containing a content word is its own prosodic phrase, the adjacent object and verb are incorporated into an additional prosodic phrase, and the entire clause is an intonational phrase (see also Moore 1965, Harnsberger 1994, 1999).

(44) *ALIGNR(CP, iP)*

The right edge of any CP in syntactic structure must be aligned to the right edge of an intonational phrase in prosodic structure.

(45)	S CP V Aux	<i>ALIGNR(CP, iP)</i>
	a. S CP V Aux	*
	b. S V CP Aux	*
	 c. S V Aux CP	

We can see that each of the ungrammatical orders in (42)–(43) would violate *ALIGNR(CP, iP)*, and so only the grammatical alternatives in which the finite complement CP is rightmost in the clause would surface.²²

One of the most attractive aspects of the remnant-VP approach was the notion that all postverbal constituents arrived at that position via the same mechanism: rightward remnant-VP movement. Section 2 addressed the ways in which the assumption that all postverbal elements are contained within verbal projections leaves us unable to make important distinctions between those elements. Having now proposed that postverbal DPs and CPs are dislocated rightward via two different mechanisms, I must also establish that the mechanism attributed to DPs would not extend to CPs, and vice versa. Certainly, moving CPs rightward in the syntax would be possible, although constraining that movement to avoid ungrammatical positions (such as intervening between a verb and an auxiliary as in (42a) or preceding a postverbal DP as in (42d)) might prove difficult. Further, this rightward movement would need to be mandatory, since finite complement CPs cannot remain in situ. This would make the operation somewhat different from the EPP optionality proposed for DPs above. Given these challenges, assimilating the account of CPs to DPs seems unproductive. What about the reverse: extending the PF-based account of CPs to account for postverbal DPs?

Chomsky (2001) proposes an operation for displacing arguments in the phonological component called Thematization/Extraction (Th/Ex). This is intended to account for sentences like *There were placed on the table several large packages*, in which there is displacement that seems to lack “the usual surface-semantic effects (specificity, etc.)” (2001:20). Given the theoretical

²² Notice that both the remnant-VP approach and this PF-based approach to postverbal CPs suggest that a DP originating in an embedded clause should be able to appear on the right edge of that embedded clause. In a context in which we have been looking for a colleague, Kabir, and asking around about whether he is in the office, someone can say this:

- (i) Raam-ne kah-aa ki Ayesha-ne dekh-aa us-ko (magar maiN is baat-ko nahiiN mantaa huN).
 Ram-ERG say-PFV that Ayesha-ERG see-PFV him-OBL (but I this thing-OBL not believe AUX)
 ‘Ram said that Ayesha saw him (but I don’t believe it).’

In the remnant-VP account, this is an instance of rightward remnant-VP movement within the embedded clause, and in the DP-scrambling account, it is a rightward-scrambled DP within the embedded clause. It does not violate the alignment constraint in (44) since the right edge of that embedded CP is still aligned with the right edge of the intonational phrase.

cost of a mechanism like EPP-R, why could this phonological operation not also be adequate to account for postverbal DPs, displaced to the right?²³ First, sentences with postverbal DPs are associated with interpretations distinct from those of preverbal DPs, but if DPs were moved rightward via a phonological operation, there would be no difference in input to the interpretive interface (on the standard model in which the results of the syntactic derivation are exported simultaneously to each interface) (Chomsky 2001). These discourse effects include identification of continuing and contrastive topics (Gambhir 1981), functions often associated crosslinguistically with leftward scrambling. Even more surprising under a phonological displacement account of postverbal DPs would be the lack of information-seeking question interpretation for postverbal *wh*-phrases. As Bhatt (2003b) points out, the obligatory echo question reading of postverbal *wh*-phrases would be unexpected under a phonological movement account, though not under an account based on syntactic movement (see section 5). So given that phonological operations like Th/Ex are not assumed to alter the input to the interpretive interface, these effects would be difficult to explain. A second line of argument against this approach concerns word order. Because there are many more grammatical positions for postverbal DPs than postverbal CPs (and because rightward movement is optional for DPs in any case), presumably multiple additional constraints regulating the phonological operation would be required to enforce grammatical word orders.²⁴ Finally, there is a theoretical gain, in addition to theoretical cost, in assuming that EPP-motivated rightward movement is available to the syntax. In attempting to account for postverbal DPs in the phonological component, we would lose the opportunity to consider leftward and rightward DP-scrambling, which both exhibit information-structural effects, as a more unified syntactic phenomenon in Hindi-Urdu. Both the remnant-VP account and the rightward-scrambling alternative presented here represent efforts to account for the interpretive effects and linear order of postverbal constituents through rightward movement in the narrow syntax. Ultimately, attributing the characteristics of sentences with postverbal DPs to phonological displacement fails to capture some of their core properties. I argue that the two distinct mechanisms for dislocating postverbal CPs and DPs proposed here give us the ability to account for clear differences in their behavior.

4.2 *Relative Clauses*

Relative clauses seem to behave somewhat differently from the finite complement CPs discussed above. Relative and correlative clauses in Hindi-Urdu have been well researched (e.g., Srivastav 1991, Mahajan 2000, Bhatt 2003a, Davison 2009). Although I will not be able to offer a complete account of the rightward displacement of relative clauses (or other nominal complement clauses) here, I will propose an account for the differences between postverbal relative clauses and postverbal finite complement clauses. Unlike complement clauses of verbs, relative clauses may appear *in situ* or in the postverbal position.

²³ I thank a reviewer for bringing this question to my attention.

²⁴ Further, Chomsky (2001) seems to suggest that application of Th/Ex is obligatory. If this were in fact the case, it might be hard to understand why rightward displacement of DPs in these structures is completely optional, in contrast to rightward displacement of CP complements (for further arguments that displacement attributed to Th/Ex actually occurs in the syntax, see Svenonius 2001, Julien 2006).

- (46) Ve log [jo zyaada chai pii-te heN] kam so paa-te heN.
 those people REL more tea drink-HAB AUX less sleep able-HAB AUX
 ‘Those people [who drink a lot of tea] aren’t able to sleep well.’
- (47) Ve log kam so paa-te heN [jo zyaada chai pii-te heN].
 those people less sleep able-HAB AUX REL more tea drink-HAB AUX
 ‘Those people aren’t able to sleep well [who drink a lot of tea].’
 (Subbarao 1984:102–103, cited in Bhatt 2003b:4)

In trying to extend the PF alignment-based account of finite verbal CP complements to postverbal relative clauses, the ALIGNR(CP, iP) constraint discussed above would be violated by instances of relative clauses *in situ*. We should expect this kind of optionality to arise if a faithfulness constraint exists favoring the *in-situ* order (see Baković 2010, Baković and Keer 1999), and if neither of these conditions is ranked higher than the other (following the notion of same-ranked constraints in Selkirk 2000, Göbbel 2007). This interaction of alignment and faithfulness allows us to understand postverbal relative clauses to be aligned rightward in the phonological component, much like postverbal finite verbal CP complements.

With this preliminary account of relative clauses in mind, we can now turn to two interesting facts about the interaction of extraposed relative clauses and other postverbal material. As discussed above, when relative clauses appear postverbally along with a DP, the relative clause must be clause-final. In fact, when the relative clause modifying the indirect object appears postverbally along with the direct object, the relative clause must still appear to the right of the direct object. The reverse order (though it is the base-generated linear order) is ungrammatical, and this is unexpected under the remnant-VP approach (see section 2.3). On the other hand, following the account proposed here, ALIGNR(CP, iP) is violated by any order in which the relative clause CP is not aligned to the right edge of the containing clause, so those orders in which the CP is to the right of any rightward-scrambled DP will be favored.

Although to this point the mechanisms assumed here provide an adequate account of word orders in which finite clauses appear on the right edge, there are scenarios that require further investigation. For instance, consider a sentence in which a relative clause and a finite complement clause both appear postverbally. The only order that is grammatical is the one in which the relative clause precedes the finite complement clause.

- (48) a. *Raam-ne us aadmii-ko kah-aa [ki Siita gay-ii] S IO V CP RC
 Ram-ERG that man-DAT say-PFV [that Sita leave-PFV
 [jo aay-aa thaa].
 [REL come-PFV AUX.PST]
 ‘Ram told that man who had come that Sita had left.’
- b. Raam-ne us aadmii-ko kah-aa [jo aay-aa thaa] S IO V RC CP
 Ram-ERG that man-DAT say-PFV [REL come-PFV AUX.PST
 [ki Siita gay-ii].
 [that Sita leave-PFV]
 ‘Ram told that man who had come that Sita had left.’
 (Mahajan 1997b:115; judgments from my informants)

The constraint ALIGNR(CP, iP) alone is not enough to derive these facts, since both of the orders in (48) have one violation of ALIGNR(CP, iP). Similarly, when a finite nominal complement clause appears postverbally along with a relative clause, the finite nominal complement clause must be rightmost.²⁵

- (49) Is baat-ne us laṛkii-ko dukhii kar diy-aa [jo Dilli-se aay-ii thii]
 this thing-ERG that girl-ACC sad do give-PFV REL Delhi-from come-PFV AUX
 [ki ham use nahiN cuneNge].
 that we her.DAT not select.FUT.M.PL
 ‘The fact that we will not choose her made the girl who had come from Delhi sad.’

The finite nominal complement clause in this case originates in a position dominating the relative clause. Notice that the remnant-VP account is also unable to derive only the grammatical ordering here (the ungrammatical CP RC order is the base order and cannot be blocked, just as (17) cannot be blocked above). Clearly, further research is needed into the distinctions that must be made between complement clauses (both verbal and nominal) and adjoined clauses in Hindi-Urdu that might underlie these postverbal ordering restrictions.²⁶ However, the discussion above has suggested that the account of CP-extrapolation as a phonological operation allows us to account for the clear differences between postverbal DPs and CPs and can be extended to help us understand many of the positioning requirements of postverbal relative clauses as well.

5 Postverbal *Wh*-Phrases

Clauses with postverbal *wh*-phrases in Hindi-Urdu do not receive normal *wh*-question interpretation; instead, they receive an echo question reading.

- (50) Siita-ne dhyaan-se dekh-aa thaa kis-ko? S V Aux *Wh*-DP
 Sita-ERG care-with see-PFV AUX.PST who-ACC
 ≠ ‘Who had Sita looked at carefully?’ (*wh*-question reading)
 = ‘Sita looked carefully at WHO?’ (echo question reading)

Under the traditional view of Hindi-Urdu as a *wh*-in-situ language in which the *wh*-phrase moves to Spec,CP at LF, the lack of a normal question reading in (50) is surprising. There seems to be no obvious reason why a postverbal *wh*-word should be unable to move to Spec,CP at LF. To explain (50), the remnant-VP approach claims that the postverbal *wh*-word is in fact the only

²⁵ I thank a reviewer for bringing these facts to my attention.

²⁶ A reviewer suggests that there have been reports in the literature of the following ordering template in Hindi-Urdu:

(i) V DPs RCs CPs ResultClauseCPs

Ordering restrictions concerning extraposed sentential subjects, nominal complements, and result clauses in English were observed at least as early as Williams 1975, Emonds 1976, and Reinhart 1980. It is clear that a more universal set of constraints may be at work here regulating the relative positioning of these types of extraposed clauses that deserves further investigation crosslinguistically.

overt material remaining in a rightward-moved remnant VP and that the remnant is a scope island. For this reason, despite obligatory reconstruction of the remnant VP to its base-generated position, the *wh*-phrase cannot escape the remnant at LF to move to Spec,CP.

In this article, I have explored an alternative account of rightward movement in which DPs scramble rightward independently (not as part of a remnant VP). Sections 3.2 and 3.3 present arguments that this approach better accounts for the positioning requirements of postverbal DPs (in particular, relative to postverbal CPs) and better predicts postverbal constituent order, while taking steps toward unifying our understanding of rightward and leftward scrambling. However, under the rightward-scrambling approach, we are still left with the puzzle in (50): why does the postverbal *wh*-phrase receive only an echo question reading?

In Manetta 2010, I present a new account of *wh*-movement and *wh*-scope in Hindi-Urdu. In this account, Hindi-Urdu is not truly *wh*-in-situ, but instead a language with a dedicated (immediately) preverbal position for *wh*-material in the specifier of a phase-defining functional head: Spec,vP. In this feature-driven account, *wh*-phrases in Hindi-Urdu move to Spec,vP, and from this position can serve as a goal to value *wh*-features on the C probe via Agree (though they do not undergo Move to Spec,CP). The wide scope of the *wh*-phrase is determined by the presence of a feature on the C head introducing an unselective binder of choice functions, binding a variable introduced by the *wh*-phrase (Reinhart 1998).

Following the account proposed in Manetta 2010, (50) will be grammatical provided that the features on the *wh*-phrase and the phase-defining v and C heads are consistent with an echo question, and the variable introduced by the *wh*-phrase will be bound by an echo operator introduced by the C head that has the semantics of an echo question (Dayal 1996).

By incorporating this new account of *wh*-questions in Hindi-Urdu into this account of rightward movement, I show here that we can understand both the echo question reading in (50) and the clause-bound scope of embedded *wh*-phrases, with no need to resort to asymmetric remnant movement and islandhood.

5.1 The Postverbal Wh-Phrase

Once we understand *wh*-movement in Hindi-Urdu as feature-driven movement to a dedicated position in the syntax, we can approach postverbal *wh*-phrases in a way that accounts for their distinct syntax and interpretation. This view assumes that the feature content of the phase-defining functional heads is determined in the lexicon. That is, a language has a limited inventory of heads like C and v with specific arrays of features.

In the derivation of a regular *wh*-question in Manetta 2010, Hindi-Urdu has the following C and v heads in its lexicon that motivate *wh*-movement in regular *wh*-questions:

(51) C	v
[iQ]	[uwh]
[uwh]	[EPP]

The *wh*-phrase in a regular *wh*-question has an interpretable *wh*-feature [iwh] and an uninterpretable Q feature [uQ]. The C head in a regular *wh*-question has an [iQ] feature, prompting the

interpretation of the clause as a root question. In contrast, in an echo question, the *wh*-word has an [*iwh*] feature and an uninterpretable echo feature (I will use the term [*uE*] here). The C head in an echo question will possess an [*iE*] feature, or echo operator, that binds a free variable introduced by the echo expression.²⁷

In an echo question, the echo expression may appear on the right edge of the entire clause. It will qualify as a matching goal in the domain of the probe responsible for rightward movement when this probe is present. It will then receive an echo interpretation because of the presence of [*iE*] on the C head.

- (52) C
 [*iE*]
 [*uwh*]

It is also possible for a clause with a regular interrogative C head and an information-seeking *wh*-phrase to have a probe on T prompting rightward scrambling. If the *wh*-phrase remains in Spec,vP and does not scramble further leftward, it could be within the domain of the rightward-scrambling probe and could serve as a matching goal.²⁸ A rightward-scrambled *wh*-phrase would still be completely accessible to the interrogative C probe, and so this would form a licit syntactic structure in which an information-seeking *wh*-word is found in postverbal position, even though this interpretation is unavailable (as in (50)). However, a derivation that proceeds in this way will fail to be interpretable (deviant at the conceptual-intentional interface in the sense of Chomsky 2008). Those DPs that appear postverbally receive an interpretation as old information (along with other potential interpretations such as continuing/contrastive topic or backgrounded topic). Since this is incompatible with the semantics of the information-seeking *wh*-phrase as new, interrogative focus, the derivation will fail to be interpretable (see Butt and King 1996, Adli 2010). On the other hand, if an echo *wh*-phrase is scrambled rightward, there will be no incompatibility at the point of interpretation. As the echo *wh*-phrase is necessarily discourse-old, it is well-suited to the interpretations assigned to postverbal material.

To complete this discussion, we must consider structures in which *wh*-phrases (53) and DPs (54) may be found between the main verb and the auxiliary.

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

²⁷ This operator could have the formulation proposed in Dayal 1996:125.

(i) $\lambda Z\lambda Q[\exists x_1 \dots \exists x_n [Q = Z(x_1) \dots (x_n)]]$

²⁸ Certainly, information-seeking *wh*-phrases may be found scrambled to the left of their unmarked position in Spec,vP. I have assumed here that leftward intermediate scrambling beyond Spec,vP lands in a position below Spec,CP such as Spec,TP (Kidwai 2000, Ko 2007) and that the (discourse-motivated) features that condition leftward scrambling are independent of the satisfaction of *wh*-features. Intermediate scrambling to the left following *wh*-movement would move the *wh*-phrase outside the domain of the rightward probe, permitting a (grammatical) structure to arise in which an information-seeking *wh*-phrase appears to the left of the verb, but other DPs appear postverbally.

- (54) Siita-ne dhyaan-se dekh-aa Rehan-ko thaa.
 Sita-ERG care-with see-PFV Rehan-ACC AUX.PST
 ‘Sita had looked at Rehan carefully.’

Crucially, as the translation of (53) suggests, *wh*-phrases between the main verb and the auxiliary may receive regular *wh*-question interpretation, indicating that *wh*-phrases and DPs in this position should be treated differently from those that have undergone rightward scrambling to Spec,TP. I will follow Bhatt and Dayal’s (2007:295) treatment of these structures, assuming that they are derived via short-distance leftward topicalization of the verbal complex after leftward scrambling of the direct object. The derivation of (53) is then neatly assimilated to that of a regular *wh*-question: the *wh*-word *kis-ko* ‘who’ has moved to its usual position, Spec,vP (Manetta 2010), and then the participle has been scrambled leftward beyond it.²⁹ Note that complex word orders such as . . . V DP₁ Aux DP₂ can also arise and are derived when DP₁ has scrambled leftward (and the participle has scrambled beyond it), leaving only DP₂ within the domain of the probe prompting rightward scrambling.

A feature-driven approach to *wh*-movement and *wh*-dependencies in Hindi-Urdu allows us to understand the unavailability of information-seeking question interpretation for postverbal *wh*-phrases. First, we understand information-seeking questions and echo questions to have distinct syntax, in the sense that the phase-defining heads possess different sets of features. Echo question interpretation arises only when the C head introduces the echo operator (via [*iE*]), irrespective of the positioning of the *wh*-element. Regular *wh*-question interpretation only arises when the C head introduces the interrogative operator (via [*iQ*]). The interpretations assigned to postverbal DPs are simply incompatible with information-seeking *wh*-phrases, so any such derivation will fail at the point of interpretation. There is no need to posit remnant movement or islands to account for echo question formation in Hindi-Urdu. Importantly, this account of echo questions maintains the locus of crosslinguistic variation in the lexicon, and even more specifically in the way in which features are organized on the phase-defining functional heads (Chomsky 2008).

5.2 Scope of Embedded Wh-Phrases

As discussed in section 4, in this article I have taken the position argued for in Manetta 2010, that apparent finite CP complements are just that, complements of the selecting verb. I have proposed here that they appear postverbally because they are aligned to the right edge of their containing clause at PF. This means that throughout the syntactic derivation, finite complement CPs remain in their base position, as leftward complements of the verb. This assumption, combined with adopting the account of *wh*-movement in Hindi-Urdu in Manetta 2010, provides a clear explanation for the lack of matrix scope of embedded *wh*-phrases.

²⁹ As a reviewer points out, one could place a blanket ban on VP-topicalization (rightward or leftward) if we were to assume that the participle alone can scramble leftward (not as part of a remnant). Bhatt and Dayal (2007) report that although Müller (1996) provides evidence that this is not correct for German, the data in Hindi-Urdu do not necessarily support the same conclusion. So in a world without any remnant-VP movement (in either direction), the derivation of (53) would require the participle V head to scramble leftward independently.

In an approach to *wh*-questions in which Hindi-Urdu *wh*-phrases take scope by moving to Spec,CP at LF, the lack of matrix scope in (55) is anomalous.

- (55) Siita jaantaa hai ki Ravii-ne kis-ko dekh-aa.
 Sita know AUX that Ravi-ERG who-ACC see-PFV
 ‘Sita knows who Ravi saw.’
 ≠ ‘Who does Sita know that Ravi saw?’

Previous analyses needed some mechanism for preventing covert movement of an embedded *wh*-phrase to the matrix Spec,CP. However, under the feature-driven account of long-distance *wh*-dependencies in Hindi-Urdu, we only expect embedded *wh*-phrases to take matrix scope if they move into the matrix clause, or if a *wh*-expletive satisfies the syntactic requirement that overt *wh*-material appear in matrix Spec,vP, as in (56) and (57).

- (56) Siita-ne kis-ko soc-aa ki Ravii-ne ____ dekh-aa?
 Sita-ERG who-ACC think-PFV that Ravi-ERG see-PFV
 ‘Who did Sita think that Ravi saw?’
- (57) Siita-ne kyaa soc-aa ki Ravii-ne kis-ko dekh-aa?
 Sita-ERG EXPL think-PFV that Ravi-ERG who-ACC see-PFV
 ‘Who did Sita think that Ravi saw?’

There is no need to attribute the facts in (55) to asymmetric remnant movement or islandhood. Instead, Hindi-Urdu looks much like other *wh*-movement languages, except that the dedicated position for *wh*-material is lower, in the vP layer instead of the CP layer.

6 Conclusion

This article has argued for what is in some ways a less unified account of rightward movement in Hindi-Urdu than found in other recent approaches. Instead of a single operation, rightward remnant-VP movement, which is responsible for all postverbal material (Bhatt and Dayal 2007), I have proposed that DPs appear postverbally via rightward scrambling and that CPs appear postverbally because they are right-aligned at PF. However, this seemingly more diffuse approach offers unification on a different and perhaps more important front. The optional, discourse-driven process of rightward scrambling can now be understood as driven by the same set of mechanisms as the optional, discourse-driven process of leftward scrambling. This allows us to avoid placing arbitrary restrictions on the types of material that can be moved rightward and leftward, and in this sense represents a significant break from the remnant-VP and antisymmetric approaches.

Further, this article has successfully applied a set of assumptions about the nature of *wh*-movement in Hindi-Urdu, argued for on independent grounds in Manetta 2010, to the behavior of postverbal *wh*-phrases. Understanding *wh*-movement as a feature-driven process and attributing variation to the lexical composition of phase-defining functional heads has demystified the properties of echo questions in Hindi-Urdu.

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