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Asymmetries in Conjunct Agreement

Rajesh Bhatt
University of Massachusetts, bhatt@linguist.umass.edu

Martin Walkow
University of Massachusetts, mwalkow@linguist.umass.edu

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Abstract
Hindi-Urdu displays an asymmetry with respect to the availability of Closest Conjunct Agreement. It is available only to objects and not to subjects. Agreement with subjects is always agreement with the full conjunct. We argue that this asymmetry in Conjunct Agreement is related to another asymmetry between subject and object agreement in Indo-Aryan languages: object agreement never involves person. We derive these properties of object agreement from the fact that object agreement is an instance of dissociated agreement, agreement that takes place independent of case-licensing. As a result when the probe (T) accesses the direct object goal, the person features of the goal have already been deactivated by the case-licenser (v) and T must look inside the DP at the phi-P, where only gender and number features are available. This yields the absence of person features in object agreement. With subjects, T is both the case-licensor and phi-agreement trigger. Hence the person features of the subject are visible to T. By a similar logic, the features of conjoined objects are not visible to the probe and a subpart must be identified whose features are visible. The identification of the subpart is subject to linearity considerations and we present a mechanism that allows for this. The resulting proposal sheds light on the distribution of features within the DP and the proper analysis of dissociated agreement. It is also a first step towards an integration of linearization and structural considerations in the treatment of agreement.

Asymmetries in Conjunct Agreement*

Rajesh Bhatt and Martin Walkow

1 Introduction

Hindi-Urdu displays an asymmetry with respect to the availability of Closest Conjunct Agreement. It is available only to objects and not to subjects. Agreement with subjects is always agreement with the full conjunct. We argue that this asymmetry in Conjunct Agreement is related to another asymmetry between subject and object agreement in a number of Indo-Aryan languages: object agreement does not involve person. We derive these properties of object agreement from the fact that object agreement is an instance of dissociated agreement, agreement that takes place independent of case-licensing. As a result, when the probe (T) accesses the direct object goal, the person features of the goal have already been deactivated by the case-licenser (v) and T must look inside the DP at the ϕP, where only gender and number features are available. This yields the absence of person features in object agreement. With subjects, T is both the case-licensor and ϕ-agreement trigger. Hence the person features of the subject are visible to T. By a similar logic, the features of conjoined objects are not visible to the probe and a subpart must be identified whose features are visible. The identification of the subpart is subject to linearity considerations and we present a mechanism that allows for this. The resulting proposal sheds light on the distribution of features within the DP and the proper analysis of dissociated agreement. It is also a first step towards an integration of linearization and structural considerations in the treatment of agreement.

2 Two Asymmetries in Object Agreement

Hindi-Urdu has one agreement trigger, T, that expresses person, number and gender features. Agreement on T is controlled by the most prominent non-overtly case-marked argument. In example (1a), both subject and object are non-overtly case-marked and the subject controls agreement. In (1b), the subject bears overt ergative case marking and only the object is non-overtly case-marked. The object accordingly controls agreement on T. In (1c), both subject and object are overtly case marked (the object by Differential Object Marking (DOM)) and agreement defaults to masculine singular.

(1) a. ***Rahul*** *kitaab* ***paṛh-taa*** ***thaa***.
Rahul.M book.F read-HAB.M.SG be.PST.M.SG
'Rahul used to read (a/the) book.'

b. *Rahul-ne* ***kitaab paṛh-ii*** ***thii***.
Rahul-ERG book.F read-PFV.F be.PST.F.SG
'Rahul had read the book.'

c. *Rahul-ne kitaab-ko paṛh-aa thaa.*
Rahul-ERG book-KO read-PFV.M.SG be.PST.M.SG
'Rahul had read the book.'

Besides auxiliaries in T, elements like aspectual markers and participles express ϕ-agreement with the same goal as T (e.g., habitual: (1a), perfective: (1b), progressive: (6)). Bhatt (2005) argues that their agreement is dependent on that of T. Evidence for this dependence comes from Long Distance Agreement (LDA) which can involve agreeing verbs in subordinate clauses, e.g., *kaaṭ-nii* in (2). In potential LDA contexts, either all agreeing elements agree with the same target, or none of them agree at all. There is never a split such that some verbs/auxiliaries agree and some don't, (2b).

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(2) a. *Shahrukh-ne* [***ṭehnii kaaṭ-nii***] ***chaah-ii thii***.
Shahrukh-ERG branch.F cut-INF.F want-PFV.F be.PST.F.SG
'Shahrukh had wanted to cut the branch.'

b. * *Shahrukh-ne* [***ṭehnii kaaṭ-nii***] ***chaah-aa thaa***.
Shahrukh-ERG branch.F cut-INF.F want-PFV.M.SG be.PST.M.SG
'Shahrukh had wanted to cut the branch.'

Bhatt takes this to show that agreeing elements other than T are not separate ϕ-probes, but that their agreement is dependent on the agreement of T. When T probes, it probes the uninterpretable ϕ-features of intermediate agreeing projections, ASP/participles, along the way, (3). This does not value the features of T or ASP, but establishes a relation between them leading to covaluation once T finds a goal with valued features.

(3) T[uϕ]... ASP[uϕ]... PART[uϕ]... DP[ϕ]$_{DO}$

In summary, subject and object agreement involve the same trigger and are sensitive to the same properties on the target.

2.1 The Person Asymmetry

Bhatt (2005) and Boeckx (2008) observe that in languages where the same head can agree with either subject or object, subject and object agreement differ in the kinds of features they involve. While subject agreement involves person, number and gender, object agreement involves only number and gender, not person. Due to DOM, this absence of person agreement is not visible in Hindi-Urdu. Person agreement only becomes visible with local person objects, but these obligatorily receive *-ko* marking, and overt case marking blocks agreement in Hindi-Urdu. The absence of person agreement can be demonstrated in Gujarati, where DOM objects still trigger agreement, (4). However, even though person agreement is expressed when the agreement target is a subject, (5a), it is absent when the target is an object, (5b).[1]

(4) Gujarati agreement with overtly case marked objects:

a. *mEN* ***tehmahri behEn-one bolawi***.
I-ERG your sisters.F-ACC invited.F
'I invited your sisters.'

b. *mEN* ***a pustek-ne waNcyuN***.
I-ERG this book.N-ACC read.N
'I read this book.' (Cardona 1965:75)

(5) a. Person agreement with second person subject:
tEhme aw-yā cho.
you.PL come-PFV.MPL be.PRS.2PL
'You have come.'

b. No person agreement with second person object:
mãĩ ***tam-ne mār-yā che***.
I you.PL-ACC strike-PFV.MPL be.PRS.3
'I have struck you.' (Magier 1983:324)

Despite the similarity between subject and object agreements in (1), the two differ in the features that participate in them.

2.2 The Coordination Asymmetry

Subject and object agreement also differ when the target is a conjunction. Conjoined subjects always show *resolved agreement*, (6), meaning that number agreement is always plural, same-gender conjunctions trigger the expected gender agreement, (6a), and mixed gender conjunctions are resolved to masculine gender, (6b).

[1] Person agreement with objects is found in Braj (via Peter Hook (p.c.), Liperovsky 2007) and Old Marathi (p.c. Peter Hook and Ashwini Deo). There is reason to believe, though, that the licensing of case by T and *v* works differently in these languages from Hindi-Urdu and Gujarati.

(6) a. MSG + MSG: agreement = MPL (also F.SG+F.SG=F.PL or M.PL)

Ram aur Ramesh gaa {*rahe hɛ̃ / *rahaa hai*}.
Ram.M and Ramesh.M sing {PROG.MPL be.PRS.PL / *PROG.MSG be.PRS.SG}

'Ram and Ramesh are singing.'

b. M.SG + F.SG: agreement = MPL (also F.SG+M.SG=M.PL)

Ram aur Sita gaa {*rahe hɛ̃ / *rahii hai*}.
Ram.M and Sita.F sing {PROG.M.PL be.PRS.PL / *PROG.F be.PRS.SG}

'Ram and Sita are singing.'

With objects, on the other hand, Closest Conjunct Agreement (CCA) is strongly preferred, (7).[2] In (7), the object appears to the left of the verbal complex, so CCA is rightmost conjunct agreement (RCA). Note that adjacency of the object and the verbal complex is not required.

(7) *Ram-ne ek thailii aur ek baksaa (aaj)* {*uṭhaa-yaa / *uṭhaa-yii / ???uṭhaa-ye*}.
Ram-ERG a bag.F and a box.M (today) {lift-PFV.M.SG / *lift-PFV.F / ???lift-PFV.M.PL}

'Ram lifted a small bag and a box.'

CCA is, with respect to both gender and number, unlike in Serbo-Croatian (Bošković 2009) or Slovenian (Marušič et al. 2007) where gender agreement targets the closest conjunct, but number agreement is resolved. Example (8) shows that Hindi-Urdu objects enter *closest* conjunct agreement rather than strictly RCA. When the object follows the verb, we see *left* conjunct agreement (LCA).

(8) *Raam-ne khariid-ii ek kitaab aur ek akhbaar.*
Ram-ERG buy-PFV.F a book.F and a newspaper.M

'Ram bought a book and a newspaper.' (modeled on Benmamoun et al. 2009:19)

Scrambling can create orders where the object is sandwiched between two agreeing elements like a participle and an auxiliary in (9). Such orders are ungrammatical when the two conjuncts differ in gender or number and the participle and the auxiliary show different agreement features, (9a, b). They are acceptable when either both conjuncts have the same features, (9c), or when the featural difference between them is obscured by syncretism, (9d). The feminine participle inflection has only one form for singular and plural: *-yii* (compare (9) c and d). This means that the agreement morphology in (9d) does not reveal the featural difference between the two conjuncts, unlike in (9a, b). The singular agreement on the auxiliary *thii* shows that (9c, d) still involve conjunct agreement.

(9) V [O&O] Aux:

a. * *Rina-ne gaa-yaa ek gaanaa aur ek nazam thii.*
Rina-ERG sing-PFV.SG.M a song.M and a nazam.F be.PST.F.SG

'Rina has sung a song and a nazam.'

b. *Rina-ne gaa-ye do gaane aur ek giit* {*??the / *thaa*}.
Rina-ERG sing-PFV.M.PL 2 songs and one giit.M.S {be.PST.M.PL / be.PST.M.SG}

'Rina has sung two songs and one giit.'

c. *Rina-ne gaa-yii ek ghazal aur ek nazam thii.*
Rina-ERG sing-PFV.F a ghazal.F and a nazam.F be.PST.F.SG

'Rina has sung a ghazal and a nazam.'

d. *Rina-ne gaa-yii kai nazmen aur ek ghazal thii.*
Rina-ERG sing-PFV.F many ghazal.F.PL and a nazam.F be.PST.F.SG

'Rina has sung many nazams and a ghazal.'

[2]Resolved agreement is possible (though still degraded) only when the rightmost conjunct is M.SG; the agreement triggered then can be M.PL irrespective of the gender features of the other conjuncts. A comparable situation is not found when the rightmost conjunct is F.SG; any agreement other than F.SG is quite bad.

The fact that the grammar is sensitive to feature mismatch between the conjuncts shows that the features of both conjuncts are accessed. That is to say, conjunct agreement is computed separately for the participle and the auxiliary.

CCA in Hindi-Urdu is not sensitive to semantic factors like Lebanese and Moroccan Arabic (Aoun et al. 1994). These languages allow CCA with postverbal subjects in addition to resolved agreement. Aoun et al. show that CCA in these Arabic varieties is incompatible with expressions that are sensitive to plurality of the subject. We replicate two of their tests for object CCA in Hindi-Urdu in (10). CCA is compatible with expressions like *together*, (10a), and relative clauses that show plural agreement, (10b).

(10) a. *Ram-ne ek saath* (*ek haath-se*) *ek baksaa aur ek thailaa uṭhaa-yaa.*
Ram-ERG together one hand-with a box.M and a bag.M lift-PFV.M.SG
'Ram lifted a box and a bag together (with one hand).'

b. *Rina-ne ek baṭuaa aur ek saaṛii kharid-ii* [*jo ki donõ sale-pe the*].
Rina-ERG a purse.M and a sari.F buy.PERF.F [REL that both sale-one be.PST.M.PL]
'Rina bought a purse and a sari which were both on sale.'

CCA is not related to animacy. The examples above all show coordinated animate subjects and coordinated inanimate objects. But subjects can be inanimate and objects can be animate. When we examine these combinations, we find that animate objects trigger CCA, (11a), and inanimate subjects don't, (11b).

(11) a. *Ram-ne duurbiin-se ek sharaṇaarthii aur ek navjaat shishu dekh-aa.*
Ram-ERG telescope-with a refugee.M and a newborn child.M see-PFV.M.SG
'Ram saw a refugee and a newborn child with a telescope.'

b. *Yeh ardha satya aur vo jhuuṭh Ram-kaa dil dukhaa* {*rahe*
this half truth.M and that falsehood.M Ram-Gen heart sadden {PROG.M.PL
hẽ */ *rahaa hai*}.
be.PRS.PL / *PROG.M.SG be.PRS.SG}
'This half truth and that falsehood are making Ram sad.'

2.3 The Size of the Coordination

Based on the sensitivity of CCA to semantic factors in Lebanese and Moroccan Arabic, Aoun et al. (1994) propose that CCA involves coordination of constituents larger than DP together with across-the-board verb movement. CCA in these languages is impossible in sentences containing elements like *each*, *together*, or relative clauses associated with the subject. In Hindi-Urdu, however, CCA is possible in the corresponding sentences, see (10). Semantic factors are therefore silent on whether such an analysis is warranted. A clausal coordination analysis would have to derive the facts from Gapping or Right Node Raising. Gapping cannot be the source of object agreement in S[O&O]V-orders, since the gapped constituent follows the verbal complex, (12).

(12) S Adv O V [& Adv O]
Rina-ne kal ek baṭuaa khariid-aa aur aaj ek saaṛii.
Rina-Erg yesterday a purse.M buy.PERF.M.SG and today a sari.F
'Rina bought a purse yesterday and a sari today.'

A better candidate is Right Node Raising (RNR), as it would in fact deliver the correct word order. The cases in (13) have a word order that forces a RNR analysis.

(13) a. [*Ram aaj*] *aur* [*Ramesh kal*] *jaa-egaa.*
Ram.M today and Ramesh.M tomorrow go-Fut.M.SG
'Ram will go today and Ramesh tomorrow.'

b. *Rina-ne* [*kal ek baṭuaa*] *aur* [*aaj ek saaṛii*] *khariid-ii.*
Rina-ERG yesterday a purse.M.SG and today a sari.F buy-PERF.F
'Rina bought a purse yesterday and a sari today.'

Recall now that objects force CCA, (7), while subjects do not allow for CCA, (6). However, (13) shows that RNR is an option with both subjects and objects. An RNR analysis of CCA would require treating what looks like a DP co-ordination as a larger verbal co-ordination where the verb in the first conjunct is silent. Let us call this "covert RNR." Deriving the Hindi-Urdu pattern of CCA via RNR would then require blocking covert RNR with subjects and forcing it with objects. RNR in Hindi-Urdu is available to structures involving subjects and objects alike. It is unclear to us right now how to derive the apposite restrictions in a non-stipulative way. Therefore, we do not pursue this type of analysis further.

2.4 Three Questions

We will address three major questions that arise from the agreement facts presented above. First, why does object agreement not involve person? Bhatt (2005) suggests that this difference between subject and object agreement arises because object agreement is ϕ-agreement without case assignment (*dissociated agreement*). Case related AGREE and dissociated agreement, he argues, involve different sets of features. This leaves open, however, why person is missing in dissociated agreement rather than number or gender.

The second question concerns accessibility. Why are the features of the whole conjunction (&P[ϕ] hereafter) not accessible to object agreement, and why are the features of the conjuncts accessible? Under standard assumptions about the locality of AGREE, a probe should have access to the features of the whole conjunction, possibly those of the first conjunct (van Koppen 2007), but not those of the last conjunct. Since these features are accessible in subject agreement, this fact cannot be attributed to conjunction in Hindi-Urdu not projecting ϕ-features.

Finally, how does the grammar access the ϕ-features of the *closest* conjunct, switching with the order of agreement trigger and target, and accessing the features of the first and the last conjunct simultaneously (see discussion of (9)), despite there only being one ϕ-probe in the syntax (see (3))?

We will argue that the first two questions receive the same answer: person features on unconjoined DPs as well as &P[ϕ] become inaccessible to T due to object case assignment. Rather than casting dissociated agreement as a separate grammatical operation from normal AGREE, its special properties follow from the fact that the direct object has already participated in an earlier AGREE-relation. The choice about which conjunct's features are expressed on T is made post-syntactically, but is constrained by the agreement relations established in the syntax.

3 Absence of Person and Accessibility

Absence of person agreement and the (in)accessibility of &P[ϕ] receive the same explanation. These features are absent from T-agreement, because they have been checked to license object case prior to T entering into AGREE with the object. We use the term *dissociated agreement* as a descriptive term from now on for situations where AGREE accesses a target that has already been assigned case.

To understand why dissociated agreement cannot access all ϕ-features of the object, we have to consider where in DP ϕ-features originate. Following Ritter (1995), we arrive at the picture in

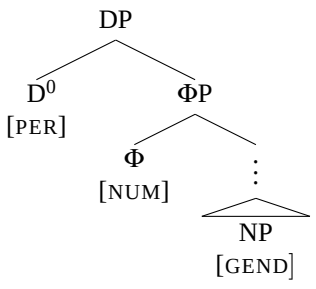


Figure 1: Origin of ϕ-features inside DP.

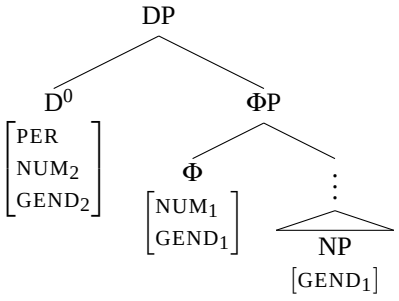


Figure 2: Distribution of ϕ-features in DP.

Figure 1. Ritter (1995) argues for a division between gender and number features. Gender features originate on the noun, while number is introduced by a higher functional projection, called ΦP here. Furthermore, Bernstein (2001) proposes that ΦP is the locus of DP-internal concord phenomena. For this reason, gender features are also present there. Person features, on the other hand, originate in D.[3] D does not enter the derivation with [NUM] or [GEND], but acquires them from its complement. D contains value-identical copies of the [GEND] and [NUM] features in ϕP as well as the only instances of person features. The resulting distribution of features is shown in Figure 2.

When accusative case is assigned to DOs, the features in D are checked and become inaccessible for further AGREE-relations. Since D contains the only instance of person features, no person features are accessible for subsequent probing by T. This accounts for the absence of person features in object agreement. The derivation in (14) illustrates this. In a first step, the direct object is assigned case by *v*. This checks the [NUM], [GEND], and [PER] features of DO. When T later probes DO, indicated as "×Step 2," it cannot value its features on DO, because D's features have already been checked. Since D contains the only instances of person features, T cannot check person. In Section 4, we argue that T resolves its gender and number features by accessing ΦP at PF.

(14) $[[[[\ \ldots \mathrm{DO} \begin{bmatrix} \text{PER} & :\checkmark \\ \text{NUM} & :\checkmark \\ \text{GEND} & :\checkmark \end{bmatrix}]\ \mathrm{V}\ ]\ v \begin{bmatrix} \text{PER} & :\checkmark \\ \text{NUM} & :\checkmark \\ \text{GEND} & :\checkmark \end{bmatrix}]\ldots \mathrm{T}\ ]$

Step 1

×Step 2

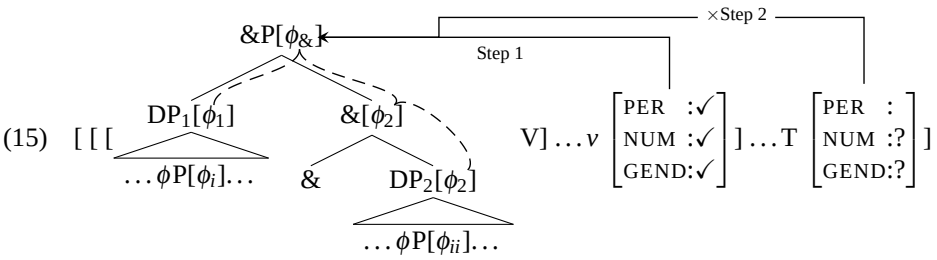
T's failure to value its ϕ-features in the syntax does not lead to a crash. This can be independently observed by the fact that structures with no possible agreement target, like (1c), are grammatical.

Person is absent from dissociated agreement because the only instance of person features is in D, and has become inaccessible due to DO case assignment.

3.1 Agreement with Conjoined Objects

Before addressing why the resolved features of conjunction are inaccessible in object agreement, we need to understand how they are computed, represented, and accessed by AGREE.

We assume that the ϕ-features on &P are computed from those of the conjuncts in such a way that a link is established between the features of the individual conjuncts and those of &P, illustrated by the dashed lines in (15). How this computation works for all three ϕ-features remains to be understood. Marušič et al. (2007) argue that gender, number, and person features behave differently in this respect. While number and person can be systematically computed from conjuncts with different person/number values, the same is not true of gender. In this system, object case assignment deactivates &P and with it the features in the D-projections of the conjuncts, explaining simultaneously the impossibility of resolved agreement with T, as well as the absence of person agreement. The derivation in (15) illustrates this. As in (14), *v* assigns case to &P, checking its person, number, and gender features. Since these features are linked to the features in the D-layers of the conjuncts (ϕ_1 and ϕ_2), these also become inaccessible for T, illustrated by "× Step 2."

(15) 

Both the question why &[ϕ] is inaccessible and why person agreement is absent receive the same explanation: accusative case assignment deactivates the features in the maximal projection of

[3]Figure 1 is Ritter's proposal for third person pronouns. She makes a different proposal for local person.

the object and makes them inaccessible for T. The next section argues that the direction of conjunct agreement is resolved at PF.

The proposal here also explains why semantic effects like in Moroccan and Lebanese Arabic are absent in Hindi-Urdu. Semantic effects relating to direct objects are computed in the *v*-domain. T agreement with the object happens after and independently of these relations.

4 Resolving Closest Conjunct Agreement

Syntax does not easily deliver a solution for CCA. On the one hand, much work since Kayne (1994) argues that linear order is not part of syntax, but imposed postsyntactically. The linear order of agreement trigger and target should then not be accessible to syntax for the resolution of CCA. On the other hand, existing syntactic approaches to CCA are problematic for Hindi-Urdu. Section 2.2 showed that a clausal reduction account of CCA faces challenges in Hindi-Urdu. Other approaches (e.g., Bahloul and Harbert 1992, van Koppen 2007) have attributed LCA to the syntactic prominence of the left conjunct. The hierarchical structure of coordination, however, does not provide an account of right conjunct agreement, unless the right conjunct is more prominent than the left in RCA. Benmamoun et al. (2009) show that this isn't the case in Hindi-Urdu. Finally, there is an argument specific to Hindi-Urdu against a syntactic account of CCA. There is only one ϕ-probe, T, in finite clauses in Hindi-Urdu, and the agreement of participles and modals is parasitic on that probe (see (3)). The discussion of (9) showed that CCA is sensitive to the features of both the first and the last conjunct when a coordinated object is sandwiched between a participle and an auxiliary. This suggests that CCA is resolved separately for the participle and the auxiliary. It is hard to see how a single probe associated with T and imposing featural identity between T and the participle could resolve agreement in different ways on T and the participle. Instead, we follow proposals like van Koppen (2007) or Benmamoun et al. (2009) in dividing up the work of conjunct agreement between syntax and PF. Syntax identifies the direct object as the agreement target, but PF decides which features in it will be expressed morphologically.

When T probes a direct object, AGREE can't value T's ϕ-features, but does establish a relation with the maximal projection of DO. PF uses this relation to restrict the search space for finding ϕ-features to express on T and other agreeing heads. The idea is that when syntax establishes a relation that fails to value features, PF gets a chance to find them in the domain identified by the syntax.

How can relations like linear proximity be stated without introducing new machinery into the grammar? We adopt a system like Kayne (1994), where linear order is established at PF, by mapping c-command relations between nodes into relations of linear precedence. We will write $\langle a, b \rangle$ to mean node *a* precedes node *b*. After the syntactic structure has been linearized, we can refer to linear order between nodes in the tree via linearization statements between them.

Three elements enter into the computation of CCA: the agreement controller (***C***); what will be called the *anchor* (***A***), the element that the T-head has AGREEd with; and the target (***T***), the node that provides the ϕ-features that end up being expressed on ***C***. Syntax delivers the relation between ***C*** and ***A***; PF's job is to figure out which part of ***A*** is ***T***. Which elements are potential ***T***s? We argued in Section 3 that D and &P aren't, because their features have already been checked. We propose that the features that are accessed in object agreement are those of the Φ-projection. The Φ-projection has gender and number, but no person features (see Figure 1), hence object agreement is only in gender and number. Similarly, conjunctions have no "conjunct ΦP," so resolved agreement is impossible in object agreement and PF has to access one of the conjuncts' ΦP to resolve agreement. Which elements act as controllers will be discussed in Section 5; we start by demonstrating the general system of resolving CCA using verbs in T as controllers.

What determines the direction of conjunct agreement is the linear relation between ***A*** and ***C***, i.e., the order between a finite verb in T and the conjoined object. When ***C*** is T, the relation between it and ***A*** has been established by AGREE under c-command. Hence there will usually be a single linearization statement that provides information about linear order ***C*** and ***A*** and the direction of conjunct agreement. The relation between ***C*** and ***T*** can then be stated as follows:

(16) Whichever linear relation holds between ***C*** and ***A***, ***T*** is the unique Φ_i such that

a. Φ_i is contained in $\boldsymbol{A}$, and

b. there is no Φ_j different from Φ_i and contained in $\boldsymbol{A}$ such that the same linear relation holds between Φ_j and Φ_i as holds between $\boldsymbol{A}$ and $\boldsymbol{C}$.

Clause b states that there is no other possible agreement target inside $\boldsymbol{A}$ that stands between $\boldsymbol{T}$ and $\boldsymbol{C}$. The resolution of LCA and RCA under (16) is illustrated in Figure 3. RCA arises in OV-order, i.e., when the anchor precedes the controller: $\langle \boldsymbol{A}, \boldsymbol{C} \rangle$. $\boldsymbol{T}$ is the unique ϕ-feature containing node Φ_i in $\boldsymbol{A}$, for which there is no ϕ-feature containing node Φ_j that it precedes ($*\langle \Phi_i, \Phi_j \rangle$). In Figure 3a, $\boldsymbol{T}$ is $\Phi P[\phi_4]$ in the rightmost conjunct. It is contained in $\boldsymbol{A}$/&P and there is no other ϕ-feature-containing node that precedes $\Phi P[\phi_4]$ in the way that $\boldsymbol{A}$/&P precedes $\boldsymbol{C}$/T. The only other candidate for $\boldsymbol{T}$ in Figure 3a is $\Phi P[\phi_2]$, the ΦP of the leftmost conjunct. It runs afoul of (16b), as there is another ϕ-feature-containing node that it precedes like $\boldsymbol{A}$/&P precedes $\boldsymbol{C}$/T: $\Phi P[\phi_4]$.

LCA, conversely, arrises in VO-order, i.e., when the anchor follows the controller: $\langle \boldsymbol{C}, \boldsymbol{A} \rangle$. $\boldsymbol{T}$ is the unique Φ_i, for which there is no Φ_j that it follows ($*\langle \Phi_j, \Phi_i \rangle$). In Figure 3b, this is $\Phi^0[\phi_2]$, the Φ-head of the leftmost conjunct. It is contained in $\boldsymbol{A}$/&P, and there is no other ϕ-feature containing node Φ_j that it follows in the way that $\boldsymbol{A}$/&P follows $\boldsymbol{C}$/T. Again, the other candidate for $\boldsymbol{T}$, $\Phi^0[\phi_4]$, runs afoul of that condition. It follows $\Phi^0[\phi_2]$ like $\boldsymbol{A}$/&P follows $\boldsymbol{C}$/T.

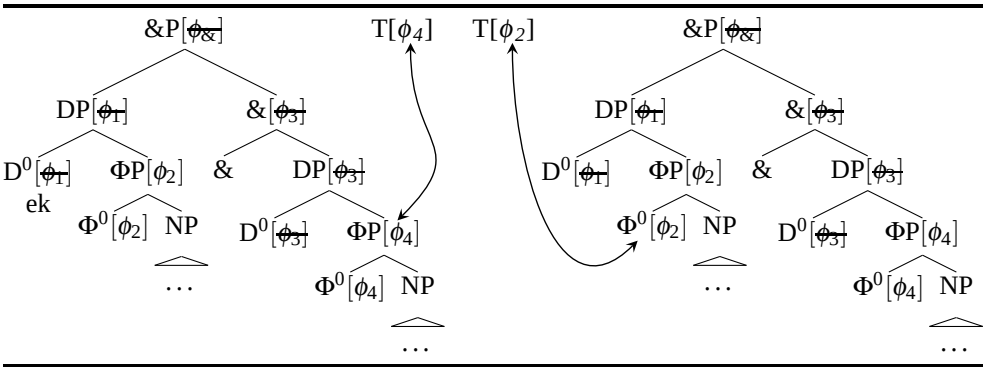
In agreement with an unconjoined object, (16b) becomes vacuous as there is only one agreement projection that could serve as the target. Agreement in OV- and VO-orders accesses different projections of ΦP, ΦP in OV-order and Φ^0 in VO-order, but these lead to the same result, as there won't be mismatches in gender or number features between the two.

A purely linear account of CCA runs into problems when objects contain other DPs: for example, inside a prenominal modifier. The prenominal relatives in (17) contain objects, which are unmarked and hence potential agreement targets. Despite this, the feminine *chiinii* 'sugar' cannot control agreement on the matrix verb *dekh-* 'eat', in bold face. Instead, the conjunct that the relative is attached to, *bhaaluu* 'bear', controls agreement on *dekh-*, in italics.

(17) a. *Atif-ne chiinii khaa-taa bhaaluu aur shahad khaa-tii* ***chiRiyaa dekh-ii***.
Atif-ERG sugar.F eat-IMP.M.SG bear.M and honey.M eat-IMP.F bird.F see-PFV.F
'Atif has seen a sugar eating bear and a honey eating bird.'

b. *Atif-ne* {***dekh-ii** / dekh-aa*} ***chiinii*** *khaa-taa* bhaaluu *aur shahad khaa-tii chiRiyaa*.
Atif-ERG {see-PFV.F / see-PFV.M} sugar.F eat-IMP.M.SG bear.M and honey.M eat-IMP.F bird.F
'Atif has seen a sugar eating bear and a honey eating bird.'

This problem can be overcome by reconsidering what exactly the anchor is. Syntax identifies &P as the anchor, but &P itself is linked to the the maximal projections of its constituent DPs. These in turn are linked, as argued in Section 3, to the features in ΦP, see Figure 2. Consequently, since the



a. Right conjunct agreement (see (7)). b. Left conjunct agreement (see (8)).

Figure 3: Left and right conjunct agreement under (16).

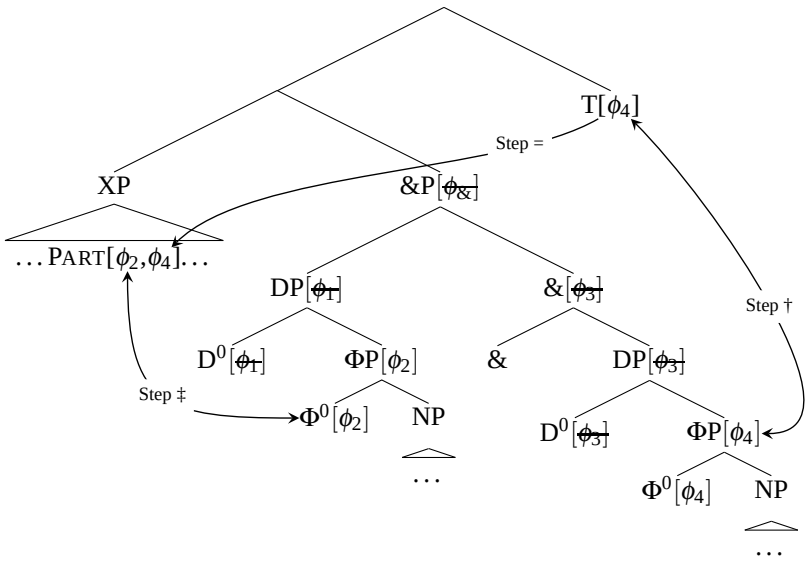


Figure 4: Agreement in V[O&O]Aux-order.

search space at PF is restricted to the anchor, it will exploit the links between &P and its constituent parts. ΦPs of elements that are not thus connected to the anchor will be invisible.

5 Syntax Constrains PF: Constraints on Feature (Mis)matches

The previous section discussed how conjunct agreement is computed when there is only one controller and it is in T. We now return to the examples in (9) where there are multiple controllers that have different linear orders with respect to ***A***, raising the question of which elements act as controllers. Under the syntactic constraint in (3) and the PF account in the previous section, one might expect that CCA is resolved once, for T, and that the features of T are copied down on all other agreeing heads. This would give rise to a situation in which, in V[O&O]Aux-orders like (9), V and Aux would show the same features, those of the rightmost conjunct irrespective of what the features of the left conjunct are. This isn't the case, as shown by the ungrammaticality of (18), where all agreeing elements show agreement with the rightmost conjunct, not the closest one.

(18) * *Rina-ne gaa-yii ek gaanaa aur ek nazam thii.*
Rina-ERG sing-PFV.F a song.M.SG and a nazam.F.SG be.PST.F.SG
'Rina had sung a song and a nazam.'

Instead, we see in (9) that such orders are ungrammatical, unless the two controllers show the same features (modulo syncretism, which will be addressed shortly). We take this to mean that both of the agreeing heads act as controllers in the sense of the previous section, and that the constraint on matching between the features on the different controllers is the effect of the syntactic relation between T and the other agreeing projections. We propose that this relation leads to transmission of T's features to these heads, as soon as T has resolved its features. Together with each agreeing head acting as a controller, this derives the ungrammaticality of (9a, b) as follows. The PF derivation for V[O&O]V-structures is shown in Figure 4. The left hand controller is a participle (PART). Steps † and ‡ are the resolution of conjunct agreement of T and PART according to (16). They result in the valuation of T's ϕ-features as ϕ_4 and those of PART as ϕ_2. "Step =" is the feature transfer of T's features to PART. This results in the presence of two sets of ϕ-features on PART. When these two sets of features cannot be realized in a single form, the structure crashes at PF. This is the case when the first and the last conjunct have different gender, (9a), or number features, (9b).

When ϕ_2 and ϕ_4 can be realized by the same form, the structure is grammatical. This happens when the features on the first and the last conjunct are identical, (9c), or when there is a syncretic

form that spells out both of the feature combinations as in (9d) (Ussery 2009).

6 Extensions

This paper focuses on CCA with objects and notes that it is independent of animacy. However, we have found that CCA is also possible with unaccusative subjects and in that domain it is subject to animacy restrictions. Extending our analysis to the full range of CCA constructions will be our next step. Outside of Hindi-Urdu, we are exploring the relationship between the absence of person in object agreement and CCA in Gujarati. Unlike Hindi-Urdu, Gujarati has resolved agreement with co-ordinated objects (Suthar 2006).

This proposal continues recent work (Bobaljik 2008, Benmamoun et al. 2009) on the location of agreement in the grammar. Our proposal relegates the task of choosing an agreement target to syntax, and leaves to PF the task of resolving which features are expressed on the agreement trigger. As one would expect, the relations established in the syntax restrict the search space for PF.

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Department of Linguistics
University of Massachusetts
Amherst, MA 01003 USA
{*bhatt, mwalkow*}*@linguist.umass.edu*