

The ups and downs of agreement

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This paper documents and analyzes novel interactions between scrambling and ϕ -agreement in Hindi-Urdu, and explores their consequences for recent debates about the directionality of Agree and valuation. Standard verb agreement in Hindi exhibits a descriptive *top-down* agreement pattern, whereby the verb agrees with the structurally highest accessible DP. We show that in a specific class of scrambling configurations, this pattern flips towards a *bottom-up* agreement pattern, whereby agreement with a structurally higher DP is possible only if agreement with a structurally lower one is not. We furthermore demonstrate that only A-scrambling is able to feed agreement in Hindi, whereas \bar{A} -scrambling is not. We argue that this set of observations receives a principled account if (i) valuation is bidirectional in the sense that an agreeing head may receive a value from both higher or lower DPs, and (ii) long-distance upward Agree is impossible. We develop an account of these generalizations in terms of Rezac’s (2003) and Béjar & Rezac’s (2009) theory of *cyclic Agree*, combining downward Agree with probe projection through labeling.

1 Introduction

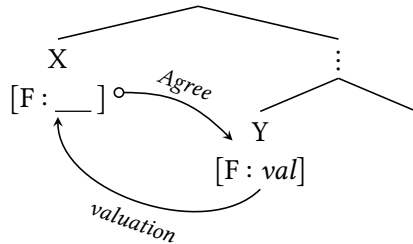
The introduction of the operation Agree in Chomsky (2000, 2001) has sparked an increased interest in the empirical properties of ϕ -agreement and the syntactic mechanisms that underlie it. A common assumption in this literature, which we will adopt here, is that agreement is achieved through *valuation*: An unvalued feature on a verbal head obtains a value from a valued counterpart on a DP. For the sake of having an analytically neutral terminology for characterizing valuation, we will refer to the unvalued feature on the verbal head as the *target* of the valuation, and to the valued counterpart on a DP as the *controller*. We will reserve the familiar *probe-goal* terminology for the narrow-syntactic operation *Agree*. One broad and controversial question in the current literature on the mechanics of agreement is what structural relationship must hold between the controller and the target in order for valuation to be possible. There is widespread consensus that the two need to stand in a c-command relationship, but the precise configurational shape of this relationship is under debate.

We will focus here on three current views about the syntax of valuation. One possibility is that valuation requires the target to c-command the controller. On this view, valuation is *upward* (1) in the sense that the feature value is copied from a lower element onto a higher one.

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(1) **Upward valuation:**

The target of valuation needs to c-command the controller. This is usually implemented in terms of *Downward Agree* (Chomsky 2000, 2001), according to which the unvalued feature (= the *probe*) searches downward through its c-command domain for a valued counterpart (= the *goal*).

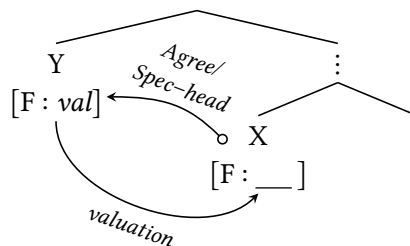


An alternative possibility is the inverse: the target of valuation needs to be c-commanded by the goal, and valuation is hence *downward* (2). This type of account may be implemented either in terms of Upward Agree (2a) or as Spec-head agreement (2b), with different consequences for the locality that must hold between the controller and the target.

(2) **Downward valuation:**

The controller always c-commands the target of valuation. This is usually implemented as either:

- a. *Upward Agree* (Merchant 2011; Zeijlstra 2012; Wurmbrand 2012, 2014):
a probe can agree long-distance with a c-commanding goal; *or*
- b. *Spec-head agreement* (Mahajan 1989; Pollock 1989; Chomsky 1991, 1993; Koopman 2006):
the controller and target are required to be in a Spec-head relationship; the dependency is hence strictly local



A third type of analysis is that valuation is not strictly upward or strictly downward, but *bidirectional* (3). This option amounts to a combination of (1) and (2). This third option may again be implemented in two ways: either as symmetrical valuation (3a), or as downward Agree combined with the possibility of valuation by a specifier (3b). The latter option is not symmetrical because downward Agree is potentially less local than Spec-head agreement (which is by definition phrasebounded).

(3) ***Bidirectional valuation:***

The target of valuation may either c-command or be c-commanded by the controller; upward valuation and downward valuation are both possible.

a. *symmetrical valuation:*

Valuation can proceed upward or downward in a potentially non-local (i.e., not phrasebounded) way (Adger 2003; Merchant 2006; Pesetsky & Torrego 2007; Baker 2008; Carstens 2016; Bjorkman & Zeijlstra 2019). This is commonly implemented as bidirectional Agree; *or*

b. *Downward Agree* combined with *valuation by the specifier* (Fernández & Albizu 2000; Rezac 2003; Béjar & Rezac 2009).¹ On this view, the two directions are not symmetrical in their locality: downward valuation is confined to Spec-head.

This paper investigates these different analytical possibilities through the lens of novel evidence from long-distance agreement (LDA) in Hindi-Urdu (henceforth Hindi). We focus in particular on interactions that arise between verbal ϕ -agreement and scrambling under specific circumstances. First, we show that scrambling may give rise to a descriptive reversal in the directionality of ϕ -agreement: while verb agreement is standardly controlled by the structurally *highest* available argument in Hindi, this preference may flip in the presence of scrambling, giving rise to preferential agreement with a structurally *lower* argument. Second, there is an asymmetry between A- and \bar{A} -scrambling in their ability to affect ϕ -agreement in this way, with only A-scrambling having an impact on ϕ -agreement.

We will argue that these generalization shed new light on the syntax of valuation, in particular its directionality and locality properties. We show that the descriptive directionality reversal poses a challenge to accounts that countenance only upward valuation or only downward valuation, but that a principled explanation becomes available if valuation is in principle bidirectional, with a bias for upward valuation (Rezac 2003; Béjar & Rezac 2009; Carstens 2016). This conclusion favors the family of models in (3), and it hence provides a new argument that valuation is in principle bidirectional. Furthermore, we propose that the differential ability of A- and \bar{A} -scrambling to affect agreement does not have to be stipulated, but that it can in fact be derived from independently motivated properties of these movements *if* downward valuation is confined to Spec-head agreement and hence does not involve genuine upward Agree. This specifically favors the models in (3b).

Our implementation of these broader analytical conclusions draws on Rezac’s (2003) and Béjar & Rezac’s (2009) seminal work on *Cyclic Agree*, which enables a particularly elegant way of understanding these patterns. According to cyclic Agree, a probe first searches through its c-command domain and if this search remains unsuccessful, the probe can be valued by an element in its specifier. Building on and updating Rezac’s (2003) and Béjar & Rezac’s (2009) implementation of cyclic Agree, we propose that cyclic Agree arises from the combination of *downward Agree* with the possibility of *probe projection* through labeling. Spec-head agreement, on this view, is not a theoretical primitive, but established through downward Agree with a

¹ To be precise, for Rezac (2003) and Béjar & Rezac (2009), valuation by a specifier is not accomplished by genuine Spec-head agreement, but instead mediated via a projected probe. We will argue for a similar view in section 5.

projected occurrence of the probe. One important consequence of this model is that while valuation is descriptively bidirectional in the sense that a feature on a head (i.e., the target) may receive a value from a DP that c-commands it or that it is c-commanded by, the narrow-syntactic operation Agree is nonetheless strictly downward. Downward valuation of a head by a specifier is established through Agree with an intermediary that c-commands the target. As such, our model is compatible with recent defenses of strictly downward Agree (Preminger 2013; Preminger & Polinsky 2015), as long as such models are enriched with a notion of probe projection.

Our proposal has a number of more general ramifications: First, the Hindi pattern extends the empirical basis of cyclic Agree beyond hierarchy effects between co-arguments (Rezac 2003; Béjar & Rezac 2009), and it demonstrates that cyclic-Agree effects may also be brought about by movement. Second, these considerations provide an argument against models in which the direction of valuation is more narrowly circumscribed, and against models that allow for long-distance downward valuation. Third, it suggests that one and the same feature in a single construction and language exhibits variable valuation directionality. Fourth, while our investigation will focus primarily on the directionality of agreement, the conclusions we reach based on it have more general repercussions in other domains as well. As already mentioned above, Hindi φ -agreement exhibits an A/\bar{A} -asymmetry in that only elements in A-positions may value a φ -probe. We show that the mechanics of φ -agreement that we propose here has the effect of deriving this asymmetry without the need to appeal to A- and \bar{A} -positions as designated types of positions that constraints on agreement can refer to. This conclusion contributes towards ongoing efforts to derive asymmetries between A- and \bar{A} -movement from deeper syntactic principles.

We will proceed as follows: Section 2 and 3 present the crucial agreement evidence that informs our proposal. Section 4 then develops a cyclic Agree account of this agreement pattern. Section 5 takes a closer look at the mechanisms underlying cyclic Agree and argues that downward valuation does not involve genuine upward Agree. Section 6 then reassesses some previous arguments in favor of upward Agree in light of this conclusion. Section 7 concludes.

2 Local and long-distance agreement in Hindi

The empirical basis for our analytical proposal is the novel observation that scrambling in Hindi interacts with φ -agreement in a specific class of LDA configurations. This section lays out the basic facts of φ -agreement in Hindi. We show that standardly, verbal agreement is top-down: The verb agrees with the structurally highest available argument. This behavior suggests downward Agree (Bhatt 2005; Keine 2019). Against this background, section 3 will then investigate the interactions of scrambling and agreement.

2.1 Local agreement

Descriptively, verb agreement in Hindi is controlled by the structurally highest argument that does not bear a case marker (see, e.g., Pandharipande & Kachru 1977: 119–224; Mahajan

1989: 220–221). In principle, both the subject and the direct object may control agreement. Whether or not the subject bears a case marker is in part determined by the aspect of the clause. Because of Hindi’s split-ergativity, the subject of a transitive clause bears the ergative case marker *-ne* in the perfective, and in this case it is not eligible for controlling verb agreement. In the habitual, on the other hand, the subject is not overtly case-marked and hence eligible for verb agreement. The case marking of the direct object is determined by differential object marking: objects that are animate or specific carry the case marker *-ko*. Other direct objects are not overtly case-marked and hence in principle eligible for agreement.² The two systems are independent of each other, that is, the case marking of the subject and the object can be manipulated independently of each other. All other arguments of the verb (e.g., indirect objects) are invariably case-marked, which renders them irrelevant for the computation of ϕ -agreement.

Against this background, verb agreement is descriptively determined by the algorithm in (4). Most importantly for our concerns here, when both the subject and the object are not overtly case-marked and hence in principle eligible for controlling agreement, the verb has to agree with the subject. In this sense, agreement shows a subject preference. If both the subject and the object are overtly case-marked, the verb appears in the masculine singular default form.

(4) ***Hindi ϕ -agreement algorithm***

If the subject does not bear a case marker → agree with the subject

Otherwise: If object does not bear a case marker → agree with the object

Otherwise: Use masculine singular default agreement.

The agreement morphology on the verb does not indicate whether the agreement controller is the subject or the object: *-aa* realizes masculine singular agreement; *-e* realizes masculine plural; *-ii* realizes feminine singular; and *-ī* realizes feminine plural, regardless of the grammatical function of the agreement controller. Together with their complementary distribution, this strongly suggests that subject and object agreement are manifestations of the same probe. Finally, if there is an auxiliary (determined by tense/aspect), it agrees with the same DP as the main verb.

The agreement algorithm in (4) is illustrated in (5). In (5a), both the subject and the object do not bear an overt case marker, and agreement is consequently controlled by the subject; object agreement and default agreement are impossible. In (5b), the subject is overtly case marked, and verb agreement is triggered by the object. Finally, in (5c), both the subject and the object are overtly case-marked, and the verb correspondingly bears default agreement.³

² In the examples in the paper, we gloss the differential object marker *-ko* as ‘accusative.’ Nothing hinges on this.

³ The following abbreviations are used in the glosses: ABS – absolutive; ACC – accusative; AUX – auxiliary; DAT – dative; DFLT – default; EMPH – emphatic; ERG – ergative; F – feminine; FUT – future; FV – final vowel; HAB – habitual; INF – infinitive; INSTR – instrumental; M – masculine; OBJ – object; PFV – perfective; PL – plural; SBV – subjunctive; SG – singular

(5) a. *Subject agreement preempts object agreement*

laṛke kitaab paṛht-**e**/*-ii/*-aa hāĩ

 boys.M book.F read.HAB-M.PL/*-F.SG/*-DFLT AUX.3PL

 ‘The boys read a book.’

b. *Object agreement if subject agreement is impossible*

laṛkõ-ne **kitaab** paṛh-**ii**/*-e/*-aa hai

 boys.M-ERG book.F read.PFV-F.SG/*-M.PL/*-DFLT AUX.3SG

 ‘The boys have read a book.’

c. *Default agreement as last resort*

laṛkõ-ne kitaab-ko paṛh-**aa**/*-e/*-ii hai

 boys.M-ERG book.F.SG-ACC see.PFV-DFLT/*-M.PL/*-F.SG AUX.3SG

 ‘The boys have read the book.’

Hindi allows free scrambling of verbal arguments (Mahajan 1990; Kidwai 2000), but this scrambling does not affect local agreement. As (6) illustrates, scrambling of the object over the subject does not impact verb agreement compared to the base order in (5a)—subject agreement is still obligatory.

(6) *Subject preference not affected by movement*

kitaab₁ **laṛke** t₁ paṛht-**e**/*-ii/*-aa hāĩ

 book.F boys.M read.HAB-M.PL/*-F.SG/*-DFLT AUX.3PL

 ‘The boys read a book.’

There is no evidence that an agreeing object moves to a designated position in order to trigger agreement in Hindi (Bhatt 2005; Keine 2016, 2019). For instance, agreeing and non-agreeing objects do not differ with respect to scope or binding, as illustrated for scope in (7). Sentences with SOV base order are scopally rigid (7a), and overt object movement enables wide scope of the object (7b) (Mahajan 1997: 199). Significantly, the SOV order is likewise unambiguous with object agreement (7c). In light of the observation that object movement allows wide scope of the object (7b), there is hence no indication that the object in (7c) undergoes movement in order to control agreement.

(7) a. **koi** **laṛkaa** har kitaab paṛht-**aa** hai *subject agreement, SOV*

 some boy.M every book.F read.HAB-M.SG AUX.3SG

 ‘Some boy reads every book.’ $(\exists \gg \forall; * \forall \gg \exists)$

b. har kitaab₁ **koi** **laṛkaa** t₁ paṛht-**aa** hai *subject agreement, OSV*

 every book.F some boy.M read.HAB-M.SG AUX.3SG

 ‘Some boy reads every book.’ $(\forall \gg \exists)$

- c. $\overbrace{\text{kisii larke-ne har kitaab parh-ii}}$ object agreement, SOV
 some boy-ERG every book.F read.PFV-F.SG
 ‘Some boy read every book.’ ($\exists \gg \forall; * \forall \gg \exists$)

Analogous facts hold for pronominal binding (not shown here in the interest of space). In the SOV base order, the object cannot bind a pronoun inside the subject, but moving the object above the subject makes such binding possible (Mahajan 1990: 25–26; Gurtu 1992: 99–103; Dayal 1994: 256; Kidwai 2000: 7, 31). This generalization is again unaffected by verbal agreement, suggesting that objects do not need to move in order to control agreement.

Additional evidence against the presence of object movement in sentences with object agreement comes from idioms. As Bhatt & Keine (2017) note, certain idiomatic objects resist movement in Hindi. An example is the idiom *bhains ke aage biin bajaay* ‘to teach something to someone who usually doesn’t listen’ (*lit.* ‘to play the flute in front of buffalo’). As (8a) illustrates, the object *biin* ‘flute’ resists movement on the idiomatic interpretation. Importantly, the object is nonetheless able to control verb agreement even on the idiomatic reading (8b). Given that the object *biin* ‘flute’ resists movement on the idiomatic reading, we again conclude that object agreement in (8b) is not parasitic on object movement.

- (8) a. $\overbrace{\#biin_1 \text{ Ram-ne [bhains ke aage } t_1 \text{ bajaay-ii]}}$
 flute Ram-ERG buffalo in front of play.PFV-F.SG
 #‘Ram taught something to someone who usually doesn’t listen.’
lit. ‘Ram played a flute in front of a buffalo.’
- b. $\overbrace{\text{Ram-ne [bhains ke aage biin bajaay-ii]}}$
 Ram-ERG buffalo in front of flute.F play.PFV-F.SG
 ‘Ram taught something to someone who usually doesn’t listen.’

In sum, object agreement in Hindi does not seem to be dependent on movement. Furthermore, as will become important below, verb agreement as presented so far descriptively exhibits a *top-down pattern* in the sense that agreement with a structurally lower DP is possible only if agreement with a structurally higher DP is impossible (5a).

2.2 Long-distance agreement (LDA)

We have so far limited our attention to local agreement between a verb and its arguments. Hindi also allows long-distance agreement between a verb and the object of an embedded nonfinite clause (see Mahajan 1989; Davison 1991; Butt 1993, 1995; Boeckx 2004; Bhatt 2005; Franks 2006; Chandra 2007; Keine 2016, 2019; Bhatt & Keine 2017; Bjorkman & Zeijlstra 2019). An example of LDA is provided in (9), where the matrix verb *dii* ‘let’ can agree with the embedded object *kitaab* ‘book’.⁴ The morphology of LDA on a verb is identical to that of

⁴ We will illustrate the crucial generalizations about LDA with the ‘permissive’ construction, which uses the embedding verb *de* ‘let’ (see Butt 1993, 1995, 2014, Bhatt 2005: 795, and Davison 2014). It seems that for some speakers, LDA is obligatory in this construction (Butt 1993: 38, 2014: 177), but this is not the case for all speakers

local agreement. Unlike local agreement, which never exhibits any kind of optionality, LDA is usually optional and alternates with default agreement (the form *diyaa* in (9)). Note that the matrix subject *saare shikṣakō-ne* ‘all teachers-ERG’ bears ergative case-marking in (9). As we will see shortly, this is indeed a requirement for LDA.

(9) *Subject overtly case-marked → LDA or default agreement*

saare shikṣakō-ne [Ram-ko **kitaab** paṛhne] d-ii/diy-aa
 all teachers.M-ERG Ram-DAT book.F read.INF let.PFV-F.SG/let.PFV-DFLT
 ‘All the teachers let Ram read a book.’

In the interest of space, we will not investigate the surface optionality of LDA in detail here. Rather, we will assume, essentially following Boeckx (2004), Bhatt (2005), and Keine (2016, 2019), that this optionality is the result of a structural ambiguity of nonfinite clauses in Hindi. On this line of account, the nonfinite clauses occur in (at least) two varieties, one of which is transparent to ϕ -agreement, the other of which is opaque. The choice between LDA and default agreement in (9) then reduces to the type of the nonfinite clause. We refer the reader to the sources just cited for specific proposals and justification.

Like local agreement, agreement in LDA configurations displays a subject preference. (10) provides the counterpart of (9) in which the matrix subject *saare shikṣak* ‘all teachers’ is not overtly case-marked. Here, verb agreement has to be controlled by the matrix subject (10a). LDA with the embedded object (10b) and default agreement (10c) are both impossible.

(10) *Subject not overtly case marked → only subject agreement*

- a. **saare shikṣak** [Ram-ko **kitaab** paṛhne] det-**e** hāĩ
 all teachers.M Ram-DAT book.F read.INF let.HAB-M.PL AUX.3PL
 ‘All the teachers let Ram read a book.’
- b. *saare shikṣak [Ram-ko **kitaab** paṛhne] det-**ii** hai
 all teachers.M Ram-DAT book.F read.INF let.HAB-F.SG AUX.3SG
- c. *saare shikṣak [Ram-ko **kitaab** paṛhne] det-**aa** hai
 all teachers.M Ram-DAT book.F read.INF let.HAB-DFLT AUX.3SG

Just as in the case of local agreement (6), object scrambling does not override the subject preference. Thus, while scrambling of the embedded object *kitaab* ‘book’ over the matrix subject is possible, it does not affect the requirement for the verb to agree with the matrix subject, as shown in (11).

- (11) a. **kitaab₁ saare shikṣak** [Ram-ko *t₁* paṛhne] det-**e** hāĩ
 book.F all teachers.M Ram-DAT read.INF let.HAB-M.PL AUX.3PL

(Bhatt 2005: 795n11; Davison 2014: 139n2), including our consultants. In any event, the same pattern, including the critical facts in section 3, hold for other LDA predicates like *caah* ‘want’ and is hence not restricted to the permissive construction.

- b. ***kitaab**₁ saare shikṣak [Ram-ko t₁ paṛhne] det-**ii** hai
 book.F all teachers.M Ram-DAT read.INF let.HAB-F.SG AUX.3SG

Moreover, again just like in the case of local agreement, LDA does not seem to be parasitic on movement of the agreement controller (Bhatt 2005; Keine 2016, 2019). The relevant facts are parallel to those for local agreement presented in section 2.1. First, an in-situ embedded object invariably takes scope below the matrix subject, even in the case of LDA (12).

- (12) *kisii shikṣak-ne* [Ram-ko **har** **kitaab** paṛhne] d-**ii**
 some teacher.M-ERG Ram-ACC every book.F read.INF let.PFV-F.SG
 ‘Some teacher let Ram read every book.’ (∃ >> ∀; *∀ >> ∃)

Second, an in-situ object cannot bind a pronoun inside the matrix subject, even if LDA takes place (Keine 2019).

Third, idiomatic objects that resist being moved—such as *biin* ‘flute’ in the idiom *bhains ke aage biin bajaa* ‘to teach something to someone who usually doesn’t listen’ (*lit.* ‘to play the flute in front of buffalo’), see (8)—can nonetheless control LDA, as demonstrated by (13).

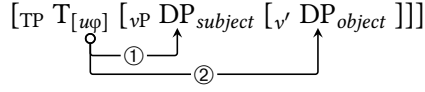
- (13) Ram-ne [bhains ke aage **biin** bajaanii] caah-**ii**
 Ram-ERG buffalo in front of flute.F play.INF want.PFV-F.SG
 ‘Ram wanted to teach something to someone who usually doesn’t listen.’

Our empirical conclusions about LDA are therefore analogous to those we reached for local agreement: LDA is not parasitic on object movement, and it exhibits a descriptive *top-down* pattern: agreement with the structurally lower DP is possible only if agreement with a structurally higher DP is impossible.

2.3 Analytical consequences: Upward valuation

The evidence so far receives an immediate account in terms of upward valuation, which may be modeled using standard downward Agree (Chomsky 2000, 2001). Assuming that the Hindi φ -probe is located on T, it may enter into a downward Agree dependency with either the subject or the object DP, as illustrated in (14). Because Agree is potentially long-distance, it does not require movement of the goal, which derives the independence of object agreement and scrambling. Furthermore, in line with relativized minimality, the φ -probe has to agree with the closest accessible goal, which entails that subject agreement (①), if possible, preempts object agreement (②). This accounts for the overarching top-down agreement pattern. Viewing φ -agreement in Hindi as established as in (14) also captures the fact that subject and object agreement are in complementary distribution (given that there is only a single φ -probe), and that the agreement morphology does not indicate whether it realizes subject or object agreement.

(14) *Downward Agree*



There are a number of ways in which the invisibility of case-marked DPs for ϕ -agreement may be modeled, and the choice is insubstantial for the remainder of this paper. One possibility is that the ϕ -probe is case-sensitized (Bobaljik 2008; Preminger 2011, 2014). Another analytical option is that Hindi case markers host their own projection (either a K(ase)P or a PP), which shields the complement DP from outside probing (Butt & King 2004; Spencer 2005; Atlamaz & Baker 2018).

Recall furthermore that default agreement is a last resort in that it arises only if there is no viable agreement controller. This is in line with Preminger’s (2011, 2014) *obligatory-operations* model, according to which Agree is mandatory if it is possible, but is allowed to fail if it cannot be established (15). On this view, default agreement is the PF realization of an unvalued ϕ -probe at PF.

- (15) If a probe can agree with a goal, it has to. Otherwise, it may remain unvalued.
(Preminger 2011, 2014)

The generalizations so far suggest that valuation *can* be upward in the sense that an target of valuation (i.e., the ϕ -probe on T) can be valued by an element that it c-commands. The next question is whether this is the only configuration in which valuation is possible or whether downward valuation is also a possibility. The following section will argue for the latter.

3 Scrambling–agreement interactions

In this section, we make the novel observation that scrambling in Hindi *can* feed agreement in a limited set of circumstances. In these configurations, the top-down pattern witnessed so far flips. Agreement then exhibits a bottom-up preference in the sense that agreement with a structurally lower goal preempts agreement with a structurally higher one. We then suggest that agreement in these configurations instantiates downward valuation.

3.1 Object scrambling may feed agreement

In the LDA configurations considered so far, the nonfinite clause that contains the agreement trigger occurs in its preverbal base position. Nonfinite clauses may also be extraposed to the right of the embedding verb, as shown in (16). In this case, LDA into the nonfinite clause becomes severely degraded. (16) forms a minimal pair with (9) above. In (9), the embedded clause is not extraposed and LDA is possible; in (16), by contrast, default agreement is the only option. Note that the matrix subject in (16) is ergative case marked, so the impossibility of LDA does not stem from an interaction with the subject.

(16) *No LDA into extraposed clause*

$\text{saare shikṣākō-ne } t_1 \text{ diy-aa}/?*d\text{-ii} \quad \text{[Ram-ko } \textbf{kitaab} \text{ paṛhne }]_1$
 all teachers-ERG let.PFV-DFLT/?*let.PFV-F.SG Ram-DAT book.F read.INF
 ‘All the teachers let Ram read a book.’

This bleeding effect of extraposition on LDA is plausibly a freezing effect (Wexler & Culicover 1980). We will make a specific proposal about how to model it in section 4.1. For now, we will simply note it as an empirical generalization.

As the next step in our argumentation, we observe that extraposed clauses are nonetheless transparent for scrambling out of them. That is, the embedded object may be moved into the matrix clause, as shown in (17). In this case, LDA is again possible, alternating with default agreement.⁵

(17) a. *Object scrambling can feed agreement...*

$\textbf{kitaab}_2 \text{ saare shikṣākō-ne } t_1 \text{ d-ii} \quad \text{[Ram-ko } t_2 \text{ paṛhne }]_1$
 book.F all teachers-ERG let.PFV-F.SG Ram-DAT read.INF
 ‘All the teachers let Ram read a book.’

b. *... but default agreement is also possible*

$\textbf{kitaab}_2 \text{ saare shikṣākō-ne } t_1 \text{ diy-aa} \quad \text{[Ram-ko } t_2 \text{ paṛhne }]_1$
 book.F all teachers-ERG let.PFV-DFLT Ram-DAT read.INF

Because agreement into an extraposed clause is impossible (see (16)), the agreement in (17a) cannot be established with the base position of *kitaab* ‘book’ inside the extraposed clause. Rather, the matrix verb must agree with the landing site of the object in the matrix clause.⁶ What (17) indicates, therefore, is that scrambling in Hindi is in principle able to feed agreement, and hence that agreement is not simply ‘blind’ to scrambling (contra Bhatt 2005; Keine 2019). At the same time, however, there are not generally any interactions between scrambling and agreement in Hindi, as we saw on the basis of (6) and (11), where word order changes have no impact on verb agreement. One analytical challenge that (17) poses is therefore to account for the possibility of scrambling–agreement interactions as well as the absence of such interactions in most cases. In order to gain a better understanding of the syntax of configurations like (11), the next section will probe the mechanics of agreement in them in greater detail.

⁵ Incidentally, the facts in (16) and (17) provide a new argument that LDA in Hindi is established directly with the embedded object and not mediated via the embedded clause, at least as an option. This is because the embedded clause in (17) occupies the same position as in (16). On an account in which the embedded object agrees with the embedded clause, which in turn agrees with the matrix verb (e.g. Legate 2005; Bjorkman & Zeijlstra 2019), LDA would be expected to be ungrammatical, just like (16), contrary to fact.

⁶ Note also that the agreement in (17) cannot be analyzed as having been established before extraposition of the embedded clause, as such a derivation would also allow agreement in (16), contrary to fact.

3.2 Distinguishing A- and \bar{A} -scrambling

One question that arises about (17) is why scrambling into the matrix clause triggers LDA only optionally. This is surprising in light of the fact that local (i.e., clausemate) agreement is not otherwise optional in Hindi (see section 2.1). Put differently, if, as concluded above, agreement in (17) is controlled by the landing site of the scrambled object in the matrix clause, then why does it not pattern like other instances of local agreement? In this section, we provide evidence that the surface optionality of LDA in (17) correlates with the type of scrambling that the DP undergoes.

A rich body of literature has argued that scrambling in Hindi is not a uniform phenomenon, and that the language utilizes (at least) two types of scrambling, which we will descriptively refer to as ‘A-scrambling’ and ‘ \bar{A} -scrambling’ here (Déprez 1989; Mahajan 1990, 1994; Gurtu 1992; Jones 1993; Bhatt 2016; Keine 2019).⁷ Motivation for this distinction comes from the fact that scrambling within a finite clause and scrambling out of a finite clause exhibit distinct properties. As (18a) shows, scrambling within a finite clause is not subject to weak crossover and hence able to feed pronominal binding. By contrast, (18b) demonstrates that scrambling that crosses a finite clause boundary is subject to weak crossover, and hence unable to feed pronominal binding. We adopt here Mahajan’s (1990, 1994) influential analysis, according to which A-scrambling in Hindi is not subject to weak crossover but unable to leave a finite clause, whereas \bar{A} -scrambling is subject to weak crossover but able to leave a finite clause. (18b) must therefore involve \bar{A} -scrambling, and it consequently gives rise to weak crossover effects.

- (18) a. **har larke-ko₁** [**uskii₁** bahin-ne] *t₁* dekh-aa
 every boy-ACC his sister-ERG see.PFV-DFLT
 ‘For every boy *x*, *x*’s sister saw *x*.’
- b. **har larke-ko₁** [**uskii_{2/*1}** bahin-ne] soc-aa [_{CP} ki Ram-ne *t₁*
 every boy-ACC his sister-ERG think.PFV-DFLT that Ram-ERG
 dekh-aa]
 see.PFV-DFLT
 ‘His₂ sister thought that Ram saw every boy₁.’ (bound reading impossible)

We will also follow Mahajan (1990, 1994) in assuming that while scrambling that leaves a finite clause must be \bar{A} -scrambling, scrambling within a finite clause is in principle ambiguous between A- and \bar{A} -scrambling. One limitation of the example in (17) above is that it merely involves a word order permutation, and as such could involve either type of scrambling. We will see that once the type of scrambling is appropriately controlled for, the surface optionality of LDA in configurations like (17) disappears: If the movement is unambiguously A-scrambling, LDA is obligatory; if it is clearly \bar{A} -scrambling, LDA is impossible.

⁷ We will use these terms as convenient labels, without making a commitment about the precise relationship between A- and \bar{A} -scrambling in Hindi and A- and \bar{A} -movement in English. See Dayal (1994), Kidwai (2000), Bhatt (2003, 2016) for relevant discussion.

3.2.1 Diagnosing A-scrambling

In order to be able to assess the relationship between A-scrambling and ϕ -agreement, we require a configuration in which scrambling is unambiguously A-scrambling. Because \bar{A} -scrambling is subject to weak crossover (see (18b)), we can employ crossover configurations to isolate A-scrambling: if a scrambled quantificational element binds a pronoun from its landing site, this scrambling step must be A-scrambling, as \bar{A} -scrambling would give rise to a crossover violation. This test is applied to the configurations of interest in (19). It is analogous in relevant respects to (17) above, but the scrambled object *har kitaab* ‘every book’ crosses over a coindexed pronoun inside the matrix subject, thus requiring the scrambling to be A-scrambling. The resulting structure is grammatical, but LDA is crucially obligatory. In this respect, (19) contrasts with (17) above.

(19) *Object A-scrambling makes LDA obligatory*

har	kitaab₂	uske₂	lekhakō-ne]	t_1	d-ii/*diy-aa		[Ram-ko	t_2
every book.F	its		authors-ERG		let.PFV-F.SG/*let.PFV-DFLT		Ram-DAT	
	paṛhne] ₁							
	read.INF							
‘For every book x , x ’s authors let Ram read x .’								

Recall that the agreement in (19) cannot be established with the object’s base position inside the extraposed clause (given (16)). (19) hence demonstrates that DPs that are A-scrambled into the matrix clause are visible to matrix ϕ -agreement, and in fact obligatorily so.

3.2.2 Diagnosing \bar{A} -scrambling

Let us now turn to the relationship between \bar{A} -scrambling and agreement. In order to diagnose \bar{A} -scrambling, we will make use of embedded clauses that can independently be shown to only allow \bar{A} -scrambling out of them.

The first relevant configuration is case-marked infinitival clauses. Certain verbs in Hindi, like *kah* ‘tell’, embed a nonfinite clause, but require this nonfinite clause to carry an overt case marker. This configuration, which Butt (1995) calls the ‘instructive’, is illustrated in (20), where the embedded clause must be marked with dative case (*-ko*). Case-marked clauses are useful for our purposes because they allow scrambling out of them, but this scrambling is subject to weak crossover. In (20), scrambling of the embedded object *har khat* ‘every letter’ into the matrix clause is possible, but it is not possible for *har khat* to bind the subject-internal pronoun *uske*. This observation implies that case-marked finite clauses do not allow A-scrambling out of them; all extraction out of them must be \bar{A} -scrambling. This makes them a useful tool for isolating \bar{A} -scrambling.

(20) *No A-movement out of case-marked clauses*

\downarrow
*har khat₂ [uske_{3/*2}] lekhakō-ne [Ram-se t₂ parhne-ko] kah-aa*
 every letter.M its authors-ERG Ram-INSTR read.INF-DAT say.PFV-M.SG
 ‘Its₃ authors told Ram to read every letter₂.’

The moved element *har khat* ‘every letter’ in (20) is masculine singular. The form of the matrix verb *kahaa* ‘say’ hence does not morphologically indicate whether it bears agreement with *har khat* or default agreement. This demonstrates that the prohibition against A-scrambling out of case-marked clauses holds irrespective of agreement.

Against this background, consider the example in (21), which is structurally analogous to (20), but the scrambled element is the feminine DP *har kitaab* ‘every book’. As shown, the matrix verb is unable to agree with it; default agreement is the only option. This holds irrespective of whether the embedded clause occurs in its preverbal base position (21b) or is extraposed (21a).

(21) \bar{A} -scrambling does not feed agreement

- a. **har kitaab₂** [uske_{3/*2} lekhakō-ne] t₁ kah-aa/*-ii [Ram-se t₂
 every book.F its authors-ERG say.PFV-DFLT/*-F.SG Ram-INSTR
 parhne-ko]₁
 read.INF-DAT
 ‘Its₃ authors told Ram to read every book₂.’ *extraposed*
- b. **har kitaab₂** uske_{3/*2} lekhakō-ne [Ram-se t₂ parhne-ko]
 every book.F its authors-ERG Ram-INSTR read.INF-DAT
 kah-aa/*-ii
 say.PFV-DFLT/*-F.SG
 ‘Its₃ authors told Ram to read every book₂.’ *intraposed*

(21) indicates that \bar{A} -scrambling is unable to feed ϕ -agreement in Hindi, and in this respect it contrasts with A-scrambling as in (19).

The same conclusion may be reached on the basis of finite clauses. We already saw on the basis of (18b) above that scrambling out of finite clauses is possible, but it has to be \bar{A} -scrambling (as revealed by weak crossover). Significantly, scrambling out of finite clauses is also unable to trigger agreement in the matrix clause, as illustrated in (22). Here, the embedded object *kitaab* is \bar{A} -scrambled into the matrix clause. The matrix verb *soc* ‘think’ cannot agree with it despite the fact that its local subject *Sita-ne* ‘Sita-ERG’ is overtly case-marked and hence ineligible to control agreement. Default agreement is the only agreement option in (22).

- (22) **kitaab₁** Sita-ne soc-aa/*-ii [CP ki Mona-ne t₁ parh-ii
 book.F Sita-ERG think.PFV-M.SG/*-F.SG that Mona-ERG read.PFV-F.SG
 thii]
 AUX.3SG.F
 ‘Sita thought that Mona had read a book.’

In sum, there is a difference between A- and \bar{A} -scrambling with respect to their ability to feed agreement in Hindi: Scrambling into an A-position is able to feed agreement, but scrambling into an \bar{A} -position is not. This strongly suggests that the apparent optionality of agreement in (17) above is epiphenomenal—it results from the fact that the scrambling in (17) could be either A- or \bar{A} -scrambling. Once the movement type is appropriately controlled for, the surface optionality disappears.

3.3 Subject preference

In all the configurations that we have considered so far in this section, the matrix subject is marked with ergative case and hence not an eligible agreement controller. We might ask at this point whether agreement with an A-scrambled object is still a possibility if the matrix subject is eligible for agreement, i.e., if it is not overtly case-marked. (23) instantiates such

a configuration. Like in (19), the embedded clause is extraposed and the embedded object *har kitaab* ‘every book’ is A-scrambled over the matrix subject *uske lekhak* ‘its authors’, as diagnosed by pronominal binding. Unlike (19), the matrix subject does not bear ergative case in (23). As shown, only subject agreement is possible in this case (23a). Agreement with the A-scrambled object is no longer possible (23b), and neither is default agreement (23c).

(23) *Subject agreement preempts agreement with A-moved object*

a. *Subject agreement*

har kitaab₂ [uske₂] lekhak t₁ det-e hāĩ [Ram-ko t₂ paṛhne]₁
 every book.F its authors.M let.HAB-M.PL AUX.3PL Ram-DAT read.INF
 ‘For every book *x*, *x*’s authors let Ram read *x*.’

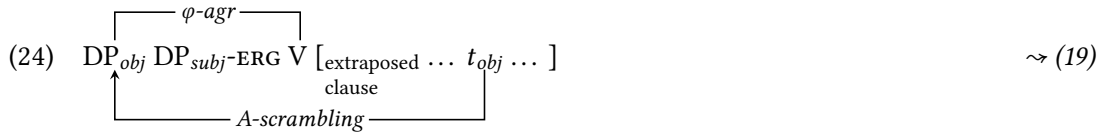
b. *Agreement with A-scrambled object impossible*

**har kitaab₂ [uske₂] lekhak t₁ det-ii hai [Ram-ko t₂ paṛhne]₁*
 every book.F its authors.M let.HAB-F.SG AUX.3SG Ram-DAT read.INF
 ‘For every book *x*, *x*’s authors let Ram read *x*.’

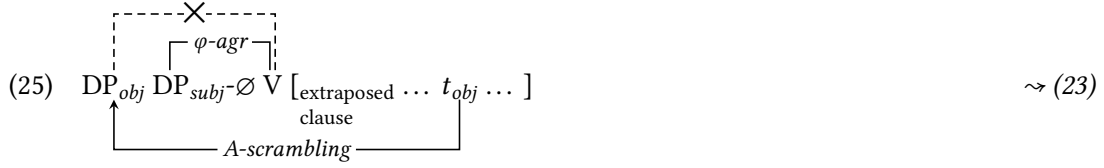
c. *Default agreement impossible*

**har kitaab₂ [uske₂] lekhak t₁ det-aa hai [Ram-ko t₂ paṛhne]₁*
 every book.F its authors.M let.HAB-DFLT AUX.3SG Ram-DAT read.INF
 ‘For every book *x*, *x*’s authors let Ram read *x*.’

What (23) demonstrates is that if both the A-scrambled object and the matrix subject are not overtly case-marked and hence in principle able to control verb agreement, then it has to be the subject that controls the agreement. This is in line with the overarching preference for agreement with the subject, but in terms of the phrase-structural positions of the two DPs, it instantiates a descriptive *bottom-up agreement* pattern. Because the landing site of the scrambled object is clearly higher than the position of the subject (given that the object binds the subject-internal pronoun), agreement with the lower DP preempts agreement with the higher DP in (23). This state of affairs is schematized in (24) and (25). (24) provides the structure of sentences like (19): the embedded object is A-scrambled out of an extraposed clause, and the matrix subject is overtly case-marked. In this case, the scrambled object can, and in fact must, control matrix agreement.



(25) represents the structure of (23), where the matrix subject is not overtly case-marked and the agreement must be controlled by the subject.



In (24) and (25), agreement with the structurally higher DP (the A-scrambled object) is possible only if agreement with the structurally lower DP (the subject) is impossible. In this sense, this configuration instantiates a bottom-up agreement pattern, whereby agreement is preferentially established with the structurally lower DP.

3.4 Consequences for the directionality of valuation

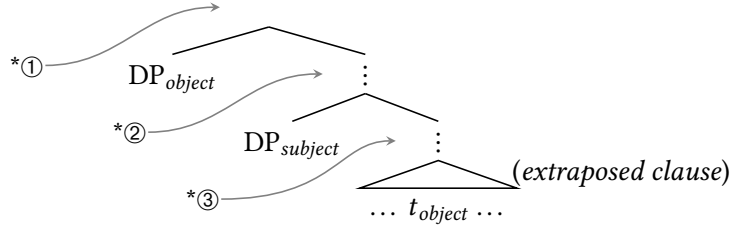
In section 2, we observed that verb agreement in Hindi is standardly established in a top-down fashion: agreement targets the structurally highest available DP. We concluded that this pattern receives a principled account in terms of upward valuation, implemented as downward Agree. The current section will argue that an account in which valuation is exclusively upward does not extend to the agreement pattern observed in section 3. We then argue in section 4 that an account in which valuation can in principle be either upward or downward enables a more principled account of this range of facts.

Let us first consider the challenge that (24) and (25) pose for an account that only allows for downward Agree and hence upward valuation. The structural requirements that have to be met by a successful account of (24) and (25) are that (i) the A-scrambled object must c-command the subject (to enable binding of the subject-internal pronoun), (ii) the A-scrambled can control agreement (24), (iii) there is nonetheless a subject agreement preference (25), and (iv) the base position of the object is invisible to matrix agreement due to the clausal extraposition (16).

To illustrate the challenge that this set of demands constitutes for an upward-valuation-only model of agreement, consider the structure in (26).⁸ Here, ①–③ represent a priori possible positions for the verbal ϕ -probe. On an upward-valuation-only model, a probe can only be valued by DPs that it c-commands. Placing the probe above the landing site of the object (①) would correctly capture the fact that object scrambling can feed ϕ -agreement, but it would incorrectly produce an object-agreement preference (given that the object would then be closer to the probe than the subject). This is incorrect, as (25) attests. Alternatively, placing the probe between the subject and the object (②) would predict that object scrambling should never feed agreement (given that, by assumption, valuation is upward only). This would fail to generate (24). Finally, situating the probe below both the subject and the landing site of the object (③) would erroneously predict that neither subject nor object agreement is possible in (26), which would fail to capture either (24) or (25).

⁸ We assume for now that agreement with an A-scrambled object is established with the landing of the object above the subject. See section 3.5 for discussion of possible alternatives.

(26) *Upward valuation: A priori possible probe locations*



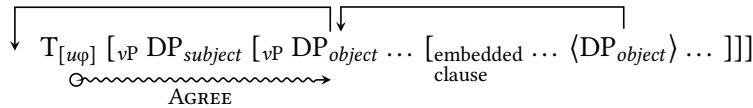
Consequently, an upward-valuation-only model does not readily lend itself to an account of the Hindi agreement pattern in this section, where a structurally higher DP is able to control agreement, but such agreement is nonetheless bled by the availability of a structurally lower DP. In conjunction with the top-down agreement pattern described in section 2, this suggests that upward valuation is possible, but that it is not the only configuration of valuation. This is unexpected on models in which valuation is either upward-only or downward-only. Section 4 proposes that an account that allows for both upward and downward valuation allows us to overcome this challenge.

3.5 Agreement with an intermediate position?

Before we develop our proposal, we now consider one possible objection to the argumentation so far. The main line of argumentation is continued in section 4.

The discussion so far has presupposed that agreement with an A-scrambled object in (19) is established with the object's surface position above the matrix subject. Let us consider whether the challenge for an upward-valuation-only model of agreement can be avoided by requiring A-scrambling to take place in two steps and letting agreement target the intermediate landing site.⁹ Thus, suppose that A-scrambling proceeds as in (27). A first movement step takes the object to a position in the matrix clause below the subject (e.g., an inner Spec,vP), followed by a second movement step to its surface position. Furthermore, suppose that agreement is established with the intermediate position of the object rather than its final landing site.

(27) *Hypothetical two-step scrambling chain*



The derivation in (27) would manage to reconcile the pattern in (24) and (25) above with strictly downward Agree.¹⁰ Let us therefore consider this possibility in greater detail.

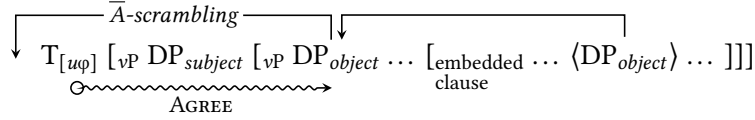
Despite its initial appeal, there are reasons to call the hypothetical derivation in (27) into question as an account of the agreement facts at hand, in particular the claim that agreement is established with an intermediate position of the object. One obstacle to such an account comes from the A/ \bar{A} -asymmetry we observed in section 3.2. Notice first that if agreement with an

⁹ We are grateful to Amy Rose Deal, Julie Legate, and Haley Wei for discussions of this possibility.

¹⁰ Preminger & Polinsky (2015) make a similar proposal in order to reanalyze data that Bjorkman & Zeijlstra (2019) take to instantiate downward valuation.

A-scrambled object is established with the intermediate landing site in (27), this intermediate landing site must be obligatorily present in examples like (19), where agreement with the object is obligatory. This is clearly not unreasonable in light of the common view that vP constitutes a phase, which requires extraction out of it to proceed through its specifier. But the \bar{A} -scrambling facts pose a challenge to such an account, because \bar{A} -scrambling should have to pass through this Spec, vP as well. If matrix agreement is established with this intermediate landing site, as hypothesized in (27), then \bar{A} -scrambling should likewise trigger agreement from this intermediate position, as schematized in (28). Yet as we saw in section 3.2.2, this is not the case—scrambling that ultimately targets an \bar{A} -position is not able to trigger agreement (recall (21) and (22)). (28) must therefore be ruled out.

(28) *Illicit agreement with \bar{A} -scrambled object (cf. (21))*



The underlying problem is that, empirically, it is the terminal A- or \bar{A} -landing site of the scrambled element that determines whether it may control agreement or not. All else equal, if agreement were established with an intermediate landing site, it should obtain irrespective of whether the object continues to move to an A- or to an \bar{A} -position. The striking A/ \bar{A} -asymmetry would then remain unaccounted for.

One way to address this challenge would be to stipulate that A-scrambling, but not \bar{A} -scrambling, proceeds through this intermediate landing site. But in the absence of independent evidence for this distinction, this would be ad hoc and as such have little explanatory value. Furthermore, to the extent that differences between A- and \bar{A} -movement with respect to movement to phase edges have been argued for, they take the opposite form, with phase-edge positions being reserved for \bar{A} -movement (e.g., Miyagawa 2010; Charnavel & Sportiche 2016). The requirements that an account like (27) would impose are at variance with such desiderata.

Another possibility to reconcile the derivation in (27) with the A/ \bar{A} -scrambling difference with respect to agreement would be to require that the intermediate landing site have the same type as the final landing site, and to furthermore stipulate that \bar{A} -positions are invisible to ϕ -agreement. Concretely, suppose that Spec, vP can be either an A- or an \bar{A} -position. The ban on improper movement would then require that the intermediate landing site be an A-position if the object undergoes further A-scrambling (and hence visible to the ϕ -probe in (27)), but an \bar{A} -position if the object moves to an \bar{A} -position (and hence ϕ -invisible in (28)).

This line of analysis would indeed be able to capture the Hindi facts above, but it too encounters a number of obstacles. First, the crucial assumption that A-positions are visible to a ϕ -probe but \bar{A} -positions are not would merely be stipulated. As such, this account would seem to offer little more than a restatement of the empirical generalization. In section 5, we will propose an account that attempts to go deeper than that by deriving the A/ \bar{A} -contrast in this domain from independently motivated properties of the movement types. As we will show, this account will require that agreement in (19) is *not* established with an intermediate landing site.

A second objection against an account that simply stipulates that \bar{A} -positions are invisible to agreement is that doing so would be too strong empirically. The literature has by now uncovered a number of languages in which elements in \bar{A} -positions *are* clearly visible to ϕ -agreement, and we will briefly mention some here. One example is LDA in Tsez (Polinsky & Potsdam 2001), Passamaquoddy (Bruening 2001), and Innu-aimûn (Branigan & MacKenzie 2002). For example, Polinsky & Potsdam (2001) argue that matrix ϕ -agreement in Tsez can be fed by embedded \bar{A} -movement (also see Polinsky 2003). This is the case for DPs that, they argue, undergo covert topicalization to embedded left periphery, and it also holds for elements that are wh-moved:

- (29) enir [**šebi** y-āk'iruli] y-iy-x-ānu Tsez
 mother wh.II.ABS II-go II-know-PRES-NEG
 'The mother does not know who [of women] left.' (Polinsky & Potsdam 2001: 638n20)

Polinsky & Potsdam (2001) furthermore show that elements that are neither topics nor wh-elements cannot trigger LDA. They attribute this fact to the \bar{A} -nature of the movement that enables the agreement. Tsez thus provides an example of ϕ -agreement with an \bar{A} -position.

Similar facts hold in Innu-aimûn. Branigan & MacKenzie (2002) argue that elements that undergo topicalization or wh-movement to the embedded Spec,CP are visible to the matrix ϕ -probe.

- (30) Tshi-tshissenim-**âut**-a **tân tât** innût tshe-takushinit? Innu-aimûn
 2-know-3PL-Q how many people FUT-arrive
 'Do you know how many people are coming?' (Branigan & MacKenzie 2002: 394)

Agreement configurations of this type cast serious doubt on any blanket prohibition against ϕ -agreement with \bar{A} -positions.

A further example of agreement with an \bar{A} -position is upward complementizer agreement in Lubukusu, as analyzed by Diercks (2013). In Lubukusu, it is possible for an embedded complementizer to agree with the subject of a matrix clause (see (31), where the complementizer *ba-li* agrees with the matrix subject *babandu* 'people'). Diercks (2013) shows that this agreement is independent of subject agreement on the verb, and he provides evidence that this agreement is mediated via a null operator in the embedded Spec,CP. He argues that this operator is semantically bound by the matrix subject—entailing identity of ϕ -features—, and that the embedded C establishes agreement with this operator, as shown in (32).¹¹

- (31) **Ba-ba-ndu** ba-bol-el-a Alfredi **ba-li** a-kha-khil-e. Lubukusu
 2-2-people 2S-said-APPL-FV 1Alfred 2-that 1S-FUT-conquer
 'The people told Alfred that he will win.' (Diercks 2013: 358)

¹¹ Though see Carstens (2016) and Diercks et al. (2017) for different approaches.

$$(32) \quad [\text{TP Subject}_1 \dots [\text{CP Op}_1 [\dots \text{C} \dots] \dots] \dots]$$

└──────────┘
└──────────┘

Binding
Agree

Like the LDA example in (30), agreement as in (32) suggests that \bar{A} -positions are not simply inaccessible to ϕ -agreement as a universal principle.

A final example of ϕ -agreement with an \bar{A} -position is wh-agreement, in which DPs that have undergone wh-movement control verb agreement that differs morphologically from agreement with non-wh-moved DPs. While such patterns have been analyzed in a variety of ways (see, e.g., Schneider-Zioga 2007; Henderson 2013; Baier 2016), at least one line of approach attributes the effect to agreement between C and the element in its \bar{A} -landing site (e.g., Henderson 2013). To the extent that these approaches are on the right track, they provide further motivation that ϕ -agreement with \bar{A} -positions is in principle a possibility.¹²

We conclude from this range of evidence that any general ban on agreement with an element in an \bar{A} -position is too restrictive empirically. Recall now that precisely such a ban was necessary for an account of Hindi that establishes agreement with an A-scrambled object in an intermediate landing site (see (27)), because such an account must rule out agreement with the intermediate landing site of \bar{A} -scrambled elements, as in (28). If \bar{A} -positions are not generally invisible to ϕ -agreement, then the fact that agreement with the intermediate landing site in (28) is impossible would remain unexplained, and with it the striking contrast between A- and \bar{A} -scrambling with respect to their ability to feed agreement in Hindi.¹³

We take these obstacles to argue against an account of the Hindi facts in terms of agreement with an intermediate position of an A-scrambled object as in (27). In the next sections, we will argue that a principled account that avoids these shortcomings becomes available if agreement with an A-scrambled object as in (24) is established with the surface landing site of the object, and if valuation is bidirectional.¹⁴

4 A cyclic-Agree approach

This and the following section develop our account of the Hindi agreement patterns in sections 2 and 3. This section focuses on how to derive the coexistence of the descriptive top-down agreement pattern in section 2 and the bottom-up agreement pattern in section 3 in a system-

¹² In addition to these empirical arguments, it is also not clear how a constraint on ϕ -agreement that specifically refers to A- vs. \bar{A} -positions can even be formulated in bare phrase structure. This problem is particularly pressing in light of theories of the A/ \bar{A} -distinction such as van Urk (2015), who dispenses with the distinction between A- and \bar{A} -positions and instead locates the distinction in the type of *feature* that triggers the movement. On the standard assumption that movement-inducing features are eliminated as a result of the movement, a principle that selectively blocks ϕ -agreement with \bar{A} -positions arguably cannot even be formulated anymore on a van Urk (2015)-style account. The account we propose in section 5 circumvents this problem, and it hence reconciles the current facts with van Urk's (2015) basic approach to the A/ \bar{A} -distinction.

¹³ Familiar poverty-of-the-stimulus considerations also discourage an analysis in which \bar{A} -positions are stipulated to be visible to a ϕ -probe in Tsez, Innu-aimûn, and Lubukusu, but invisible in Hindi.

¹⁴ We would like to note that our proposal does not rule out the possibility that A-scrambling in this example proceeds in two steps (i.e., via the matrix Spec, vP), only that it is not this intermediate landing site that controls the agreement. See fn. 15.

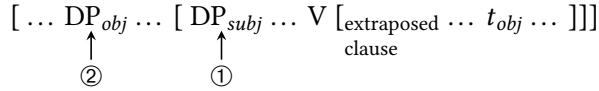
atic manner. Section 5 then proposes an account of the A/\bar{A} -scrambling contrast with respect to ϕ -agreement.

The empirical challenge that we address in this section can be summarized as in (33) and (34). In section 2, we showed that standardly, verb agreement in Hindi exhibits a top-down agreement pattern: if two DPs are eligible for controlling agreement (i.e., if they are not overtly case-marked), then agreement is established with the structurally higher DP (see (33)). In section 3, we observed data that exhibit a bottom-up agreement pattern, whereby it is the structurally lower DP that preferentially controls verb agreement (see (34)).

(33) *Top-down preference* (section 2)



(34) *Bottom-up preference* (section 3)



Descriptively, (33) and (34) instantiate an *agreement reversal*, in the sense that competition between two eligible DPs is resolved in favor of the structurally higher one in (33) and in favor of the structurally lower one in (34). As argued in section 3.4 above, this reversal is problematic for accounts on which valuation is either only upward or only downward. The analytical challenge, then, is to account for this flip in a principled manner. In this section, we show that such an account becomes available if (i) valuation can be both upward and downward, and (ii) upward valuation takes priority over downward valuation. This provides novel support for the *cyclic Agree* model in Rezac (2003) and Béjar & Rezac (2009) or the *delayed valuation* model in Carstens (2016).

4.1 Background: The opacity of extraposed clauses

Before we turn to the agreement reversal itself, it will be helpful to make a number of auxiliary assumptions about the status of extraposed clauses in Hindi. We saw on the basis of (16), repeated here as (35), that extraposed clauses do not allow ϕ -agreement into them. At the same time, (17) (repeated here as (36)) shows that they allow scrambling out of them, and this scrambling can be A- or \bar{A} -scrambling (see (19) and (21)).

(35) saare shikṣākō-ne t₁ diy-aa/?*d-ii [Ram-ko **kitaab** parhne]₁
 all teachers-ERG let.PFV-DFLT/?*let.PFV-F.SG Ram-DAT book.F read.INF
 ‘All the teachers let Ram read a book.’ = (16)

(36) kitaab₂ saare shikṣākō-ne t₁ d-ii/diy-aa [Ram-ko t₂ parhne]₁
 book.F all teachers-ERG let.PFV-F.SG/let.PFV-DFLT Ram-DAT read.INF
 ‘All the teachers let Ram read a book.’ = (17)

Any account of the Hindi data above needs to implement this asymmetry between movement and agreement in some way, and the account of the agreement reversal that we propose below is compatible with a variety of choices. Nevertheless, for the sake of concreteness, we will adopt one specific implementation here.

We draw a parallel here between the behavior of extraposed clauses in (35) and (36) and what Keine (2016, 2019) calls *selective opacity*, whereby a given syntactic domain is opaque to some process (here, ϕ -agreement) but transparent to another (A- and \bar{A} -scrambling). Keine notes that such asymmetries between movement and agreement are attested more generally. One example is Bobaljik & Wurmbrand’s (2005) *agreement domains*—clauses that allow movement out of them, but disallow agreement into them. For example, Bobaljik & Wurmbrand (2005) study LDA in Itelmen and observe that LDA with an embedded object requires the object to take scope over the matrix verb (37).

- (37) t’-əntxa-čəʔn [miʔ okno-ʔn sop-es] Itelmen
 1SG-forget-3PL.OBJ all window-PL close-INF
 ‘I forgot to close all the windows.’ ($\forall \gg \text{forget}; *forget \gg \forall$)
(Bobaljik & Wurmbrand 2005: 849)

Bobaljik & Wurmbrand (2005) propose that the embedded clause in (37) is transparent to A-movement, but not to ϕ -agreement, and that as a consequence, genuine crossclausal agreement is impossible in Itelmen. In order for the DP *miʔ okno-ʔn* ‘all windows’ to control agreement on the matrix verb, this DP has to A-move into the matrix clause and hence take scope there. The locality contrast between movement and agreement in Itelmen bears a clear resemblance to extraposed clauses in Hindi.

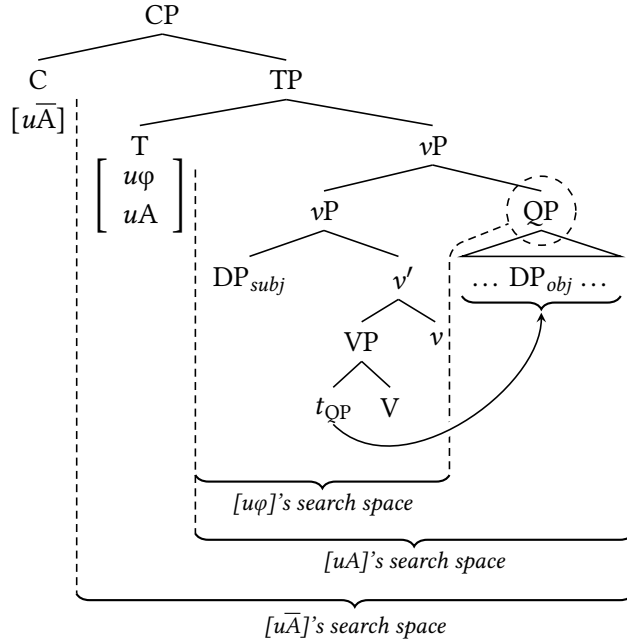
Locality asymmetries between movement and agreement are also attested in the other direction, with movement being more restricted than agreement. One example is Tsez (Polinsky & Potsdam 2001). As already mentioned in section 3.5 above, Tsez allows a matrix verb to agree with an element in the left periphery of an embedded clause (see (29)). Interestingly, Polinsky & Potsdam (2001) also note that Tsez does not allow any crossclausal movement whatsoever. This indicates that in Tsez, ϕ -agreement can cross a finite clause boundary in a way that movement cannot, the opposite of what we saw for Itelmen.

It seems natural to attempt to assimilate the Hindi contrast in (35) and (36) to this broader pattern. In the interest of being specific, we adopt here the account of such asymmetries developed in Keine (2016, 2019), who suggests that probes have characteristic *horizons*—category labels that terminate that probe’s search. For example, if a given probe has, e.g., C as its horizon, then this probe’s search terminates upon encountering a node of category C, i.e., a CP. As a result, this probe cannot make contact with any elements separated from this probe by a CP node. This is because the probe’s search stops when it encounters the CP node, and therefore all elements dominated by that CP are inaccessible to the probe, including elements in CP’s edge. The consequence is that CP clauses are opaque to this probe. Keine (2016, 2019) assumes that both ϕ -agreement and movement are parasitic on the establishment of an Agree relationship. Selective opacity is then implemented as differences between probes with respect to their horizons. In Itelmen, for instance, the ϕ -probe would have C as its horizon (assuming

that the embedded clause in (37) is a CP, but the A-movement probe would not. Elements inside the embedded clause can therefore be contacted by the A-movement probe, but not by the ϕ -probe, giving rise to Bobaljik & Wurmbrand's (2005) central empirical observation.

We will now show that this line of account can be extended to the movement–agreement asymmetry of extraposed clauses in Hindi. Suppose that, in order to extrapose, an embedded clause must be a QP—following the spirit of Cable (2010)—, and that QP constitutes a horizon for the ϕ -probe ($[u\phi]$), but not for the probes underlying A-scrambling ($[uA]$) and \bar{A} -scrambling ($[u\bar{A}]$). This is schematized in (38): $[u\phi]$'s search terminates at the QP node, but $[uA]$'s and $[u\bar{A}]$'s search does not. As a consequence, $[uA]$ and $[u\bar{A}]$ can search into the extraposed QP clause and reach the object DP inside it. This enables A- and \bar{A} -scrambling out of an extraposed clause, and hence renders the clause transparent for extraction. By contrast, $[u\phi]$'s search terminates at QP and thus cannot reach anything dominated by it, including the object DP. Consequently, an extraposed clause is opaque for ϕ -agreement into it. We show $[u\phi]$ and $[uA]$ as being located on T, and $[u\bar{A}]$ on C, a placement that will be justified in section 5.1.

(38) *Extraposed clauses are transparent to A- and \bar{A} -scrambling, but opaque to ϕ -agreement*



For the sake of concreteness, we depict extraposition as targeting a vP specifier in (38), but this is not crucial for our account. Assuming that all embedded clauses that are (to be) extraposed bear a QP shell, it is irrelevant for our account precisely what position extraposition targets. The central consequence of (38) is that the extraposed clause is opaque to ϕ -agreement, but transparent to A- and \bar{A} -scrambling. This derives the contrast illustrated in (35) and (36).

4.2 Cyclic Agree and bidirectional valuation

With this specific implementation of the properties of extraposed clauses in place, we now turn to our core proposal. We show in this section that an account in which valuation is bidirectional and cyclic along the lines of Rezac (2003), Béjar & Rezac (2009), and Carstens (2016) enables a principled account of the Hindi agreement reversal facts.

Rezac (2003), Béjar & Rezac (2009), and Carstens (2016) argue for a model in which Agree first searches through a probe's c-command domain, and if this search is unsuccessful, the probe may agree with higher material. This is the specifier for Rezac (2003) and Béjar & Rezac (2009), and potentially more distant material in Carstens (2016). For now, we will use the term 'cyclic Agree' as a cover term of both kinds of approaches, though section 5 will develop an argument for the former view. A first rendition of cyclic Agree is formulated in (39). The crucial aspect of (39) is that valuation is in principle bidirectional and that upward valuation (i.e., downward Agree) is primary.

- (39) **Cyclic Agree** (to be refined)
 Given a probe P on head H,
 a. P first searches H's complement (i.e., H's c-command domain);
 b. if this search is unsuccessful, P can agree with higher material.

Rezac (2003), Béjar & Rezac (2009), and Carstens (2016) propose that the cyclicity of Agree in (39) derives from the common minimalist assumption that Agree is interspersed with syntactic structure building, and that Agree is subject to the Earliness Principle (Chomsky 2000; Pesetsky & Torrego 2001; Collins 2003), which requires Agree between a probe and a goal to be established as soon as possible. We will adopt this perspective here.

To illustrate, consider a ϕ -probe P on head H that is merged with XP containing a DP with visible ϕ -features, as in (40). Upon Merge of H and XP, P searches XP (*first-cycle Agree*), finds DP and enters into an Agree relationship with it that values P. By contrast, if P's complement XP does not contain a suitable goal for P, as in (41), P's first cycle of Agree terminates unsuccessfully, leaving P unvalued. Next, suppose that a DP is merged as H's specifier. Because P is still unvalued at this point of the derivation, it agrees with DP in its specifier (*second-cycle Agree*).

- | | |
|---|--|
| <p>(40) [HP H_[P: _] [XP ... DP ...]]</p> <div style="text-align: center; margin-left: 100px;">  <p style="margin: 0;">first-cycle
Agree</p> </div> | <p>(41) [HP DP [H' H_[P: _] [XP ...]]]</p> <div style="text-align: center; margin-left: 100px;">  <p style="margin: 0;">second-cycle
Agree</p> </div> |
|---|--|

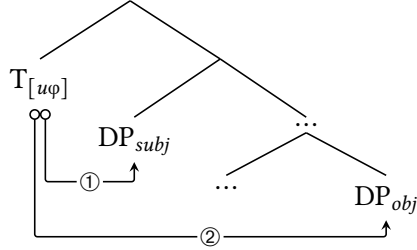
First-cycle Agree takes derivational precedence over second-cycle Agree because Agree into H's complement is possible as soon as H is merged and hence before higher structure is assembled. Second-cycle Agree with a specifier is hence possible only if first-cycle Agree is impossible, i.e., if H's complement lacks a suitable goal for P. We note that the effect of the Earliness Principle might plausibly be derived from Preminger's (2011, 2014) obligatory-operations model in combination with cyclic structure building (Chomsky 1995). If Preminger's

notion of obligatory operations is applied at every step of the derivation, then if Agree into a probe's complement is possible, it is required, before the specifier is merged into the structure.

In order to apply the cyclic-Agree account to Hindi, we will make a number of specific structural assumptions. First, we will assume that the verbal φ -probe in Hindi is located on T, hence above the ν P-internal base positions of the subject and the object, as was already shown in (14). Second, we will assume that scrambling in Hindi (at least of the relevant type, which lands in a pre-subject position) targets a ν P-external position. We will refine this latter assumption in section 5.1 below.

We now demonstrate how the agreement reversal noted above falls into place on a cyclic-Agree account. We treat the pervasive top-down agreement pattern shown in section 2 as an instance of first-cycle Agree, as schematized in (42): The φ -probe searches serially through its c-command domain, agreeing with the structurally closest accessible (i.e., not overtly case-marked) DP. If the subject is visible to probing by $[u\varphi]$, the probe agrees with it due to minimality (①). If the subject is case-marked, then the object agrees if it is not overtly case-marked (②). If both the subject and the object are case-marked and hence inaccessible, the φ -probe remains unvalued. The result is the top-down agreement pattern of section 3 because agreement targets the structurally highest available DP.

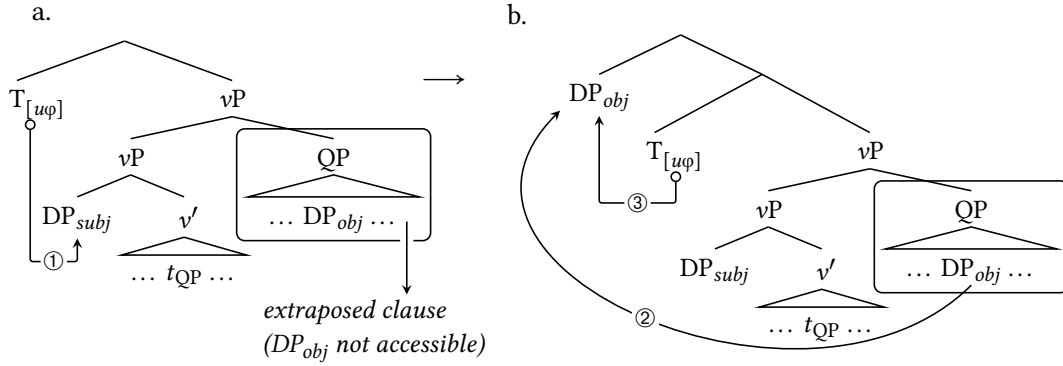
(42) *First-cycle Agree*



Let us now turn to configurations in which first-cycle is unsuccessful, that is, derivations in which the φ -probe remains unvalued after first-cycle Agree. We propose that in this case, the probe can be valued from above, by agreeing with the landing site of an A-scrambled object. Consider an example in which the object is located inside an extraposed clause, as shown in schematic form in (43). In this configuration, $[u\varphi]$ launches a first cycle of Agree as soon as T is merged, shown in (43a). If the matrix subject is not overtly case-marked and hence accessible to the probe, it values $[u\varphi]$ and subject agreement obtains (①). By contrast, if the subject is not a licit Agree controller for $[u\varphi]$, then $[u\varphi]$'s first cycle of Agree fails to find a goal (given that embedded object DP is inside an extraposed QP clause and hence outside of $[u\varphi]$'s search space, see (38)). This stage of the derivation is followed by A-scrambling of the embedded object out of the QP clause, landing above T (②), as shown in (43b). If $[u\varphi]$ is still unvalued at this point of the derivation (i.e., if first-cycle Agree was unsuccessful), it agrees upward with the landing site of the object (③).¹⁵

¹⁵ In principle, it is also conceivable that the embedded object undergoes scrambling to a position below T and the matrix subject before QP extraposition, followed by scrambling to its surface position above T. For the reasons discussed in section 3.5, this intermediate landing site would have to be invisible to T's φ -probe (otherwise, it would trigger agreement even if the object subsequently moves to an \bar{A} -position, see (28)). While

(43) *Second-cycle Agree in complex clauses*



As mentioned above, due to the cyclicity of Agree, second-cycle Agree is possible only if first-cycle Agree has failed. In the configuration (43), this has the effect that A-scrambling of the object may feed agreement only if the vP does not contain a viable Agree controller for $[u\phi]$. As a result, if the subject is a licit agreement goal in (43a), Agree is always successful in the first cycle, i.e., before object scrambling takes place.

The cyclic-Agree account hence predicts that A-scrambling of the object is able to feed second-cycle Agree, but only if subject agreement is impossible. This is indeed the case, as we observed in section 3. The crucial contrast is repeated here in (44) and (45). In (44), the matrix subject is ergative case-marked. As we saw, object A-scrambling makes agreement with this object obligatory in this case as a second-cycle Agree effect (③ in (43b)). In (45), the matrix subject is not overtly case-marked, and in this case, agreement with the subject is obligatory despite the fact that the object has undergone A-scrambling. This instantiates a first-cycle Agree effect (① in (43a)). The fact that subject agreement bleeds object agreement in (45) is hence derived from the cyclicity of Agree: If first-cycle Agree is successful, no second cycle of Agree obtains even if the object A-moves into a position that would otherwise be accessible to such second-cycle Agree.

(44) *Object A-scrambling feeds LDA ...*

har	kitaab₂	uske ₂	lekhakō-ne	<i>t</i> ₁	d-ii/*diy-aa	[Ram-ko	<i>t</i> ₂
every	book.F	its	authors-ERG		let.PFV-F.SG/*let.PFV-DFLT	Ram-DAT	
	parhne] ₁						
	read.INF						
‘For every book <i>x</i> , <i>x</i> ’s authors let Ram read <i>x</i> .’							= (19)

our cyclic-Agree account could then be readily stated in such a system as well, it is not clear to us how to exempt this intermediate landing site from undergoing ϕ -Agree in a principled manner (see section 3.5), which is why we do not pursue this option here.

(45) ... but only if subject agreement is impossible

har kitaab₂ uske₂ lekhak t₁ det-e hãĩ [Ram-ko t₂ parhne]₁
 every book.F its authors.M let.HAB-M.PL AUX.3PL Ram-DAT read.INF
 ‘For every book *x*, *x*’s authors let Ram read *x*.’ = (23a)

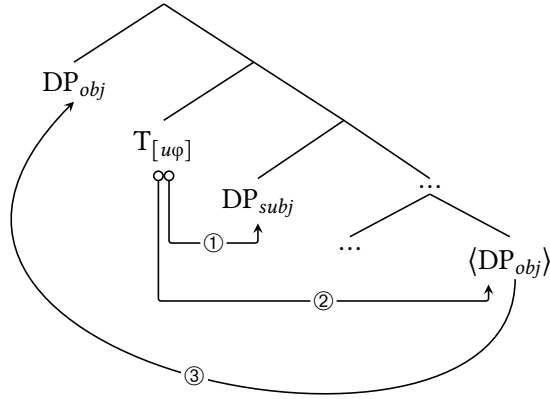
The cyclic-Agree derivation in (43) thus offers an explanation for the descriptive bottom-up agreement pattern in these constructions: Agreement with a structurally higher DP (the A-scrambled object) is possible only if agreement with a structurally lower one (the subject) is not.

Finally, the cyclic-Agree account also derives the fact that in most cases, scrambling does not affect verb agreement in Hindi. This was already illustrated in (6) and (11), and it also holds for scrambling that is unambiguously A-movement, as in (46). Here, the object *har gaarĩ* ‘every car’ undergoes A-scrambling above the subject (diagnosed by the absence of weak crossover). Crucially, both the subject and the object are not overtly case-marked and hence in principle able to control agreement. As shown, agreement is obligatorily controlled by the subject in this case.

(46) har kitaab₁ [uske₁ lekhak(=hii)] t₁ parhẽg-e/*-ii
 every book.F its authors.M(=only) read.FUT-M.PL/*-F.SG
 ‘Every book *x* will be read by *x*’s authors (not by anybody else).’

Local scrambling never affects agreement in Hindi, and the cyclic-Agree account provides a way of understanding this asymmetry: Recall that scrambling that lands above the subject targets a vP-external position and hence always applies *after* first-cycle Agree. In local scrambling configurations, this is derivationally too late to have an impact on agreement, as schematized in (47). If either the subject or the object are φ -accessible, Agree will be established before scrambling takes place, and hence be unaffected by it. This is the case in, e.g., (46). If both the subject and the object are inaccessible to φ -Agree, then the object of course remains inaccessible after scrambling. In both cases, φ -agreement remains unaffected by scrambling.

(47) Local agreement \rightarrow no effect of scrambling



The present account thus provides a principled explanation for the primacy of argument structure in local scrambling configurations and hence for why scrambling feeds agreement only in a very narrow set of circumstances.

Lastly, default agreement in Hindi arises if *both* first-cycle and second-cycle Agree have failed to locate a goal for $[u\phi]$, i.e., as a last resort. This is illustrated in (48), which is structurally analogous to (44), but has a case-marked embedded object (*kitaab-ko* ‘book-ACC’). A-scrambling of the object (diagnosed by pronominal binding) is possible in (48), but because both the subject and the object are overtly case-marked, neither can control verbal agreement. In this case, the verb has to bear default agreement.

- (48) har kitaab-ko₂ uske₂ lekhakō-ne t₁ diy-aa [Ram-ko t₂ parhne]₁
 every book.F-ACC its authors-ERG let.PFV-DFLT Ram-DAT read-INF
 ‘For every book *x*, *x*’s authors let Ram read *x*.’

In (48), both first-cycle Agree and second-cycle Agree are unsuccessful. The emergence of default agreement in (48) is readily accounted for on Preminger’s (2011, 2014) view that default agreement is the realization of an unvalued ϕ -probe at PF.

In sum, we have proposed a cyclic-Agree account of the Hindi agreement facts in sections 2 and 3, and we have shown how such an analysis accounts for both the primacy of top-down agreement and the attested instances of bottom-up agreement, and hence for the descriptive agreement reversal. The top-down agreement pattern results from first-cycle downward Agree and hence involves upward valuation. The bottom-up agreement pattern in the presence of A-scrambling out of an extraposed clause follows because second-cycle Agree with a moved object—and hence downward valuation—is possible only if first-cycle Agree with a structurally lower DP is not, yielding preferential agreement with the lower DP.

The crucial enabling property of this account is that valuation is bidirectional: The ϕ -probe on T may receive a value both from below (first-cycle Agree) or from above (second-cycle Agree), with a derivationally grounded preference for the former, which is itself derived from the cyclicity of Merge, Move, and Agree. The bidirectionality of valuation in this model overcomes the limitations of accounts in which valuation is either only upward or only downward. We therefore take this agreement pattern to indicate that the additional power of a bidirectional-valuation model is empirically warranted. It is notable that this bidirectional

valuation behavior holds for a single probe ($[u\phi]$) in a single language and construction. This suggests that bidirectional valuation holds even at the level of individual features.

5 The mechanics of second-cycle Agree

The previous section showed how a cyclic-Agree account offers a principled explanation for the Hindi LDA facts. In this section, we will investigate two outstanding questions. First, we saw in section 3.2 above that only A-scrambling can feed agreement in Hindi; \bar{A} -scrambling cannot. What underlies this contrast? Second, we argued that valuation can be upward or downward. This raises the question what the relationship between the two is. Empirically, does agreement in the two directions exhibit the same overarching properties? Analytically, is downward valuation an instance of genuine upward Agree (Carstens 2016), or is it confined to Spec-head agreement (Rezac 2003; Béjar & Rezac 2009)?

This section argues that these questions can be fruitfully brought to bear on each other. Specifically, we propose that the A/\bar{A} -contrast in this domain can be derived if second-cycle Agree is very local in a way that first-cycle Agree is not, and that this contrast hence sheds new light on the mechanics of second-cycle Agree. We will argue that the A/\bar{A} -distinction in this domain can be derived if second-cycle Agree does not involve genuine upward Agree, but is confined to Spec-head agreement. Section 5.2 then develops an account of this asymmetry between first-cycle and second-cycle Agree that does without Spec-head agreement as a theoretical primitive, building on insights by Rezac (2003) and Béjar & Rezac (2009).

5.1 Returning to the A/\bar{A} -distinction

We saw in section 3.2 above that A- and \bar{A} -scrambling in Hindi differ in their ability to feed ϕ -agreement. The relevant contrast is repeated in (49) and (50). (49) involves A-scrambling of the object over a case-marked subject, which leads to obligatory agreement with the landing site of the object. By contrast, (50) involves \bar{A} -scrambling, which does not feed agreement. Here, default agreement is the only option.

(49) *A-scrambling feeds agreement*

	┌──────────────────┐					
har	kitaab₂	[uske ₂ lekhakō-ne]	<i>t</i> ₁	d-ii/*diy-aa		[Ram-ko <i>t</i> ₂
every	book.F	its	authors-ERG	let.PFV-F.SG/*let.PFV-DFLT	Ram-DAT	
	parhne] ₁					
	read.INF					
‘For every book <i>x</i> , <i>x</i> ’s authors let Ram read <i>x</i> ’						=(19)

(50) \bar{A} -scrambling does not feed agreement

$\begin{array}{c} \text{-----X-----} \\ \text{har} \quad \text{kitaab}_2 \quad [\text{uske}_{3/*2} \quad \text{lekhak}\ddot{o}\text{-ne} \quad] \quad t_1 \quad \text{kah-aa/*-ii} \quad \quad \quad [\text{Ram-se} \quad t_2 \\ \text{every book.F} \quad \text{its} \quad \text{authors-ERG} \quad \text{say.PFV-DFLT/*-F.SG} \quad \text{Ram-INSTR} \\ \text{parhne-ko} \quad]_1 \\ \text{read.INF-DAT} \\ \text{'Its}_3 \text{ authors told Ram to read every book}_2 \text{'} \end{array}$

=(21a)

Within the cyclic-Agree analysis proposed in section 4, the contrast between (49) and (50) translates into the generalization that A-scrambling can feed second-cycle Agree, whereas \bar{A} -scrambling cannot. As it stands, our account does not derive this contrast, and this section develops an attempt to understand it.

One conceivable analytical response to the contrast in (49) and (50) would be to simply stipulate that \bar{A} -positions are invisible to ϕ -Agree. While this would yield the correct descriptive result, it encounters the objections we raised against such a stipulation in section 3.5. First, such a restriction would be ad hoc. Ideally, we might hope to derive the A/ \bar{A} -contrast in this domain from some independently observable difference between the two scrambling types. Second, a blanket constraint against ϕ -agreement with \bar{A} -positions would be too strong, as it would also exclude attested instances of ϕ -agreement with \bar{A} -positions, such as LDA in Tsez, Innu-aimûn, and Passamaquoddy, as well as upward complementizer agreement in Lubukusu (see (29)–(32) above). What is required, therefore, is an account that is both more explanatory and more nuanced than a blanket ban on agreement with \bar{A} -positions.

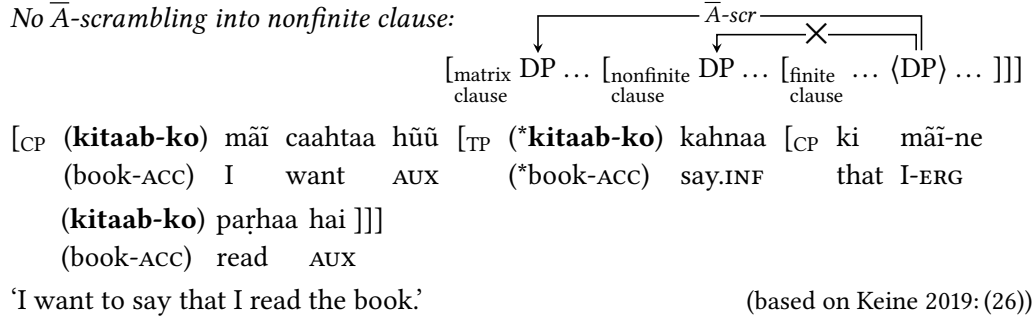
In order to develop such an account, we will draw here on an independent correlate of the Hindi A/ \bar{A} -scrambling distinction argued for by Keine (2018, 2019). Keine presents evidence that the two types of scrambling differ in their landing sites along the lines in (51).

(51) *Landing sites of Hindi scrambling*

- a. \bar{A} -scrambling: Spec,CP
- b. A-scrambling: TP-internal

We will not present Keine's arguments in detail here, but we will give an overview of the line of reasoning. First, Keine argues that finite clauses in Hindi are CPs, whereas nonfinite clauses lack a CP projection (also see Dayal 1996; Bhatt 2005; Chandra 2007). Against this background, Keine's argument for (51a) is based on examples like (52). This example involves a double-embedding structure, in which a matrix clause embeds a nonfinite clause, which in turn embeds a finite clause. The nonfinite clause is extraposed to demarcate its left edge. The crucial restriction is that the object of the innermost clause (*kitaab-ko* 'book-ACC') can be scrambled into the matrix clause, but not into the intermediate nonfinite clause. In other words, it is possible for *kitaab-ko* to appear either in its base position or in the topmost clause, but not inside the intermediate clause.

(52) *No \bar{A} -scrambling into nonfinite clause:*



Because the innermost clause is finite in (52), Keine concludes that scrambling out of it must be \bar{A} -scrambling, as only \bar{A} -scrambling can leave finite clauses in Hindi (see (18b)). The impossibility of moving *kitaab-ko* into the intermediate nonfinite clause then indicates that \bar{A} -scrambling cannot land in a nonfinite clause, while movement into the finite matrix clause is possible. Keine suggests that this restriction is explained if \bar{A} -scrambling targets Spec,CP: Given that nonfinite clauses in Hindi lack a CP layer, they are structurally too small to provide a landing site for \bar{A} -scrambling. Movement into the finite clause in (52) is possible given that the matrix clause contains a CP projection. This provides evidence for (51a).

The inability of \bar{A} -scrambling to move into a nonfinite clause is not shared by A-scrambling. Keine (2019) provides the example in (53) to demonstrate that A-scrambling is able to land inside a nonfinite clause. In this example, the embedded nonfinite clause is again extraposed to demarcate its left edge. The embedded object *har larkii-ko* 'every girl-ACC' is A-scrambled within this extraposed nonfinite clause, as diagnosed by its binding the pronoun inside the adjunct *uskii shaadii ke dauraan* 'during her wedding'.

- (53) Sita-ne caahaa thaa [TP **har** **laṛkii-ko**₁ [uskii₁] shaadii ke dauraan] *t*₁
 Sita-ERG wanted AUX every girl-ACC her wedding during
 dekhnaa]
 see.INF
 ‘Sita wanted to see every girl *x* at *x*’s wedding.’ (Keine 2019: (27))

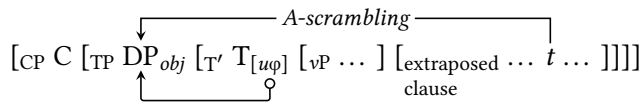
Keine (2018, 2019) concludes from (53) that A-scrambling must target a TP-internal position in Hindi. Here, we add to Keine’s argument that this conclusion also holds for crossclausal A-scrambling. In Hindi, A-scrambling is able to leave nonfinite clauses. (54) provides a configuration in which a nonfinite clause is embedded inside a nonfinite clause, and the object *har kitaab-ko* ‘every book-ACC’ is A-moved out of the innermost nonfinite clause into the intermediate nonfinite clause, binding the adjunct *uske chapneke din-hii* ‘on its publication day’, which is located inside the intermediate clause (on the relevant interpretation where *on its publication day* modifies the intermediate verb *start*). The resulting structure is grammatical. Like (53), (54) indicates that A-scrambling lands inside a TP-internal position.

- (54) *A-scrambling into nonfinite clause:* ✓ [matrix clause ... [nonfinite clause DP ... [nonfinite clause ... *t* ...]]]
- [CP māĩ caahtaa hũũ [TP **har** **kitaab-ko**₁ [uske₁] chapneke din-hii] [TP *t*₁
 I want AUX every book-ACC its printing.of day-EMPH
 paṛhnaa] shuruu karnaa]]
 read.INF start do.INF
 ‘For every book *x*, I want on *x*’s publication day to start to read *x*’

Both (53) and (54) support the conclusion in (51b), suggesting that \bar{A} -scrambling targets a position that is higher than the landing site of A-scrambling.

Having established this landing site difference between A- and \bar{A} -scrambling in Hindi, we propose that this contrast can be fruitfully related to their differential ability to feed second-cycle Agree. The generalization that A-scrambling can feed second-cycle Agree (49), but that \bar{A} -scrambling cannot (50), can now be schematized as in (55) and (56). In (55), the embedded object undergoes A-scrambling out of the embedded clause into a position above the matrix subject. Because A-scrambling lands in a TP-internal position (by (51b)), we will treat this position as (an outer) Spec,TP. The generalization that A-scrambling feeds second-cycle Agree in this configuration (see (49)) then indicates that Spec,TP is accessible to second-cycle Agree by [*uφ*].

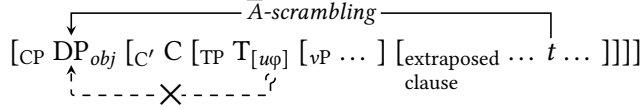
- (55) *A-scrambling feeds second-cycle Agree*



This situation contrasts with \bar{A} -scrambling, shown in (56). Because the object undergoes \bar{A} -scrambling, it lands in Spec,CP (by (51a)). In light of the generalization that \bar{A} -scrambling is

unable to feed second-cycle Agree (see (50)), we can infer that Spec,CP is not accessible to second-cycle Agree by [$u\phi$].

(56) *\bar{A} -scrambling does not feed second-cycle Agree*



What underlies the contrast in (55) and (56)? We propose that it sheds new light on the fine structure of second-cycle Agree. Specifically, we take the contrast to indicate that second-cycle is very local, essentially limited to the specifier of the head that hosts the probe; specifiers of higher heads are out of its reach. As a result, second-cycle Agree of a probe on T can reach an element in Spec,TP (as in (55)), but not one in Spec,CP (as in (56)). The revised understanding of cyclic Agree that incorporates this conclusion is formulated in (57).

(57) **Cyclic Agree**

(revised from (39), to be derived)

Given a probe P on head H,

- a. P first searches HP's complement (Comp,HP);
- b. (i) if unsuccessful, P can agree with Spec,HP;
- (ii) P *cannot* agree with Spec,XP for any head X c-commanding H.

On the view that we are proposing, the fact that \bar{A} -scrambling in Hindi cannot feed second-cycle Agree is due to the fact that it lands in a position that is too high, and hence out of the reach of second-cycle Agree. This connects the agreement facts to the independently observable contrast between (52) and (53)/(54).

If this reasoning is on the right track, it provides empirical evidence that second-cycle Agree is much more restricted in terms of its locality than first-cycle Agree: second-cycle Agree is confined to Spec-head agreement and hence essentially phrase-bounded (though see section 5.3 for some refinements), while first-cycle Agree is not similarly restricted (see section 2, where we presented evidence that first-cycle Agree can be established long-distance). We take this to suggest that second-cycle Agree is not simply the exact mirror image of first-cycle Agree, and hence that it does not involve upward Agree. This conclusion favors the account of second-cycle Agree in Rezac (2003) and Béjar & Rezac (2009)—according to which second-cycle Agree is confined to Spec-head—over that pursued in Carstens (2016)—which involves genuine upward Agree. But this raises another question: if second-cycle Agree does not involve upward Agree, then what is its analytical foundation? One possibility is that second-cycle Agree involves Spec-head agreement in the sense of Mahajan (1989), Chomsky (1991), and Koopman (2006). However, on the common assumption that Spec-head relations do not have a special status (e.g., Chomsky 2000: 126), direct Spec-head agreement is not an analytical option. The next section suggests that an account of second-cycle Agree in terms of probe projection (Rezac 2003; Béjar & Rezac 2009) is able to analytically unify first-cycle and second-cycle Agree and to derive (57) without invoking direct Spec-head agreement.

5.2 Second-cycle Agree as probe projection

In this section, we propose that both first-cycle and second-cycle Agree involve strictly downward Agree (as opposed to genuine Spec–head agreement or upward Agree), but possibly from a projected occurrence of a probe. Our proposal draws on the model of cyclic Agree in Rezac (2003) and Béjar & Rezac (2009), though they differ in the implementation and some empirical predictions (see section 5.3).

Concretely, we adopt a model in which the narrow-syntactic operation Agree is downward-only in the sense of (58), as originally proposed by Chomsky (2000, 2001) and recently defended by Preminger (2013) and Preminger & Polinsky (2015).

(58) *Downward Agree*

A probe [uF] can undergo Agree with a goal G only if [uF] c-commands G .

How can (58) be reconciled with the evidence for second-cycle Agree (and hence downward valuation) above? Rezac (2003) and Béjar & Rezac (2009) propose that a probe on head H *projects* as part of H 's label, and that second-cycle Agree is Agree from a projected occurrence of a probe (also see Carstens 2016). We develop here one implementation of this general line of analysis. Probe projection is defined in (59). According to (59), probe features behave like categorial features for the purposes of labeling: Merge not only projects the category feature of a head H as part of its label, but also probes located on H . This is consistent with the assumption that the label is nondistinct from its head (Chomsky 2000: 133–134).

(59) *Probe Projection*

$\text{Merge}(H_{[uF]}, XP) \rightarrow \{H_{[uF]}, \{H_{[uF]}, XP\}\}$

Assuming, as is standard, that labeling leaves the features it projects unchanged, it follows immediately that a projected probe may launch Agree (Rezac 2003). Furthermore, we take probe projection to produce several *occurrences* (or, equivalently, *copies*) of a probe. Being occurrences of the same probe, they stand in a *feature-sharing/unification* relationship: if one occurrence receives a value, all do (see Pollard & Sag 1994; Frampton & Gutmann 2000; Bhatt 2005; Legate 2005; Pesetsky & Torrego 2007; Abels 2012; Ackema & Neeleman 2013; and Haug & Nikitina 2016 for the general concept of feature sharing and its application to a variety of domains).¹⁶

(60) *Feature Sharing*

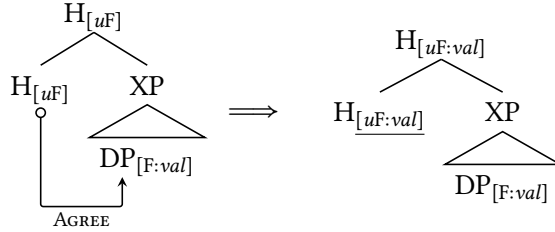
Valuation of an occurrence of probe [uF] leads to valuation of all occurrences of [uF].

On the resulting account, first-cycle and second-cycle Agree are then derived as shown in (61) and (62), respectively. In (61), head H containing probe [uF] is merged with XP . By (59), the resulting constituent contains [uF] as part of its label. Because Agree requires c-command

¹⁶ Feature sharing (60) is essentially the feature-based counterpart of a similar phenomenon that holds in the case of copies created by movement. If, e.g., a DP gets one of its uninterpretable features checked or valued in a derived position, the occurrence of this feature in the lower copy of the DP must also be checked or valued, lest it crash the derivation.

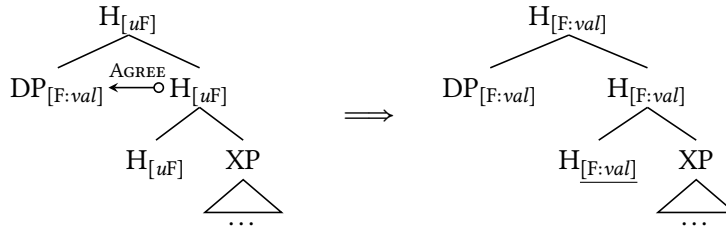
(by (58)), the projected occurrence of the probe is unable to initiate Agree at the stage of the derivation in (61). [uF]'s lower occurrence, on the other hand, can search into XP, entering into Agree with DP inside it, which leads to valuation of [uF] (indicated as [$uF:val$] in (61)). By (60), both the projected and the non-projected occurrence of the probe get valued, bleeding subsequent Agree by the higher probe occurrence.

(61) *First-cycle Agree*



Second-cycle Agree becomes possible if the first search cycle fails to locate a goal (i.e., if XP does not contain a viable DP), leaving the probe unvalued. When the specifier to H is merged, the projected occurrence of [uF] on the intermediate projection of H c-commands the specifier, allowing Agree with it, as shown in (62). As before, if such Agree is possible, all occurrence of [uF] are valued, including [uF]'s occurrence on H.

(62) *Second-cycle Agree*

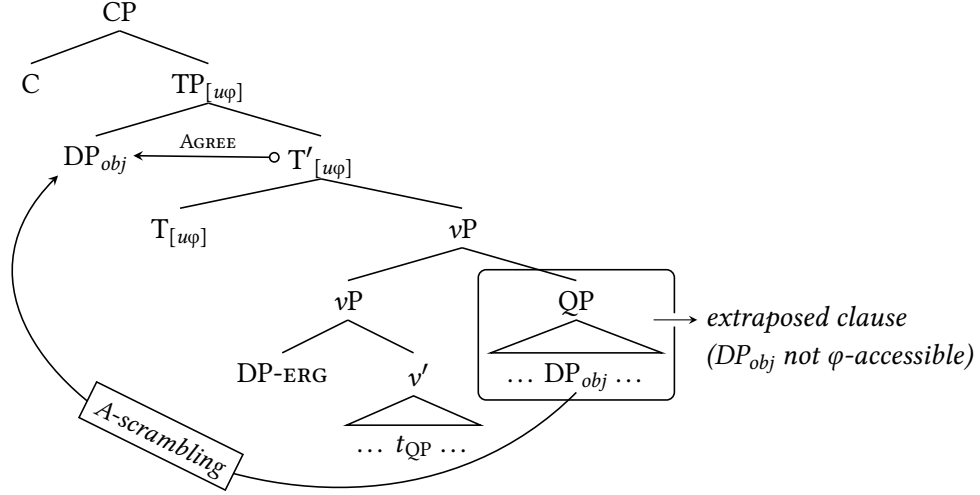


Descriptively, second-cycle Agree as in (62) involves downward valuation: The occurrence of the probe on the head H (where the agreement is morphologically realized) receives a value from a DP that it is asymmetrically c-commanded by. However, on the present account, this valuation is not the consequence of a direct dependency between the two (i.e., genuine Spec-head agreement). Rather, the probe on the head receives a value indirectly—mediated by the projected occurrence of the probe. As such, downward valuation in (62) is established through downward Agree with a projected occurrence of the probe in combination with feature sharing. This has the consequence that first-cycle Agree and second-cycle Agree are operationally unified as downward Agree (58), albeit with different occurrences of the same probe.

In addition to operationally unifying first-cycle and second-cycle Agree, this account also derives the strict locality of second-cycle Agree encoded in (57)—and hence the contrast between A- and \bar{A} -scrambling in Hindi—from the locality of labeling, as shown in (63) and (64). In the case of A-scrambling (63), the scrambled embedded object lands in Spec,TP, a position that is c-commanded by a projected occurrence of the ϕ -probe on T. This scrambling

is consequently able to feed second-cycle Agree. By feature sharing (60), the occurrence of $[u\varphi]$ on T is valued, where the feature will morphologically realized. This derives the example in (49).¹⁷

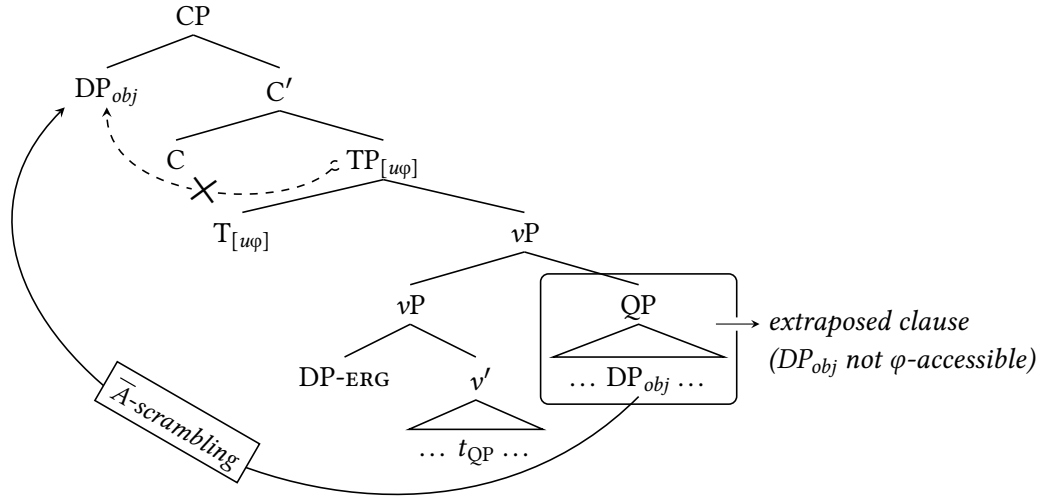
(63) *A-scrambling feeds second-cycle Agree*



Consider now \bar{A} -scrambling. In section 5.1, we saw evidence that \bar{A} -scrambling targets Spec,CP. Because projection of a probe follows the same principles as the projection of a head's category label, probe projection is bounded by the projection line of the head: given that the label of head H does not project past HP, a probe on H likewise does not project higher than HP, in this case TP. As consequence, Spec,CP is not c-commanded by any occurrence of $[u\varphi]$, as shown in (64). Due to the requirement in (58) that the probe c-command the goal, $[u\varphi]$ is barred from agreeing with a DP in Spec,CP. This derives the generalization that \bar{A} -scrambling does not feed second-cycle Agree in Hindi (see the example in (50)), as desired.

¹⁷ To keep the trees streamlined, we do not indicate movement of the subject to Spec,TP in (63) and (64). Because the subject is ergative-marked, it is irrelevant for agreement regardless of its precise position.

(64) \bar{A} -scrambling does not feed second-cycle Agree



In sum, we have proposed an account of downward valuation of a feature on a head that is based on strictly downward Agree combined with probe projection and feature sharing. This account contrasts with alternative ways of modeling downward valuation in a number of respects: First, it operationally unifies first-cycle and second-cycle Agree in terms of strictly downward Agree: downward valuation of a feature on a head by a specifier is established through downward Agree with a projected occurrence of the probe and mediated through feature sharing. Second, unlike an account that allows Agree to be bidirectional, it derives the strict upward-boundedness of second-cycle Agree and hence the locality contrast between the two cycles of Agree in (57). The locality of second-cycle Agree, on this view, follows from the locality of labeling and the strict downward orientation of Agree. This derives the contrast between A - and \bar{A} -scrambling in Hindi with respect to their ability to feed ϕ -agreement from the independently motivated landing site differences in (51) and the locality of labeling.

An important benefit of this approach is that it derives the A/\bar{A} -contrast in this domain without appeal to A - or \bar{A} -positions as such. No constraint that specifically stipulates that \bar{A} -positions are invisible to ϕ -agreement is thus required. Rather, the reason that \bar{A} -positions cannot be ϕ -agreed with (in Hindi at least) is that these positions are located outside the portion of the structure that is visible to second-cycle search by $[u\phi]$, which is itself determined by the locality of labeling. What the account presented here achieves, then, is to derive the A/\bar{A} -asymmetry in this domain from more fundamental principles and properties of these scrambling types.¹⁸

¹⁸ While the account here derives the difference between A - and \bar{A} -scrambling in their ability to feed second-cycle Agree, we should note that \bar{A} -scrambling in Hindi also cannot feed first-cycle Agree. In (i), the embedded object *kitaab* ‘book’ is scrambled to the edge of the embedded finite clause, but agreement with the matrix verb is impossible. Given that (i) has a parse in which *kitaab* undergoes \bar{A} -scrambling to Spec,CP, this indicates that \bar{A} -scrambling does not feed first-cycle Agree either.

5.3 Agree: C-command or dominance?

Our account of second-cycle Agree inherits from Rezac (2003) and Béjar & Rezac (2009) the idea that second-cycle Agree arises as a result of probe projection. However, the two accounts differ in the specifics of Agree. In the account here, Agree arises if the probe c-commands the goal (58). On Béjar & Rezac’s (2009: 48–49) account, on the other hand, a probe agrees with material that it dominates. In other words, in Béjar & Rezac’s (2009) model, all Agree (and not just second-cycle Agree) is established with a projected occurrence of the probe.¹⁹ For the Hindi data that have informed our account, as well as for the data investigated in Béjar & Rezac (2009), the two views are indistinguishable. We will not attempt a comprehensive comparison between the two approaches here, but we would like to discuss one area in which they differ.

Consider a configuration in which a probe fails to find a goal in both its complement and specifier. In such a configuration, the present account predicts that the probe can launch a further cycle of Agree from the phrase level. As an example, if a ϕ -probe on T is unable to enter into first- and second-cycle Agree, it should, all else equal, be able to then enter into a third cycle of Agree with C (given that the highest occurrence of the probe on TP c-commands C). By contrast, Béjar & Rezac’s (2009) account does not lead one to such an expectation.

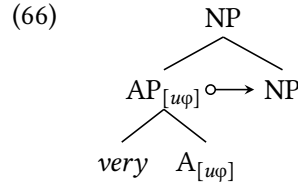
It is difficult to assess this particular prediction because C is not typically the locus of ϕ -features, ruling out ϕ -Agree with it for independent reasons, but the logic of the prediction holds more generally. Adjuncts provide a domain in which this prediction might be useful. Consider the Hindi example in (65). Here the adjective head of the complex adjunct *bahut acchii* ‘very good’ agrees in ϕ -features with the head noun *kitaab* ‘book’. On the common assumption that an adjunct does not project its label when it is adjoined, (65) has the schematic structure in (66), where the occurrence of the ϕ -probe on the AP c-commands the NP. Our account therefore allows [$u\phi$] on AP to agree with NP, valuing the ϕ -probe on A through feature sharing.

-
- (i) Sita-ne soc-aa/*-ii [CP *kitaab*₁ Mona-ne *t*₁ parh-ii thii]
 Sita-ERG think.PFV-M.SG/*-F.SG book.F Mona-ERG read.PFV-F.SG AUX.3SG.F
 ‘Sita thought that Mona had read a book.’

Whether deriving (i) requires additional assumptions depends on the status of the finite clause. As a matter of principle, finite clauses in Hindi always occur to the right of their embedding predicate. One line of account of this fact is that finite clause are obligatorily extraposed (e.g., Mahajan 1990; Dayal 1996). If so, then the impossibility of agreement into them can be attributed to the same principle that prohibits agreement into an extraposed nonfinite clause (see section 4.1 for a proposal). Alternatively, if finite clauses are not extraposed but simply linearized to the right (Manetta 2012), then this restriction would need to be attributed to some other factor. One option is that finite clauses bear 3SG.M ϕ -features and thus intervene for agreement with *kitaab* in (i). Alternatively, one might adopt Keine’s (2019) proposal that the CP node of the embedded clause constitutes a *horizon* for the matrix ϕ -probe, terminating its search before it can contact the \bar{A} -scrambled DP. All three approaches are consistent with the general view that impossible agreement between a ϕ -probe and a DP in an \bar{A} -position should not be attributed to a designated stipulation that renders elements in \bar{A} -positions invisible to such probes.

¹⁹ It is not entirely clear to us which group Rezac (2003) falls in.

(65) [bahut acch-ii] **kitaab**
 very good-F.SG book.F



By contrast, if Agree required a dominance relation between the goal and the probe, it should be impossible in (66). Agreement with adjuncts as in (65) thus seems to favor the c-command-based view proposed here.

Parallel considerations hold for sentential adjuncts as well. Carstens & Diercks (2013) document that in some varieties of Bantu, the wh-word *rie* ‘how’, which they argue adjoins to ν P, ϕ -agrees with the subject of the clause, as shown in (67).

(67) [_{ν P} [_{ν P} **Si-tanda** si-funikhe] **si-rie**(na)]? Lubukusu
 7-bed 7SA-broke 7-how
 ‘How did the bed break?’ (Carstens & Diercks 2013: 180)

In the structure that Carstens & Diercks (2013: 189) propose for (67), no projection of *rie* dominates the subject. If so, then (67) again favors a c-command-based view of Agree over a dominance-based one.

A third potential instance of Agree launched from a phrasal node is Carstens’ (2016) analysis of complementizer agreement in Bantu, which likewise involve Agree between a probe on a phrasal node and an element c-commanded by it. While a detailed comparison between the dominance-based and the c-command-based version of cyclic Agree is beyond the scope of this paper, we conclude that there is some indication that the latter view is empirically advantageous.

5.4 Interim conclusion

We argued that the complex agreement patterns in Hindi presented in sections 2 and 3 provides new evidence that (i) valuation is descriptively bidirectional in the sense that a probe on a head H may receive a value from elements above or below H, (ii) upward valuation takes derivational precedence, and (iii) downward valuation is confined to the local specifier.

We then proposed that these conclusions provide novel support for the cyclic-Agree model of Rezac (2003) and Béjar & Rezac (2009). We developed a rendition of this model according to which Agree as a syntactic operation is strictly downward (i.e., the probe is required to c-command the goal), but probes may project and stand in a feature-sharing relationship. It is therefore important to separate our conclusions about the directionality of valuation (which is in principle bidirectional) from those about Agree (which is unidirectional). Downward valuation of a probe on a head, on this account, is established indirectly, through a projected occurrence of the probe. We furthermore showed how this account derives the contrast between A- and \bar{A} -scrambling with respect to their ability to feed agreement from the positions that

they target and the fact that probe projection follows the locality of labeling. This renders principles that specifically prohibit ϕ -agreement with \bar{A} -positions unnecessary.

Finally, to the extent that our account of the Hindi facts is on the right track, it provides a novel empirical domain of cyclic-Agree effects. Rezac’s (2003) and Béjar & Rezac’s (2009) motivation for cyclic Agree comes from hierarchy effects between co-arguments. The evidence here suggests that analogous interactions also exist between elements that are not co-arguments, and that cyclic Agree may also be fed by movement. This is, of course, precisely what one would expect if Agree is cyclic.

6 Beyond ϕ -agreement: Some implications

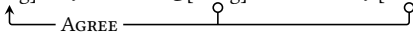
Returning to the overarching discussion in section 1, we have argued that the Hindi evidence presented here indicates that valuation is descriptively bidirectional, supporting the families of accounts in (3), but that downward valuation is tightly capped in its locality, favoring (3b). Long-distance downward valuation is thus ruled out in this model. But empirical arguments for the necessity of such valuation have been made in the literature (see the references in (2a) and (3a)), raising the question whether they can be reconciled with our conclusions here. While we are unable to do full justice to these arguments in the scope of this paper, we would nonetheless like to consider some of the motivation for this alternative view in light of the model presented here. We will focus on Zeijlstra (2012), Carstens (2016), and Bjorkman & Zeijlstra (2019), who articulate the reasoning particularly clearly.

The first point to note is that the relevant evidence in favor of long-distance upward Agree does not in fact come from ϕ -agreement, but is instead based on other long-distance dependencies, in particular negative concord and case assignment.²⁰ We begin by considering negative concord. As is well-known, in negative-concord languages a neg-word can be interpreted as \exists -quantification if this word occurs in the scope of a negative operator. The phenomenon is illustrated in (68).

- (68) a. Zoe didn’t_i say **nothing** _{\exists} to **nobody** _{\exists}
 b. Mario **non**_i ha parlato di **niente** _{\exists} con **nessuno** _{\exists} *Italian*
 Mario NEG has spoken about nothing with no one
 ‘Mario hasn’t spoken with anyone about anything.’ (Ladusaw 1992: 237)

Importantly, neg-words cannot have a non-negative, existential interpretation unless they are licensed by a negative operator. This raises the question what the nature of this licensing is. Zeijlstra (2004, 2012) and Bjorkman & Zeijlstra (2019), among others, propose that it involves syntactic Agree. On this view, neg-words contain an uninterpretable [*uNeg*] feature, which acts as a probe and requires Agree with an interpreted [*iNeg*] feature, as shown in (69).

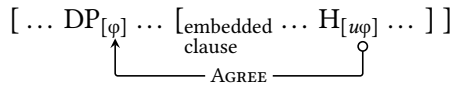
²⁰ One argument made by Bjorkman & Zeijlstra (2019: 4–5) based on ϕ -agreement is that downward valuation by a specifier is sometimes for more features than upward valuation, and that this asymmetry suggests that downward valuation (i.e., upward Agree) is analytically primary. See Preminger & Polinsky (2015: 6–9) for a reply.

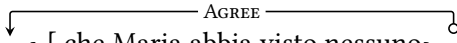
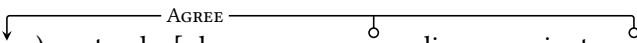
- (69) Zoe didn't_[iNeg] say nothing_[uNeg] to nobody_[uNeg].


Zeijlstra (2012) and Bjorkman & Zeijlstra (2019) conclude that if negative concord involves Agree, then Agree must be upward and non-local (i.e., not phrase-bounded), at least as an option. This is incompatible with the conclusions we have reached here.

Incorporating insights by Preminger (2013), Bjorkman & Zeijlstra (2019) furthermore acknowledge that a model that countenances only downward valuation is insufficient, given cases of LDA into an embedded clause such as Hindi, Basque, Tsez, or Innu-aimûn. Bjorkman & Zeijlstra (2019) propose a hybrid model that allows both upward valuation (for LDA) and downward valuation (for negative concord), and both are unified in terms of Agree. This unification is intriguing, and the resulting model is clearly an insightful one. But the unification of ϕ -agreement and negative concord that lies at its heart also gives rise to an analytical challenge, to which we now turn. Preminger & Polinsky (2015) point out that all attested cases of LDA involve a matrix verb agreeing with the argument of an embedded clause. The inverse (i.e., agreement of an embedded verb with a matrix argument) appears to be ruled out. As Preminger & Polinsky (2015) note, an account of Agree that allows for long-distance downward valuation is too powerful, all else equal, to derive the apparent absence of inverse LDA. This is because such models would in principle allow the upward-Agree configuration in (70), given that analogous dependencies are indeed attested for negative concord (see (71)). The challenge for an account that attributes both ϕ -agreement and negative concord to the same syntactic operation is thus to allow (71) and at the same time exclude (70).

- (70) *Illicit 'inverse' long-distance agreement*



- (71) a. Dubito_[iNeg] [che Maria abbia visto nessuno_[uNeg]] *Italian*
 'I doubt that Mary saw anyone.' (Alonso-Ovalle & Guerzoni 2004: 20)

 b. Oggi *(non_[iNeg]) pretendo [che nessuno_[uNeg] dica niente_[uNeg]]
 today NEG ask.1SG that nobody says.SBV nothing
 'I don't ask today that anybody says anything.' (Bjorkman & Zeijlstra 2019: (39))


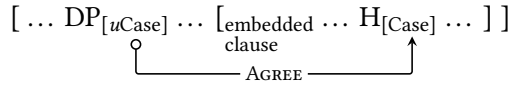
One line of response to this apparent paradox explored by Bjorkman & Zeijlstra (2019) is to maintain that (70) is indeed well-formed, but that it is contingent on a very specific constellation of other factors, which conspire to make it so rare that its crosslinguistic absence can be treated as an accidental gap (given that LDA is relatively infrequent to begin with).

An alternative answer to the contrast between (70) and (71) is to treat the absence of inverse LDA as systematic fact that ought to fall out from the theory of agreement. On this view, this contrast indicates that ϕ -agreement and negative concord impose distinct constraints on the structural relationship that licenses them, in particular the locality conditions that have to be met. Accordingly, Preminger (2013) and Preminger & Polinsky (2015) take discrepancies of this

sort to show that the two dependencies do not involve the same licensing mechanism, and that they hence should be kept distinct. This alternative approach is consistent with the model we have developed here if ϕ -agreement involves Agree along the lines proposed here, and negative concord is licensed differently—perhaps semantically. This is by no means a novel claim, as there are numerous analyses of negative concord that involve semantic licensing (e.g. Zanuttini 1991; Haegeman & Zanuttini 1996; Giannakidou 2000; de Swart & Sag 2002; Alonso-Ovalle & Guerzoni 2004). Because none of these accounts involve upward Agree, they render negative concord compatible with the conclusions about the directionality of Agree that we reached here.²¹

A second argument for upward Agree is based on case. Zeijlstra (2012), Carstens (2016), and Bjorkman & Zeijlstra (2019) adopt a model of case in which a DP carries an unvalued case feature that receives a value from a verbal functional head. In light of evidence that a DP may receive case from a head that c-commands it, they conclude that such case assignment must involve upward Agree. As in the case of negative concord, an account along these lines has the advantage of unifying case assignment and ϕ -agreement in terms of Agree, but it likewise does not obviously predict the absence of ‘inverse’ LDA configurations such as (70). Correspondingly, if this gap is systematic, then such approaches arguably miss a generalization. Furthermore, if case assignment involves Agree and if Agree can be upward or downward, then nothing seems to rule out a configuration in which a DP that is base-generated in a matrix clause receives case from a head in an embedded clause through long-distance upward valuation as in (72), akin to LDA.²²

(72) *Illicit long-distance upward case assignment*



To the best of our knowledge, configurations like (72) are not attested. But an account that treats ϕ -agreement and case assignment as involving the same operation would generate (70) in the same way it generates attested LDA structures. This suggests that an important difference between the two is being missed. An alternative view, which we adopt here, is that case assignment does not involve Agree, at least not in the form of $[u\text{Case}]$ on a DP probing upward. This view then allows us to distinguish between (72) and LDA, and it reconciles case assignment with the conclusions about Agree we have reached here. It also aligns well with arguments in the literature that case assignment does not involve probe–goal Agree, but rather a dependent-case model such as Marantz (1991), McFadden (2004), Preminger (2011, 2014), and Baker (2015).

Summing up, models that involve upward Agree have typically been motivated on the basis of dependencies other than ϕ -agreement, on the natural default assumption that these

²¹ Though as Bjorkman & Zeijlstra (2019) point out, something must then be said about why negative concord is subject to what appears to be syntactic locality constraints, a task we will not take up here.

²² This point applies most directly to accounts that would allow for case assignment under downward Agree, such as Carstens (2016). The approach in Bjorkman & Zeijlstra (2019) is more nuanced in that it requires upward valuation to be parasitic on upward Agree with another feature. But even their account would generate (72) if H also agreed with DP in ϕ -features.

dependencies likewise involve Agree. While syntactic unification of this sort is of course eminently reasonable all else equal, in the case at hand, doing so requires a version of Agree that is potentially too powerful to provide a restrictive account of the descriptive properties of either dependency. We conclude instead that the strict upward orientation of case assignment and negative concord suggests that they should not be operationally unified with ϕ -agreement, and hence that they do not constitute evidence for upward Agree. This renders them compatible with the conclusions reached here. Furthermore, to the extent that ‘inverse’ LDA configurations like (70) are indeed unattested for principled reasons, this gap follows from the model of Agree advocated here.

7 Conclusion and emerging issues

This paper investigated the syntax of valuation and the mechanisms that underlie it through a close look at some novel generalizations about scrambling–agreement interactions in Hindi. The high-level conclusion we reached is that the complex empirical pattern that we observed favors a model of agreement in which valuation is descriptively bidirectional, in the sense that a probe on a head may receive a value from a DP above or below it. We furthermore argued that valuation in the two directions is not symmetrical: First, upward valuation is derivationally primary, while downward valuation is secondary, allowed only if upward valuation is impossible. Second, downward valuation is tightly bounded in its locality in that a probe on head H may receive a value from a DP in Spec,HP, but not from DPs in higher projections. This phrase-boundedness of downward valuation is not shared by upward valuation.

We then proposed that these broader conclusions about the syntax of valuation can be derived if (i) Agree (as a syntactic operation) is strictly downward, and (ii) probes may project under feature sharing, yielding cyclic Agree in the sense of Rezac (2003). On this account, downward valuation is established indirectly, mediated through a projected occurrence of the probe. This analysis manages to unify upward and downward valuation in terms of downward Agree, and it also derives the desired locality asymmetry between the two.

Our account has several broader implications. First, circling back to the basic analytical division in section 1, our account provides empirical support for the view in (3b) that valuation is bidirectional but asymmetrical. Second, while we have concluded that valuation is bidirectional on a descriptive level, the specific account that we proposed involves only downward Agree. Third, to the extent that this understanding of the Hindi evidence is on the right track, it extends the empirical basis for cyclic Agree (Rezac 2003; Béjar & Rezac 2009) beyond hierarchy effects between coarguments. Because the derivational primacy of upward valuation is derived through the intertwining of Merge and Agree, this model supports the view that agreement is established in the syntax and not solely at PF (pace Bobaljik 2008).²³ Fourth, we reassessed some arguments in favor of genuine upward Agree and hence long-distance downward

²³ A number of recent proposals have argued that the phenomenon of ϕ -agreement in fact straddles multiple components. For example, Arregi & Nevins (2012), Bhatt & Walkow (2013), Marušič et al. (2015), and Atlamaz & Baker (2018) argue that the Agree dependency between two elements is established in syntax, but that the actual feature copying (that is, the valuation) occurs at PF. Such models are compatible with the conclusions reached

valuation, which notably came from dependencies other than ϕ -agreement. We suggested that these dependencies should be operationally dissociated from ϕ -agreement in order to capture systematic differences in their directionality and locality in a principled manner. By doing so, the account we advocate here is able to preserve a more restrictive notion of Agree, which, among other things, predicts the crosslinguistic absence of ‘inverse’ LDA structures like (70).

Finally, we showed that our account of the directionality and locality of valuation sheds new light on the well-known difference between A- and \bar{A} -movement with respect to their ability to feed ϕ -agreement. We demonstrated that at least in Hindi, this asymmetry can be derived without the need for a designated constraint that renders \bar{A} -positions invisible to ϕ -probes. On the strongest version of this view, all DPs within the search space of a ϕ -probe are accessible (modulo relativized minimality), and the reason that \bar{A} -positions cannot control ϕ -agreement is that they are located outside the portion of the tree that is visible to second-cycle Agree, as determined by the locality of probe projection. \bar{A} -opacity thus follows as an epiphenomenon from the principle that determine a probe’s search space. This conclusion contributes towards efforts to derive the A/ \bar{A} -distinction in this domain from more general syntactic principles.

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here, because what is crucially required is that *some* operational component of ϕ -agreement is interspersed with structure building and hence syntax-internal.

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