

Closest conjunct agreement in Serbo-Croatian: a rule ordering account

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Abstract

In this paper, we argue that the ‘closest’ aspect of so-called *Closest Conjunct Agreement* is in fact illusory. What may, at first glance, seem like linearly-conditioned agreement can instead be analyzed as varying orders of the operations Agree and Merge inside the conjunct phrase. Thus what may give the impression of agreement with a single conjunct is in fact agreement with a conjunct phrase which has inherited the features of only one of its conjuncts. Furthermore, the assumption that a given order of operations inside the conjunct phrase is repeated at later cycles of the derivation makes correct predictions about the possibility for each pattern to occur either pre- or postverbally. Thus, we arrive at a principled analysis of conjunct agreement, which avoids many of the problems associated with recent analyses.

1. Introduction

Closest Conjunct Agreement (CCA) poses a problem for standard theories of Agree as it seems to be sensitive to linear proximity rather than *c*-command. Some recent works either complicate the Agree mechanism to avoid violating Minimality (Bošković 2009) or to make reference to linearity (Bhatt and Walkow 2013, Marušić et al. to appear). Based on new empirical data, we propose that all observed patterns of conjunct agreement in Serbo-Croatian (SC) can be derived in syntax from the order in which the basic operations Agree, Merge and Move apply at &P, and subsequently, TP.

Patterns of CCA also raise questions as to how ϕ -features of the conjuncts are processed, the locus of agreement (whether it is performed in syntax or it is post-syntactic) and the exact mechanism of agreement. We will focus

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on three types of conjunct agreement: *Resolved Agreement (RA)* (full agreement with both conjuncts, where the verb either agrees with both conjuncts if their features match, or shows default agreement) and *Closest Conjunct Agreement (CCA)*, which involves two subtypes: *First Conjunct Agreement (FCA)* (agreement with the first conjunct in a postverbal subject), and *Last Conjunct Agreement (LCA)* (agreement with the last conjunct in a preverbal subject).

We propose that the above patterns can be captured under an account based on the interaction of the basic syntactic operations of Merge, Move and Agree. We assume that the conjunct phrase is a phrase headed by a coordinating conjunction (henceforth &), and that it has a hierarchical structure where the higher NP asymmetrically *c*-commands the lower one:

- (1) [_{&P} NP₁ [_{&'} & NP₂]]

Furthermore, we propose that, as well as triggering External Merge of both its argument NPs, the & head bears a gender probe and can carry out Agree with either both, one or none of the NPs.

Using the basic syntactic operations Merge, Move, and Agree, we show that all patterns of conjunct agreement can be derived on the basis of the order in which these operations apply at the &P level, and subsequently, at the level of TP. The operations available to discharge the features on & are MOVE, MERGE, and both Upward (Spec-Head) Agree \uparrow AGR \uparrow and standard Downward Agree \downarrow AGR \downarrow to discharge its features.¹ Since the application of an operation such as Spec-Head Agree (\uparrow AGR \uparrow) can only happen if a specifier is present, and the operation MERGE provides this, these two operations can potentially interact. In a derivation where MERGE precedes \uparrow AGR \uparrow , the necessary environment for \uparrow AGR \uparrow to apply will be created (thus MERGE feeds \uparrow AGR \uparrow). If \uparrow AGR \uparrow applies before MERGE, however, it applies 'too early' to be fed by MERGE and is therefore *counterfed* (Kiparsky 1973). Resolved agreement is the result of MERGE feeding both Agree operations, as it is ordered before both of them. LCA results from counterfeeding of \uparrow AGR \uparrow by MERGE, which causes the &-head to Agree only with the lower conjunct and project its features further to &P. FCA results from counterfeeding of \downarrow AGR \downarrow by MERGE, which causes the &-head to Agree only with the higher conjunct and project its features.

¹In our analysis, we will use the notations in small capital letters to denote formal operations available on &, and on T. When talking about the same operations in general and with reference to previous literature, the standard notation with the initial capital letter will be retained.

Additionally, we will show that FCA can result from counterfeeding of both Agree operations, by which &P does not receive any ϕ -features, and T targets the structurally higher conjunct for agreement. Thus, what may seem like agreement with a single conjunct, is in fact agreement with an entire conjunct phrase, which has partially inherited features of only one conjunct.

Furthermore, it is argued that the order in which operations apply within the &P has to be maintained at TP (*Uniform Order of Operations* hypothesis). We assume that MOVE applies optionally and only if it has an effect on outcome (Chomsky 1995) and with the condition that it applies before MERGE (*Move over Merge*). Consequently, any derivation in which MOVE bleeds or counterfeeds either $\uparrow\text{AGR}\uparrow$ or $\downarrow\text{AGR}\downarrow$ will not converge because T will not be able to find a goal in its search domain to value its ϕ -features. Crucially, these assumptions allow us to derive not only attested patterns of CCA in Serbo-Croatian, but also a new pattern of *Highest Conjunct Agreement* as well as allowing us to successfully rule out the unattested pattern of postverbal LCA (or *Lowest Conjunct Agreement*).

In Section 2, we will discuss the basic patterns of conjunct agreement in Serbo-Croatian. Section 3 outlines some previous approaches to the same issue, offering the insight into the literature and different accounts that have tried to capture the same phenomenon. Our analysis of the Serbo-Croatian data is presented in Section 4 together with some implications for data from Hindi, and Section 5 provides some concluding remarks.

2. Patterns of conjunct agreement in Serbo-Croatian

In order to determine the possible patterns of CCA in Serbo-Croatian, we present data obtained in an informal survey on the productive patterns of conjunct agreement in this language. The survey was completed by 60 native speakers, all university students. They were asked to complete a production task in which they were required to fill in the missing participle endings and auxiliary slots in sentences with conjoined subjects.

In this paper, we will focus on gender agreement with conjoined NPs², while number agreement is left for further research. We will discuss the fol-

²Following Bošković (2005 and subsequent work), we assume that Serbo-Croatian does not project a DP. Yet, the issue of NP/DP in this language is still a matter of debate (see Progovac 1998 for arguments in favour of a DP analysis).

lowing basic patterns of agreement: Resolved Agreement (RA) (full agreement with both conjuncts, where the verb either agrees with both conjuncts if their features match, or shows default agreement), Closest Conjunct Agreement (CCA), which involves two subtypes: First Conjunct Agreement (FCA) (agreement with the first conjunct in a postverbal subject), and Last Conjunct Agreement (LCA) (agreement with the first conjunct in a preverbal subject).³ Each pattern is presented in turn below, although the main focus of this paper will rest on the derivation of Closest Conjunct Agreement.

2.1. Resolved agreement

Resolved Agreement is manifested as either agreement with the same gender values when conjuncts match in gender (i.e. masculine or feminine agreement with two masculine or feminine conjuncts), or as masculine agreement when gender features on conjuncts do not match. As the examples below illustrate (2)-(5), in RA, different combinations of features on NPs yield the following results: $M+M=M$, $F+F=F$, $M+F=M$, and $F+N=M$.

- (2) [_{&P} Otac i sin] su gledali utakmicu.
 father.MSG and son.MSG are watch.PRT.MPL game
 ‘Father and son watched the game.’ (M+M=M)
- (3) [_{&P} Sve majke i kćerke] su išle / *išli po
 all mother.FPL and daughter.FPL are go.PRT.FPL *go.PRT.MPL in
 prodavnicama.
 shops
 ‘All mothers and daughters went to the shops.’ (F+F=F)
- (4) [_{&P} Dečaci i devojčice] su zajedno pošli / *pošle
 boy.MPL and girl.FPL are together start.PRT.MPL *start.PRT.FPL
 u školu.
 in school
 ‘Boys and girls started going to school together.’ (M+F=M)

³For a more detailed overview of all the patterns of conjunct agreement recorded in Serbo-Croatian, we refer the reader to Puškar (2013).

- (5) [&P Okolnosti i vremena] su bili teški za
 circumstance.FPL and time.NPL are be.PRT.MPL difficult.MPL for
 sve stanovnike.
 all inhabitants
 ‘The circumstances and times were hard for all the inhabitants.’

(F+N=M)

2.2. Last conjunct agreement

Last Conjunct Agreement is the pattern of CCA in which the verb agrees with the second/last conjunct in a preverbal subject, presented in (6)–(7).

- (6) [&P Sva odela i sve haljine] su juče prodate.
 all suit.NPL and all dress.FPL are yesterday sell.PRT.FPL
 ‘All suits and all dresses were sold yesterday.’
- (7) [&P Okolnosti i vremena] su bila teška za
 circumstance.FPL and time.NPL are be.PRT.NPL difficult.NPL for
 sve stanovnike.
 all inhabitants
 ‘The circumstances and times were hard for all the inhabitants.’

However, there are no attested examples of postverbal Last Conjunct Agreement or *Lowest Conjunct Agreement*:

- (8) *Juče su prodate [&P sva odela i sve haljine].
 yesterday are sell.PRT.FPL all suits.NPL and all dresses.FPL
 ‘All suits and all dresses were sold yesterday.’

2.3. First conjunct agreement

First Conjunct Agreement is the pattern of CCA in which the verb agrees with the first conjunct in a postverbal subject conjunct phrase, exemplified here as (9).

- (9) Po dvorištu su razdragano ključale [_{&P} kokoške i
 across yard are cheerfully peck.PRT.FPL hen.FPL and
 pilad].
 chicken.NPL
 'Hens and chicken pecked cheerfully in the yard.'

One marginal but attested pattern that was recorded in a small number in the survey is the pattern of preverbal FCA (i.e. *Highest Conjunct Agreement*). In this case, the verb agrees with the highest conjunct, i.e. with the first conjunct in a preverbal &P (10).

- (10) [_{&P} Krave i telad] su mirno pasle po polju.
 COW.FPL and calf.NPL are peacefully graze.PRT.FPL across field
 'Cows and calves grazed peacefully in the field.'

Before we proceed with the analysis of the above data, we will consider some of the more prevalent analyses of conjunct agreement proposed in the literature so far.

3. Previous accounts

The issue of conjunct agreement has been extensively studied in a number of different languages, which has resulted in different approaches and accounts over the years. Different patterns in head-initial languages have been discussed for the following languages: Arabic (Aoun et al. 1994, 1999), Polish (Citko 2004), Slovenian (Marušič et al. 2007, to appear), Russian and (Serbo-)Croatian (Bošković 2009, 2010, Willer-Gold and Franks 2013). On the other hand, conjunct agreement in head-final languages was discussed for Hindi and Tsez by Benmamoun et al. (2010) and Hindi-Urdu by Bhatt and Walkow (2013). Most of the accounts above are syntactic in nature, and only a few of them propose that a part of the agreement process is carried out post-syntactically, as we discuss below. Accounts relying on post-syntactic Agree commonly claim that resolved agreement is the result of both conjuncts being included in the process of agreement. Resolved agreement is considered to be the result of agreement with the whole &P, which 'calculates' or 'resolves' the features of its NPs according to resolution rules (cf. Corbett 1991). CCA is then the result of agreement with only one of the NPs/DPs, whose features are copied onto the verb. If this is indeed the case, what these accounts fail to

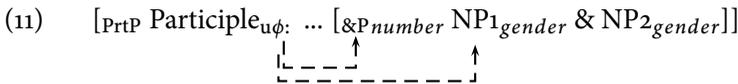
make explicit is the mechanism according to which &P inherits the features of its conjuncts. Moreover, they still have to make additional assumptions about linearization, and how the verb is able to target the linearly closer conjunct for post-syntactic agreement. All these assumptions can be dispensed with if agreement is placed entirely in syntax, as we show below.

3.1. Syntactic agree: Bošković (2009)

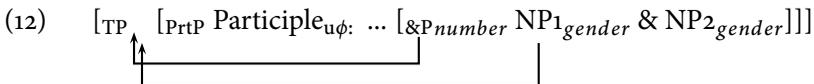
One of the recent syntactic accounts that deals with conjunct agreement on the basis of data from Serbo-Croatian is outlined in Bošković (2009), and it was extended to Russian in Bošković (2010). According to Bošković (2009), FCA and LCA are the result of a unique process which relies on the Chomskyan 3-stage operation Agree: Probe (where the probe searches for features), Match (which determines whether the goal has the kind of category the probe is looking for) and Value (the process of giving value to unvalued features). Bošković (2009) uses this approach to derive both FCA and LCA.

An important starting assumption is that the participle is a single ϕ -probe, which probes for number and gender features of the noun together (as proposed in (Bejar 2003) for ϕ -probes in general). Another assumption is that features on lexical items are characterised as valued/unvalued and interpretable/uninterpretable in the spirit of Pesetsky and Torrego (2007). The process of Last Conjunct Agreement proposed in this account proceeds following the steps in (11) – (14).

Step 1: The probe establishes a Match relation with &P for number and NP1 for gender (it enters into Multiple Agree; Hiraiwa 2001, Pesetsky and Torrego 2007).



Step 2: If the probe has an EPP feature, pied-piping of the subject is required. Valuators undergo pied-piping, and here pied-piping of the subject fails due to ambiguity of the target for movement (either &P or NP1 can be moved as Serbo-Croatian allows for violations of Coordinate Structure Constraint according to the paper).



Step 3: Another cycle of Agree is instantiated to prevent a crash, resulting in targeting NP₂, because NP₁ was deactivated after first Agree (its uninterpretable gender feature was deleted after Match).

- (13) [TP [PrtP Participle_{uφ}: ... [&P_{number} NP_{1gender} & NP_{2gender}]]]
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Step 4: As NP₂ is now the valuator, and it cannot be extracted, the only option is to move the whole &P to subject position, which results in the LCA pattern.

- (14) [TP [PrtP Participle_{uφ}: ... [&P_{number} NP_{1gender} & NP_{2gender}]]]
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First Conjoint Agreement is essentially the same process, the only difference between the two is that there is no pied-piping, as the verb does not have an EPP feature. Without pied-piping, there is no conflict between the two valutors in the first place, and the gender features on the verb can be provided by NP₁.

To summarise the analysis above, let us observe the examples in (15) and (16).

- (15) [&P Sva odela i sve haljine] su juče prodate.
 all suits.NPL and all dresses.FPL are yesterday sell.PRT.FPL
 'All suits and all dresses were sold yesterday.'
- (16) Juče su prodata [&P sva odela i sve haljine].
 yesterday are sell.PRT.NPL all suits.NPL and all dresses.FPL
 'All suits and all dresses were sold yesterday.'

In the sentence (15) above, it is assumed that the participle has an EPP feature at the beginning of the derivation. It first probes for number and gender while the &P is in its base position. It Matches the plural number on the &P, as well as Matching the neuter gender on NP₁ (*sva odela* 'all suits'), without receiving the value yet. Since now the system has the option of moving both the &P and NP₁, this leads to a conflict, which results in non-valuation of the verb's features. Secondary Agree initiates the search for ϕ -features again, and now probes past NP₁ (which has been deactivated after the first cycle of Agree), and targets the NP₂ (*haljine* 'dresses'). Since NP₂ cannot be extracted, and only the &P can be moved, after the valuation of the verb's features, the whole &P is pied-piped to the subject position.

In the example with FCA (16), it is assumed that the participle does not have an EPP feature. After it probes for number and gender features, it Matches the plural number on the &P, as well as Matching the neuter gender on NP₁ (*sva odela* 'all suits'). Since there is no EPP feature, no conflict arises as to which of the elements should be moved, and thus the participle's features will be valued by the two Matched elements.

Bošković (2009) provides a uniform non-language specific account incorporating conjunct agreement into an existing mechanism. However, there are some issues that require further attention as regards both number and gender agreement. For start, the account assumes that the only difference between FCA and LCA is in whether pied-piping happens or not, and it predicts that FCA always happens postverbally, and LCA happens preverbally. However, new data from Serbo-Croatian that we presented in the previous section (repeated here as (17)), and data from Slovenian (see Marušič et al. to appear), show that this prediction is wrong, as FCA can also happen preverbally.

- (17) [&P Krave i telad] su mirno pasle po polju.
 cow.FPL and calf.NPL are peacefully graze.PRT.FPL across field
 'Cows and calves grazed peacefully in the field.'

The difference between FCA and LCA thus cannot be tied to pied-piping only. He incorrectly predicts that FCA is tied to lack of &P-movement. Examples such as (17) show that this cannot be the whole story. Moreover, Bošković (2009) has to assume optionality of having an EPP feature for Serbo-Croatian, which further conditions the resulting type of conjunct agreement, while it is not clear to what extent the EPP is motivated in Serbo-Croatian. We will show that different patterns of conjunct agreement can be derived without having the existence of an EPP as a prerequisite for agreement. Rather, we will show that the reverse holds – whether or not the conjunct phrase moves depends on how agreement is carried out at an early stage in the derivation.

Concerning gender agreement, Bošković (2009) records some cases of FCA/LCA parallelism breakdown if the conjunct that does not determine the agreement is masculine. According to him, in the cases where NP₁ is masculine, FCA is possible, but LCA is not. This is explained by the fact that masculine on the first conjunct, as the default feature, blocks agreement with the second conjunct, and forces default agreement of the whole conjunct phrase. Judging by the results of our survey presented in Section 2, it can be noted that

the problem with Bošković (2009) analysis is that, for some speakers, LCA seems to be possible even when the first conjunct is masculine. An example is given in (18).

- (18) Računari i mašine su upravljale fabrikom, te je
 computers.MPL and machines.FPL are run.PRT.FPL factory so is
 dosta radnika otpušteno.
 a.lot.of workers fired
 'Computers and machines ran the factory, so a lot of workers were
 fired.'

According to the previous account, LCA when NP₁ is masculine should be ruled out. As we have seen, this is a problematic result. As we will show, LCA is not dependent on the feature composition of the conjuncts, but it depends on more general mechanisms of basic syntactic operations.

The final problem with Bošković's (2009) account is the mechanics by which LCA is derived. In order for this pattern to be derived, Secondary Agree has to be assumed as a way to save the derivation. Secondary Agree is assumed to be another instance of Agree which is triggered after the pied-piping conflict between the &P and NP₁ as valutors of verb's features. Essentially, it is assumed that NP₁ is deactivated after the first instance of Agree, i.e. its interpretable ϕ -features have been deleted after Match. This is why the verb cannot "see" it, and it cannot Match its features any more. Consequently, the verb probes past the NP₁, to target NP₂. In current Minimalist terms, targeting the structurally lower conjunct should be strictly disallowed as a Minimality violation. In general, LCA is the pattern of conjunct agreement that is the greatest challenge for any account trying to tackle it, as in this pattern we have something that always looks as a Minimality violation on the surface, as the verb agrees with the structurally lower element. While previous accounts either have to complicate the Agree mechanism (as the one presented in this section), or to refer to linearity (as the accounts in the following section), what we will show is that Minimality violations do not even arise as an issue when different patterns are derived with different ordering of operations Agree, Merge and Move.

3.2. Post-syntactic Agree

3.2.1. *Marušič, Nevins and Badecker (to appear)*

Two of the most prominent recent accounts on conjunct agreement that argue that at least one part of the agreement process is carried out post-syntactically are Marušič et al. (to appear) and Bhatt and Walkow (2013). Marušič et al. (to appear) carried out experiments on conjunct agreement in Slovenian, based on which they were able to identify three grammars of conjunct agreement: agreement with the closest conjunct, agreement with the highest conjunct, and agreement with the entire &P. They illustrate all three types of agreement with an example repeated here in (19), respectively.

- (19) [&P Krave in teleta] so odšla / odšle / odšli na
 COW.FPL and calf.NPL are go.PRT.NPL go.PRT.FPL go.PRT.MPL ON
 pašo.
 graze
 ‘Cows and calves went grazing.’ (Slovenian)

Marušič et al. (to appear) identify three main strategies that speakers of Slovenian use for different types of agreement. According to their account, the &P computes its own number features via an operation that takes the values of number features of individual conjuncts, after which the features are projected on &P and available for agreement with the verb. In contrast, &P cannot compute and project gender features, and is thus never specified for gender. Default masculine agreement is the result of a grammar in which the verbal probe agrees only with the &P, which is hierarchically the highest target, without looking inside and reaching any of its constituents (in their terms, this grammar has a ‘no peeking’ preference, where it is more important not to look into a complex phrase than to have default values). The probe finds a value for number, but since &P is not specified for gender, default gender value is inserted.⁴ Other kinds of grammars try to avoid default values, and thus allow the probe to look inside the &P in search for gender features, and to find values on the closest conjunct. The closest conjunct can either be the hierarchically higher conjunct, or the one that is linearly closer to the probe,

⁴There is a variation to this kind of agreement with no peeking preference in the situation where one of the conjuncts, or both of them, are underspecified for number (e.g. NPs with 5 and up numerals), where default values are inserted for both number and gender.

depending on the timing of the copying of features from the goal to the probe and flattening of the structure of &P during linearisation.

Marušič et al. (to appear) assume that the operation Agree is carried out in two steps: Agree-Link, which only establishes probe-goal relations in syntax, and the subsequent Agree-Copy, which actually copies the values of features from the goal to the probe. Their claim is that agreement with the highest conjunct is the result of Agree-Copy happening before flattening of structure of &P, while NP₁ is still structurally and hierarchically in a higher position than NP₂, and is thus the most available goal. Agreement with the linearly closer conjunct (agreement with NP₂ when the subject is preverbal, and agreement with NP₁ when the subject is postverbal) is the result of Agree-Copy happening after flattening of the structure of &P, which is a linearisation process by which &P is transformed from a hierarchically ordered structure into a set of linearised terminals. In that case, the NP from which the probe copies the value is the one that is linearly closer to the verb, and thus the most available one.

Even though the account captures the data from Slovenian nicely, an issue that arises is the nature of the process of linearisation. In Closest Conjunct Agreement, it seems that all the information about the hierarchical structure of the &P is not available for the verb any more, it can only "see" the closest conjunct, and copy the value from it. The question is how is the reference to hierarchical order restricted in this kind of agreement, and conversely, how is the reference to linear order restricted in the case of highest conjunct agreement. One option to solve this problem could be to simply somehow restrict Slovenian Closest Conjunct Agreement from referring to hierarchical order once linear order is present, perhaps by some kind of version of an earliness principle. Thus, if the speaker at the moment of a given production was going to use hierarchical structure, there is no need to wait until linearization happens to choose the Agree-Copy controller (Andrew Nevins, pers. comm.). Yet, the nature of flattening and linearisation, and the amount of information on hierarchical structure at each point within these processes still requires further research. We argue that there is no need to refer to linear structure at all, as the choice of the element whose features are copied onto the verb happens already during the standard syntactic Agree.

3.2.2. *Bhatt and Walkow (2013)*

Bhatt and Walkow (2013) propose an account similar to Marušič et al. (to appear) to capture the differences between subject and object conjunct agreement in Hindi-Urdu. Subject conjunct agreement always results in default plural number agreement, and default masculine gender, except when two feminine nouns are conjoined, in which case feminine agreement is also an option. Object agreement typically yields patterns of Closest Conjunct Agreement. Additionally, Hindi-Urdu shows patterns of bidirectional agreement, where in sentences with complex verbal structures the auxiliary can agree with one conjunct, and the participle with the other, when the conjunct phrase is in between the two. It is important to note that CCA in Hindi-Urdu is true agreement with a single conjunct in both gender and number.

One of the main assumptions in Bhatt and Walkow (2013) is that Agree is separated in two steps – Match and valuation. Valuation can happen either in syntax or post-syntactically. Additionally, they assume that probes and goals with unvalued features are active, thus unvalued case features make DPs active, and T is active due to its unvalued ϕ -features. Receiving the values for the unvalued features deactivates them. The explanation for Resolved Agreement with subjects in this account is that in this case T targets only the &P, without looking inside and reaching one of the conjuncts. ϕ -features are available on the &P as the result of computation of number and gender features of the conjuncts. The account, however, does not discuss the exact mechanism of feature resolution, as it is an issue that is orthogonal to the discussion in the paper. They assume that ϕ -features on the &P are linked via the resolution rules to the features of the conjuncts. The process of CCA with conjoined objects is a bit more complicated, and involves the steps in (20).

(20) *Object CCA in Hindi-Urdu*

- v first agrees with the object &P, and assigns case to it, by which &P is deactivated.
- T probes past the ergative subject, to the &P object.
- Since the &P is deactivated, it cannot value T's ϕ -features.
- Assuming that even though it has been deactivated, &P is still visible for Match, T can establish a Match relation with the &P, which will later serve as a search space for the valuation of T's

features at PF (as the features of &P are linked to the features of its conjuncts by resolution rules).

- The Matched features of the conjuncts will be used later to determine the valuator for T's features after linearisation, post-syntactically.

Under this account, objects are visible for Matching, but not for valuation in narrow syntax. Valuation happens at PF, where features for the T probe are provided by the linearly closest conjunct. Linear proximity is defined on the basis of an algorithm presented and discussed in Bhatt and Walkow (2013), based on Kayne (1994 and subsequent work). It relies on c-command relations of the elements involved in agreement, and it derives the CCA pattern, predicting that the probe will always agree with the linearly closer conjunct. It would be very difficult to account for the Highest Conjunct Agreement in Slovenian and Serbo-Croatian using this algorithm without additional stipulations. Furthermore, a potential problem with the crucial assumption that &P does not compute the gender of its conjuncts is raised by 'resolved agreement' with conjoined subjects.

Bhatt and Walkow (2013) give a short comparison of Hindi-Urdu and Serbo-Croatian based on the data in Bošković (2009). They claim that in both languages, CCA is actually a repair strategy that applies when T's features cannot be valued by &P. In Serbo-Croatian, T's ϕ -features cannot be valued by the &P because it does not compute gender, which is why the probe looks for features on the conjuncts, and CCA is the strategy that this language uses to save the derivation. Similarly in Hindi-Urdu, T's features cannot be valued, but for a different reason, because the object &P has previously been deactivated, and cannot serve as a valuator any more. Postsyntactic CCA is a strategy to save the derivation in this case. Crucially, Bhatt and Walkow assume that Agree does not fail if T does not find a valuator in syntax. Match is an intermediate step, which allows for the derivation to be saved later, at PF. In what follows, we adopt a different approach and view patterns of CCA as logical combinations of the operations Merge, Move and Agree. Agreement on T is a direct consequence of agreement with &P, in that the whole derivation has to reflect the order of operations Merge and Agree that apply on &P. This way of agreement will allow us to account both for the resolution of gender features on &P (a fact that Bhatt and Walkow do not capture in the paper), and the resulting agreement on T.

4. Analysis

4.1. Theoretical assumptions

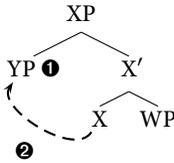
4.1.1. Architecture of the system

We assume a local, derivational model of syntax where all operations are feature-driven. A head bears a set of operation-triggering features, e.g. [\bullet N \bullet] for Merge. Since ‘indeterminacies in rule application’ (Müller 2009) arise, i.e. there is a stage at the derivation at which two different operations could in principle both equally apply, it is necessary to postulate a mechanism for determining which operation takes precedence over another. One option is to order the features on a stack and assume that the order in which operations are carried out is determined by the order in which this stack is comprised (e.g. Heck and Müller 2007, Müller 2011). This, of course, raises the important question of how the order of this stack is determined (assuming it is not entirely free). Instead, we adopt a slightly different approach in assuming that features can be checked by four basic syntactic operations: *External Merge* (MERGE), *Internal Merge* (MOVE), *Downward (Head-Complement) Agree* (\downarrow AGR \downarrow) and *Upward (Spec-Head) Agree*⁵ (\uparrow AGR \uparrow).⁶ We argue that these operations can, in principle, apply in any order to discharge the feature on a given head. Doing so, however, will have (sometimes negative) consequences. For example, if we want a head X to agree with a phrase YP in its specifier, then we have the operations MERGE and \uparrow AGR \uparrow . If MERGE applies first to check [\bullet N \bullet] and is then followed by \uparrow AGR \uparrow to discharge a case probe feature [\ast CASE \ast], for example, this will result in an order where MERGE feeds \uparrow AGR \uparrow :

⁵We also assume the *Spec-Head Bias* (see Müller 2009, Assmann et al. to appear), which states that Agree with the specifier is preferred to Agree under c-command. Furthermore, assuming a local, derivational syntax, Upward Agree can only ever be Spec-Head Agree since there will be no other higher structure present at the point at which \uparrow AGR \uparrow applies – thus \uparrow AGR \uparrow is always trivially Spec-Head Agree. Syntactic objects introduced by higher heads will come too late to undergo this type of Agree in that cycle.

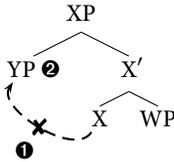
⁶The operations under this architecture are still ‘feature-driven’ but in slightly different sense. an operation such as movement is not triggered by an individual feature (e.g. \bullet N \bullet) but the battery of operations that we propose present possible ways to check these features. For example, if a head such as *v* has a feature triggering (External) Merge and a probe feature assigning accusative case, these are an unordered set of features. The operations we assume are just ways to check these features. Application of MERGE will check the \bullet N \bullet feature. If there is no such feature, its application is vacuous (but it still applies in some sense).

(21) MERGE > ↑AGR↑:

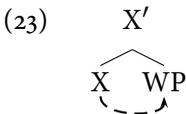


If the reverse order (↑AGR↑ > MERGE) were to apply, then ↑AGR↑ would not find a goal since there is no DP in the specifier yet.

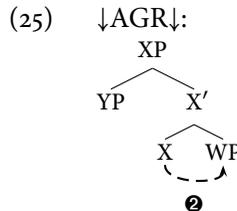
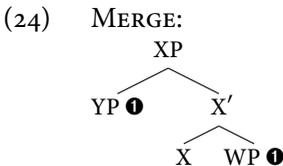
(22) ↑AGR↑ > MERGE:



This would therefore be an instance of *counterfeeding* of ↑AGR↑ as it would have applied if the order had been the reverse. Finally, it is important to note that this architecture requires a slightly weaker definition of cyclicity. Under the assumption of Strict Cyclicity, an operation such as ↓AGR↓ would apply at the X' cycle, before MERGE of the specifier:



Under our approach, the application of MERGE will discharge *all* c-selectional features simultaneously. This means that if a head merges both a complement and a specifier and MERGE precedes ↓AGR↓, for example, then both arguments are first merged (24) and then ↓AGR↓ applies (25). Therefore, the notion of a cyclicity here is that each projection (XP) is a cyclic domain (cf. McCawley 1988).



4.1.2. *Uniform order of application*

In the previous section, we proposed that the order of operations is in principle free (yet, some orders will lead to a crash). Additionally, we argue that the order of application of operations is maintained throughout. We pursue an argument similar to Assmann et al. (to appear), who argue that the order Merge > Agree at vP, which is responsible for deriving ergative patterns of argument encoding, is maintained at TP, thereby deriving the impossibility of A-bar movement of ergatives.

Accordingly, we also assume that whichever order of operations is decided on for a particular head (or phase under the assumption that every phrase is a phase Müller (2011)), this order must be maintained for the every other application of operations in the derivation. We summarize this as follows:

- (26) *Uniform order of application:*
 If the order of operations $\alpha > \beta > \gamma$ holds at a given stage of the derivation s , then there can be no stage of the derivation s_{n+1} which does not conform to this order.

For our purposes, it will mean whichever order of operations applies at the &P level, the same order of operations must hold at TP, for example.

4.1.3. *Move over Merge*

An additional assumption is that the relative order of the operations MOVE and MERGE is constrained by the following condition:

- (27) *Move over Merge:*
 In any given order of operations, the following must hold: MOVE > MERGE.

A preference for Move over Merge has also been suggested by Chomsky (2013) appealing to Minimal Search (Chomsky 2008) and the idea that more basic operations precede more complex ones (Sanders 1974, Koutsoudas et al. 1974). Chomsky argues that Internal Merge (Move) ‘is simpler, since it requires vastly less search than EM (which must access the workspace of already generated objects and the lexicon)’ (2013: 41). Furthermore, Shima (2000: 376) has argued that Move should be preferred over Merge as ‘it is more economical to look only at an already formed structure than to look at, not only an existing

structure, but also lexical items in the numeration, or at an independent syntactic object'. See Deal (2009) for a further argument in favour of Move over Merge based on economy considerations.

Furthermore, the condition on MOVE defined in (28) also holds, which is a combination of the *Earliness Principle* and the claim by Chomsky (1995) that certain operations apply if they 'have an effect on outcome'.

(28) *Earliness condition on Move:*

MOVE applies as early as possible and only if it has a (positive) effect on outcome (assuming (27) also holds).

Thus, MOVE is an optional operation, but if it does apply, it must precede MERGE.

4.1.4. *Fallibility of Agree*

Another important assumption for the analysis to follow can be summarized as follows:

(29) *Fallibility of ϕ -agreement:*

The derivation crashes as soon as T cannot find a goal for ϕ -agreement.

Crucially, we assume that this is not necessarily the case for gender agreement outside of T. In order to be able to model opaque interactions such as counterfeeding as shown in (22), it is necessary that certain operations can underapply. Our analysis rests on the fact that Agree operations on & such as \uparrow AGR \uparrow and \downarrow AGR \downarrow can fail to apply in certain cases. In order to achieve this, we have to assume that failure of the gender probe on & to find a goal does not lead to crash. We believe there are, perhaps, a couple of reasons for this assumption. First of all, gender agreement in a conjunction cannot be viewed as a 'one chance operation' since in the default case (Resolved Agreement), it is assumed that the gender probe will get a value from each conjunct. As such, features like these, which allow multiple values, can afford to have Agree with one of the conjuncts fail since there is the chance that a later Agree relation will provide a value. This seems different from ϕ -agreement on T as we do not have agreement with both subject and object in Serbo-Croatian. As such, we can view the ϕ -probe on T as an obligatorily 'single-value' feature and therefore it cannot afford to allow agreement to be fallible since this would incorrectly result

in object agreement should subject agreement fail. This kind of feature has to find a goal (the subject) on its first try.

An empirical argument for the fallibility of gender agreement outside of T comes from the fact that gender agreement on participles in Romance is only ever present as a reflex of movement. Consider the French examples in (30), where only movement leads to gender agreement on the participle.

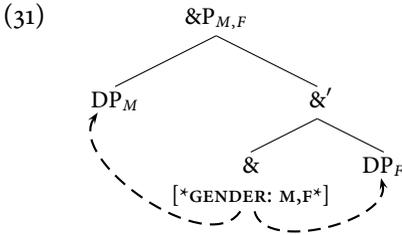
(30) *Participle agreement in French* (Kayne 1989):

- a. Paul a repaint / *repaint-es les chaises
 Paul has repainted repainted-FEM.PL the chairs.FEM.PL
 ‘Paul has repainted the chairs.’
- b. Je me demande [_{CP} [combien de tables]_k Paul a
 I me ask how.many of tables.FEM.PL Paul has
 *repaint / repaint-es t_k]
 repainted repainted-FEM.PL
 ‘I wonder how many tables Paul has repainted.’

Implementing the analysis of Kayne (1989) and following Georgi (2014), this agreement is the result of an Upward Agree relation of *v*. This is fed only in cases where a DP has to move to the phase edge to undergo further movement. This successive-cyclic movement feeds gender agreement. In cases without movement, gender agreement is not fed and therefore it applies vacuously (i.e. it does not find a suitable goal). We therefore make the same assumption about the &-head in Serbo-Croatian, namely that, with the exception of T, it is possible for Agree to fail to find a goal.

4.2. Deriving conjunct agreement

Now, we turn to our analysis of the patterns of conjunct agreement in Serbo-Croatian. An important assumption is that the &-head bears a separate probe for gender and number (cf. Bejar 2003) and can carry out Agree with its arguments. Thus, it is possible for the gender probe on &P [**gender:□**] to have multiple values, which are projected to the root node as in (31):



As noted above, we assume that order in which basic operations apply is in principle free (but only some will result in licit derivations). The different orders of operations on & will result in the & obtaining different values for its gender feature. The orders deriving the patterns discussed in Section 2 are given below:

(32) *Possible orderings of operations for conjunct agreement:*

- | | | | | | | | | |
|--------|---|-------|---|-------|---|-------|---|--------------------|
| (MOVE) | > | MERGE | > | ↑AGR↑ | > | ↓AGR↓ | → | Resolved Agreement |
| (MOVE) | > | MERGE | > | ↓AGR↓ | > | ↑AGR↑ | → | Resolved Agreement |
| (MOVE) | > | ↑AGR↑ | > | MERGE | > | ↓AGR↓ | → | LCA |
| (MOVE) | > | ↓AGR↓ | > | MERGE | > | ↑AGR↑ | → | FCA (postverbal) |
| (MOVE) | > | ↓AGR↓ | > | ↑AGR↑ | > | MERGE | → | FCA (postverbal) |
| (MOVE) | > | ↑AGR↑ | > | ↓AGR↓ | > | MERGE | → | FCA (preverbal) |

In some cases, e.g. LCA, the fact that ↑AGR↑ applies before MERGE means that ↑AGR↑ is counterfered by MERGE and & will not agree with the highest conjunct. The patterns above will each be discussed in detail below. The welcome results of the assumption in (26) such as ruling out LCA postverbally (Lowest Conjunct Agreement (52)) will also be shown. In the following sections, we will demonstrate the main patterns of conjunct agreement (RA, LCA, FCA) on the basis of the example (6) repeated below. The patterns we will analyse are the following:

- (33) [_{&P} Sve haljine i sva odela] su juče prodata /
 all dress.FPL and all suit.NPL are yesterday sell.PRT.NPL
 prodati / ?prodate.
 sell.PRT.MPL sell.PRT.FPL
 'All dresses and all suits were sold yesterday.'

- (34) Juče su prodate / prodati / *prodata [_{&P} sve
 yesterday are sell.PRT.FPL sell.PRT.MPL sell.PRT.NPL all
 haljine i sva odela].
 dress.FPL and all suit.NPL
 'All dresses and all suits were sold yesterday.'

Example (33) shows that if the conjunct phrase occurs preverbally, the agreement options are (i) agreement with the linearly closest conjunct (LCA), (ii) default masculine agreement (RA) and, for some speakers, (iii) agreement with the first conjunct (Highest Conjunct Agreement) (c.f. patterns of agreement in Slovenian (19), that our account is able to derive). With postverbal conjunct phrase (34), the verb can agree with the closest conjunct (FCA), show default agreement (RA) but, importantly, it cannot show agreement with the last conjunct (Lowest Conjunct Agreement). In the following, we show how the order of operations inside &P determines both the gender value of &P and whether it occurs pre- or postverbally.

4.2.1. Resolved agreement

Recall that Resolved Agreement (RA) is manifested as either agreement with the same gender values when conjuncts match in gender (i.e. masculine or feminine agreement with two masculine or feminine conjuncts), or as masculine agreement when gender features on conjuncts do not match. Examples (2)-(5) showed that RA may yield different patterns of agreement.⁷ Here, we concentrate on examples (33) and (34) above. In these examples, we see that RA (default masculine) is available both pre- and postverbally. Therefore, we want to derive the fact that the values of both conjuncts are computed (in order to 'resolve' them with default agreement) and that movement to Spec-TP appears to be optional.

We can capture this by assuming that Resolved Agreement is the result of MERGE preceding, and therefore feeding, the operations $\uparrow\text{AGR}\uparrow$, and $\downarrow\text{AGR}\downarrow$. The relative order of $\uparrow\text{AGR}\uparrow$ and $\downarrow\text{AGR}\downarrow$ does not play a role at &P, and thus both orders in (35) result in RA:

⁷It should be noted here that two feminine conjuncts do not trigger default agreement if they are animate. Still, feminine inanimate conjuncts can trigger default agreement, and so can neuter conjuncts, either animate or inanimate. We consider the default masculine agreement in these cases to be the result of RA. If the values do not match, they are then resolved via the process of Impoverishment resulting in gender neutralization (default masculine agreement).

(35) *Orders for Resolved Agreement:*

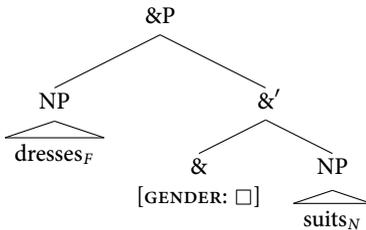
- a. (MOVE) > MERGE > ↑AGR↑ > ↓AGR↓
- b. (MOVE) > MERGE > ↓AGR↓ > ↑AGR↑

Let us first illustrate a derivation involving the order in (35a) with the example in (33), repeated here as (36).

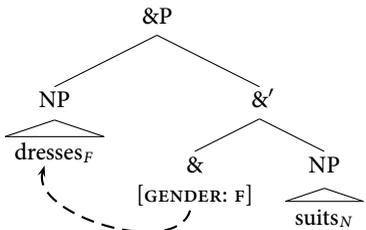
- (36) [_{&P} Sve haljine i sva odela] su juče prodata /
 all dress.FPL and all suit.NPL are yesterday sell.PRT.NPL
 prodati / ?prodate.
 sell.PRT.MPL sell.PRT.FPL
 ‘All dresses and all suits were sold yesterday.’

As MOVE applies vacuously at the &P, the first operation which applies is MERGE where the &-head merges its two argument NPs (37). Next, ↑AGR↑ applies and the conjunction copies the gender value from the higher NP (38). Subsequently, ↓AGR↓ applies (39) and the conjunction copies the value from the lower NP. After Agree has taken place, the features of the conjuncts are present at &P and available for agreement with T. Since the values (N+F) do not match, they are resolved to masculine.

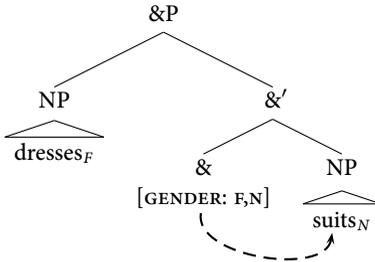
(37) MERGE:



(38) ↑AGR↑:

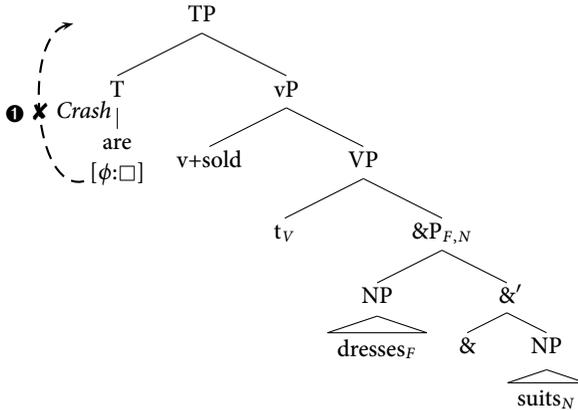


(39) ↓AGR↓:



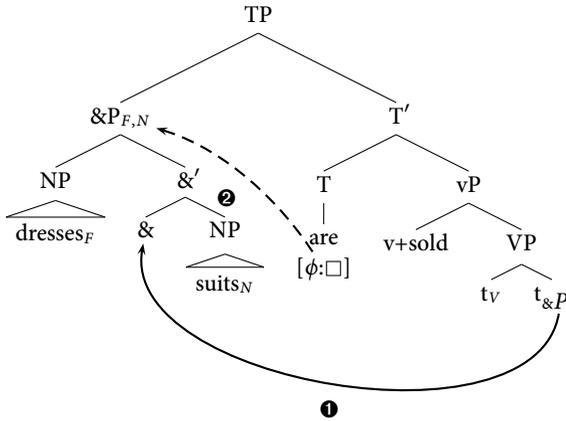
Now, assuming that order of operations in (35a) has to be maintained at TP, MOVE will apply only if it does not have a negative effect on outcome, i.e. as long it does not lead to a crash. Since MERGE applies vacuously at TP (since there is nothing in the numeration left to merge), the next operation to apply is ↑AGR↑. If MOVE does not apply, then ↑AGR↑ will probe upwards and not find a goal (since nothing has been merged in Spec-TP). Following our assumptions about the fallibility of ϕ -agreement on T, this will lead to a crash:

(40) (MERGE) > ↑AGR↑ > ↓AGR↓:



If MOVE does apply, it will *feed* ↑AGR↑ and avoid a crash:

(41) MOVE > (MERGE) > ↑AGR↑ > ↓AGR↓:

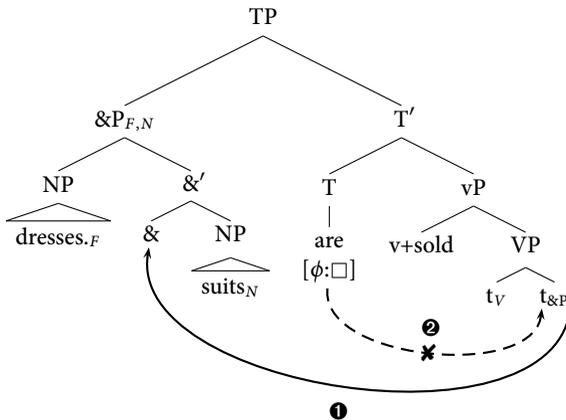


Thus, the order in (35a) derives resolved agreement in a preverbal position since the order of operations at &P (↑AGR↑ > ↓AGR↓) forces movement of the conjunct phrase at TP.

The second order of operations in (35b) at &P level will give the exact same outcome as in (37)-(39), with the difference that ↓AGR↓ applies before ↑AGR↑. Since both of these options follow MERGE, their order is irrelevant – & will find both values and project them to &P.

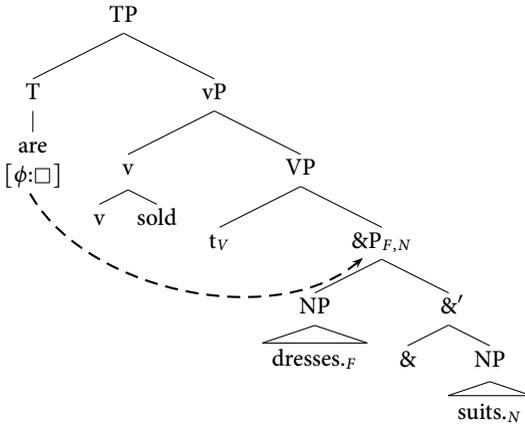
At TP, the relative of order of ↑AGR↑ and ↓AGR↓ does matter since the fallibility of φ-agreement on T requires that it find a goal with its first operation. Since this provides ↓AGR↓ as the first operation to apply after vacuous application of MERGE, MOVE cannot apply as doing so would bleed ↓AGR↓:

(42) MOVE > (MERGE) > ↓AGR↓ > ↑AGR↑:



Thus, the application of MOVE with this order is blocked. The only way to avoid a crash at TP with this order of &P operations is to leave the conjunct phrase *in situ* and T agrees with &P via $\downarrow\text{AGR}\downarrow > \uparrow\text{AGR}\uparrow$ in this position:

(43) (MERGE) > $\downarrow\text{AGR}\downarrow > \uparrow\text{AGR}\uparrow$:



What we see is that both of these orders derive the possibility for RA to occur both pre- and postverbally. The order immediately following MERGE at &P determines whether MOVE must apply at TP. In the following sections, we will see this idea in action again in the analysis of Closest Conjunct Agreement.

4.2.2. Last conjunct agreement

An important point about the Closest Conjunct Agreement phenomena discussed in this and subsequent sections is that the nature of ‘closest’ is entirely illusory. What we in fact have in almost every case, and certainly with LCA, is actually agreement with an entire conjunct phrase which has only inherited the features of one of its conjuncts, in this case, the final NP.

Last Conjunct Agreement (LCA) is a pattern of CCA in which the verb agrees with the second/last conjunct when the &P is in a preverbal position. Recall from the examples (33) and (34) (repeated below) that LCA is only acceptable when the conjunct phrase is in preverbal position. It is entirely ungrammatical if the &P is postverbal.

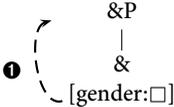
- (44) [_{&P} Sve haljine i sva odela] su juče prodata /
 all dress.FPL and all suit.NPL are yesterday sell.PRT.NPL
 prodati / ?prodate.
 sell.PRT.MPL sell.PRT.FPL
 ‘All dresses and all suits were sold yesterday.’
- (45) Juče su prodate / prodati / *prodata [_{&P} sve
 yesterday are sell.PRT.FPL sell.PRT.MPL sell.PRT.NPL all
 haljine i sva odela].
 dress.FPL and all suit.NPL
 ‘All dresses and all suits were sold yesterday.’

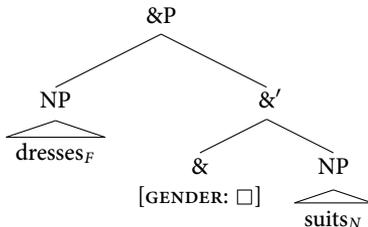
Following the logic above, we can capture this by assuming that LCA is derived from an order of operations at &P where $\uparrow\text{AGR}\uparrow$ precedes $\downarrow\text{AGR}\downarrow$, since movement to Spec-TP is enforced. The pattern in question is given in (46) below.

- (46) (MOVE) > $\uparrow\text{AGR}\uparrow$ > MERGE > $\downarrow\text{AGR}\downarrow$

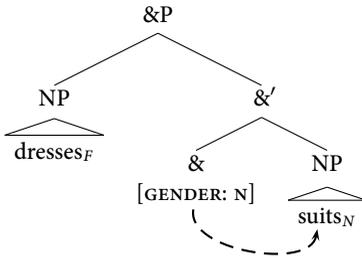
Here, MERGE applies after $\uparrow\text{AGR}\uparrow$, thereby counterfeeding it. The derivation proceeds as follows: MOVE applies vacuously at the &P level and $\uparrow\text{AGR}\uparrow$ applies before MERGE. Since there is still no goal that this operation can target, it will not find a goal (47) and thus applies vacuously. The next operation is Merge of the NPs (MERGE) (48). Finally, $\downarrow\text{AGR}\downarrow$ applies and the &-head receives the gender value of only the lowest conjunct (49).

As a result, the &P node bears the features of only the second conjunct.

- (47) $\uparrow\text{AGR}\uparrow$:
- 

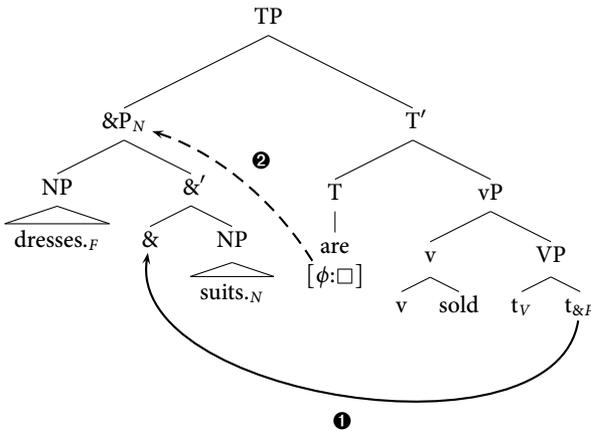
- (48) MERGE:
- 

(49) ↓AGR↓:

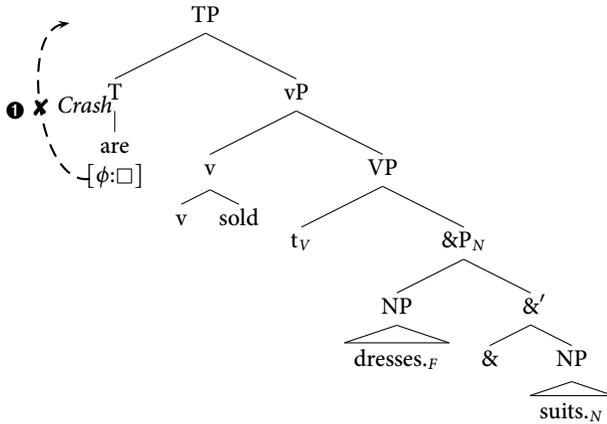


At the TP level, the previous order of operations must be maintained. There are again two possible scenarios depending on whether MOVE applies or not. If MOVE takes place, it will feed the next operation ↑AGR↑ and Agree will apply (50):

(50) MOVE > ↑AGR↑ > (MERGE) > ↓AGR↓:



If MOVE does not apply thereby leaving the &P in its postverbal base position, then ↑AGR↑ will probe upwards but not find a goal (i.e. it will be counterfed by MOVE). Following our assumptions about the ϕ -probe on T, the derivation crashes as soon as T cannot find a goal.

(51) $\uparrow\text{AGR}\uparrow > (\text{MERGE}) > \downarrow\text{AGR}\downarrow$:

This means that MOVE *has* to apply at the TP level with the order deriving LCA inside the &P (46), there is no optionality. As such, this means that we rule out cases of LCA postverbally since movement to Spec-TP (i.e. feeding of $\uparrow\text{AGR}\uparrow$) is the only way to avoid a crash. This has the welcome consequence of excluding postverbal LCA or what we called *Lowest Conjunct Agreement* repeated below in (52):

(52) *Lowest conjunct agreement*:

*Juče su prodata [_{&P} sve haljije i sva odela].
 yesterday are sell.PRT.NPL all dress.FPL and all suit.NPL

‘All suits and all dresses were sold yesterday.’

The crucial point of this analysis is that LCA is agreement with the *entire* conjunct phrase that has only acquired the features of the second conjunct.

4.2.3. First conjunct agreement

First Conjunct Agreement (FCA) is the pattern of CCA in which the verb agrees with the first conjunct in a postverbal subject conjunct phrase.

We saw in (52) that it is not possible for the conjunct phrase to appear postverbally under the order leading to &P having the features of only the last conjunct. Recall from the example under discussion (repeated again below) that in preverbal position, FCA is marginal/accepted by some speakers,

whereas the canonical case of FCA (also cross-linguistically) is in a postverbal position. In (54) it looks like the verb is agreeing with linearly closest conjunct (the first).

- (53) [_{&P} Sve haljine i sva odela] su juče prodata /
 all dress.FPL and all suit.NPL are yesterday sell.PRT.NPL
 prodati / ?prodate.
 sell.PRT.MPL sell.PRT.FPL
 'All dresses and all suits were sold yesterday.'
- (54) Juče su prodate / prodati / *prodata [_{&P} sve
 yesterday are sell.PRT.FPL sell.PRT.MPL sell.PRT.NPL all
 haljine i sva odela].
 dress.FPL and all suit.NPL
 'All dresses and all suits were sold yesterday.'

We will see that there is a number of possible orders that can derive FCA. One such order involves counterfeeding of $\downarrow\text{AGR}\downarrow$ in (55).

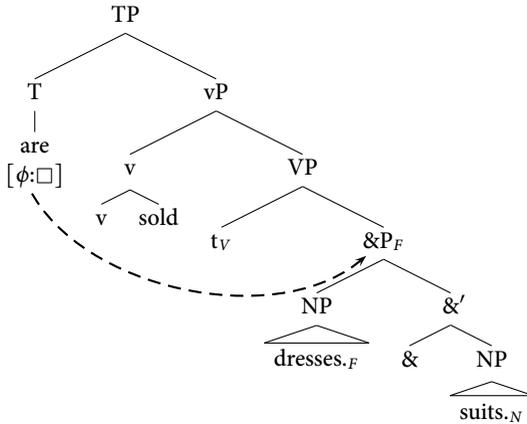
- (55) (MOVE) > $\downarrow\text{AGR}\downarrow$ > MERGE > $\uparrow\text{AGR}\uparrow$

The idea is the same as with previous cases, since $\downarrow\text{AGR}\downarrow$ applies 'too early' its application is counterfed and thus vacuous – & will not agree with the last conjunct because it is not yet present in the structure. The derivation is as follows: MOVE does not apply and $\downarrow\text{AGR}\downarrow$ is counterfed by MERGE (56). MERGE introduces the two NP arguments (57). Finally, $\uparrow\text{AGR}\uparrow$ applies agreeing with the higher NP in its specifier, and only the features of the higher NP are projected to the &P (58). What we have is a conjunct phrase that bears only the gender feature of the first conjunct.

- (56) $\downarrow\text{AGR}\downarrow$:
 &P
 |
 &
 [GENDER: □]
- 

The other option where MOVE does not apply, however, will converge as $\downarrow\text{AGR}\downarrow$ is not bled by MOVE. Here, $\downarrow\text{AGR}\downarrow$ will agree with the &P bearing features of the first conjunct (60):

(60) $\downarrow\text{AGR}\downarrow > (\text{MERGE}) > \uparrow\text{AGR}\uparrow$:



The pattern outlined in this section derives FCA as a result of T agreeing with the whole &P, which has inherited the features of its highest conjunct. As with LCA, we argue that the impression that it is agreeing with the linearly closest conjunct is an illusion. In the following section, we discuss the two remaining orderings of operations that can also derive FCA both postverbally and preverbally.

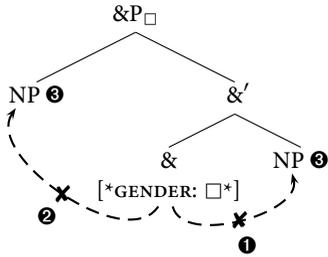
4.2.4. Counterfeeding of Agree – two additional patterns of FCA

As noted previously in (32), there are two possible orderings of operations in which both operations $\uparrow\text{AGR}\uparrow$ and $\downarrow\text{AGR}\downarrow$ are counterfed by MERGE, repeated here in (61).

- (61) a. (MOVE) > $\downarrow\text{AGR}\downarrow$ > $\uparrow\text{AGR}\uparrow$ > MERGE
- b. (MOVE) > $\uparrow\text{AGR}\uparrow$ > $\downarrow\text{AGR}\downarrow$ > MERGE

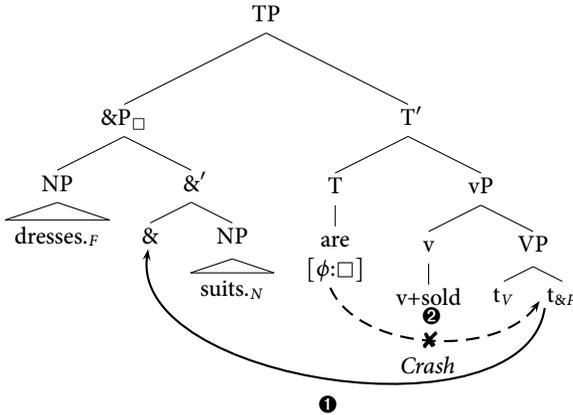
These orders result in both Agree operations being counterfed since they both apply before MERGE. As a result, the &P will not receive a value and thus &P will remain underspecified for gender features (indicated by \square in (62)).

(62)



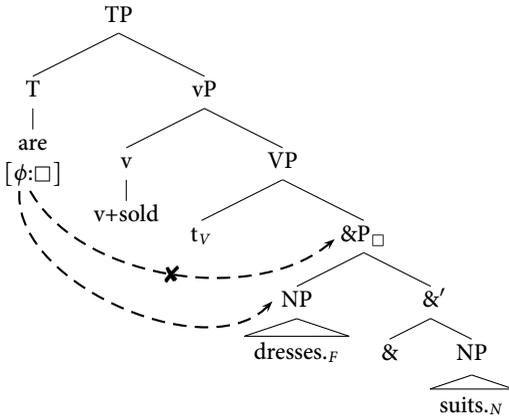
At TP, the order of operations in (61a) will again result in postverbal FCA. If MOVE applies, it will bleed $\downarrow\text{AGR}\downarrow$, as T will not find a goal leading to a crash:

(63) MOVE > $\downarrow\text{AGR}\downarrow$ > $\uparrow\text{AGR}\uparrow$ > (MERGE):



If MOVE does not apply, then the next operation $\downarrow\text{AGR}\downarrow$ finds the &P. In this case, the root node of &P is not a legitimate goal for Agree since it does not have a valued gender feature. Instead, the closest goal for T is the structurally higher first conjunct in Spec-&P and T agrees with this:

(64) $\downarrow\text{AGR}\downarrow > \uparrow\text{AGR}\uparrow > (\text{MERGE})$:

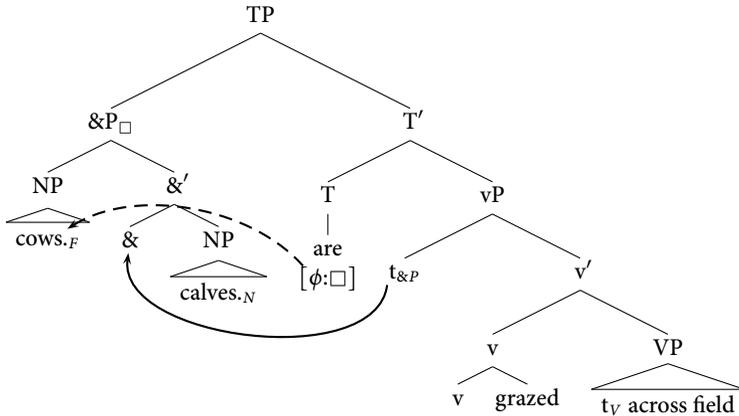


The order of operations in (61b) results in the rare pattern of preverbal FCA, or Highest Conjunct Agreement (65).

(65) [_{&P} Krave i telad] su mirno pasle po
 cows.FPL and calves.NPL are peacefully graze.PRT.FPL across
 polju.
 field
 ‘Cows and calves grazed peacefully in the field.’

At &P level, counterfeeding of both Agree operations will leave the &P unspecified for gender features. Subsequently, at TP, the derivation will only converge if MOVE applies. If it does not apply, $\uparrow\text{AGR}\uparrow$ will not find a goal. Thus, in the order where MOVE applies, movement of the &P feeds $\uparrow\text{AGR}\uparrow$. Since &P has not been valued for gender, however, the &P node does not constitute a goal for the Agree relation. As was assumed for FCA in (64), $\uparrow\text{AGR}\uparrow$ can also ‘look inside’ the &P and find the structurally higher, first conjunct:

(66) MOVE > ↑AGR↑> ↓AGR↓> (MERGE):



Preverbal FCA was an attested pattern for some speakers in our survey, yet it is somewhat rare. Its rarity in comparison to postverbal FCA might be attributed to the fact that there is one very specific order of operations (in (66)), which derives it, whereas postverbal FCA can be derived by multiple orders.

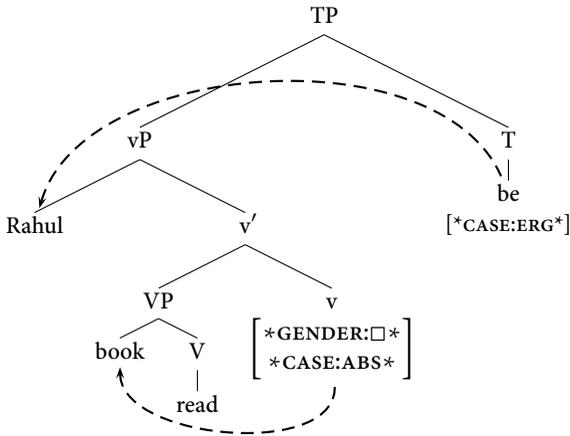
4.3. Cross-linguistic implications: LCA *in situ* in Hindi

The question at this point is whether the analysis developed here for Serbo-Croatian can be extended to cases of conjunct agreement in typologically-distinct languages such as Hindi-Urdu (Bhatt and Walkow 2013). In this section, we will show that the mechanism of conjunct agreement presented here can deal with the data presented in Bhatt and Walkow (2013). We will see that Closest Conjunct Agreement in a head-final language such as Hindi is actually LCA *in situ* (an order which was ungrammatical in Serbo-Croatian). We will show how this can be derived from typological differences between Hindi-Urdu and SC. Bhatt & Walkow show that gender agreement in Hindi is with the non-overtly case-marked DP (or absolutive marked DP) (67).

- (67) a. Rahul-ne kitaab par.h-ii thii
 Rahul.M-ERG book.F read-PFV.F be.PST.F.SG
 ‘Rahul had read the book.’
- b. Ram-ko ek ghazal likhn-ii hai
 Ram.M-DAT a ghazal.F write.INF-F be.PRS.SG
 ‘Ram has to write a ghazal.’

Recall from the discussion in Section 3.2.2 that the assumption that *v* assigns absolutive case to the object &P was crucial for ensuring its deactivation and therefore unavailability for Agree. If we adopt the assumption that *v* assigns absolutive case⁹, then it seems that there is a link between this case and gender agreement. Let us take this as an indication that these operations are in fact carried out by the same head. This means that in Hindi, *v* is responsible for both gender agreement and absolutive assignment. Thus, the derivation of (67a) would look as follows:

(68)



Bhatt and Walkow (2013) show that there is an asymmetry between conjoined subjects and objects. Conjoined subjects only allow for resolved agreement (69), whereas conjoined objects tend to result in Closest Conjunct Agreement (70):

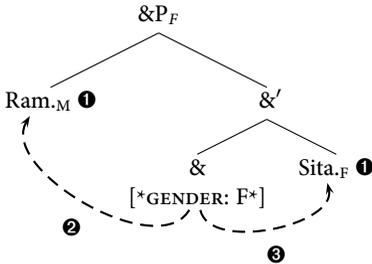
(69) [&P Ram aur Sita] gaa {rahe hāĩ / *rahii hai}
 Ram.M and Sita.F sing PROG.MPL be.PRS.PL *PROG.F be.PRS.SG
 ‘Sita and Ramesh are singing.’

(70) Main-ne [&P ek chaataa aur ek saaRii] (aaj)
 I-ERG an umbrella.MASC.SG and a saaree.FEM.SG today
 khariid-ii.
 buy-PERF.FEM.SG
 ‘I bought an umbrella and a saree.’ (Kachru 1980: 147)

⁹Note that this is contrary to Müller (2009) who, following Murasugi (1992), assumes that *v* assigns ergative case.

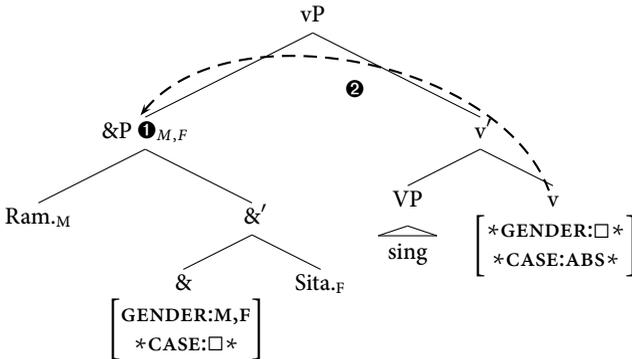
We can account for these data as follows: If we want to derive the apparent link between gender agreement and absolutive assignment in Hindi, then we should place both operations on *v*.¹⁰ Recall from the previous section that Resolved Agreement is derived by both Agree operations following MERGE. Thus, the order of operations for the &P in (69) will be as follows:

- (71) (MOVE) > MERGE > ↑AGR↑ > ↓AGR↓:



Now, this order of operations must be repeated at all later cycles following (26). The cycle of interest is *v*P rather than TP. MOVE applies vacuously since there is nothing to move. Next, MERGE applies on *v* merging the external argument &P. Subsequently, ↑AGR↑ applies assigning absolutive case to the conjunction (note the absence of *-ne* ergative marking) and also agrees with the entire &P in gender. The clashing M and F features are resolved as in Serbo-Croatian to default masculine:

- (72) (MOVE) > MERGE > ↑AGR↑ > ↓AGR↓:



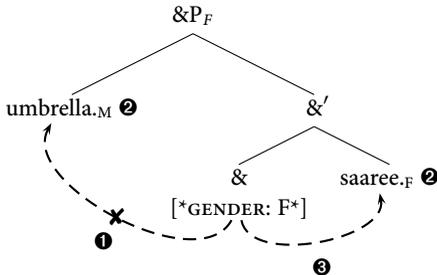
¹⁰The possibility for separate agreement of the participle and the auxiliary suggests that T may also probe for gender separately in certain cases. In the more standard cases discussed, let us assume that T agrees with *v* to inherit the gender value it finds.

For the example (70) where we have agreement with the linearly closest conjunct, we will analyse this as LCA *in situ*. Recall that the order deriving LCA has $\uparrow\text{AGR}\uparrow$ apply before MERGE and thereby be counterfed:

- (73) *Order deriving LCA:*
 (MOVE) > $\uparrow\text{AGR}\uparrow$ > MERGE > $\downarrow\text{AGR}\downarrow$

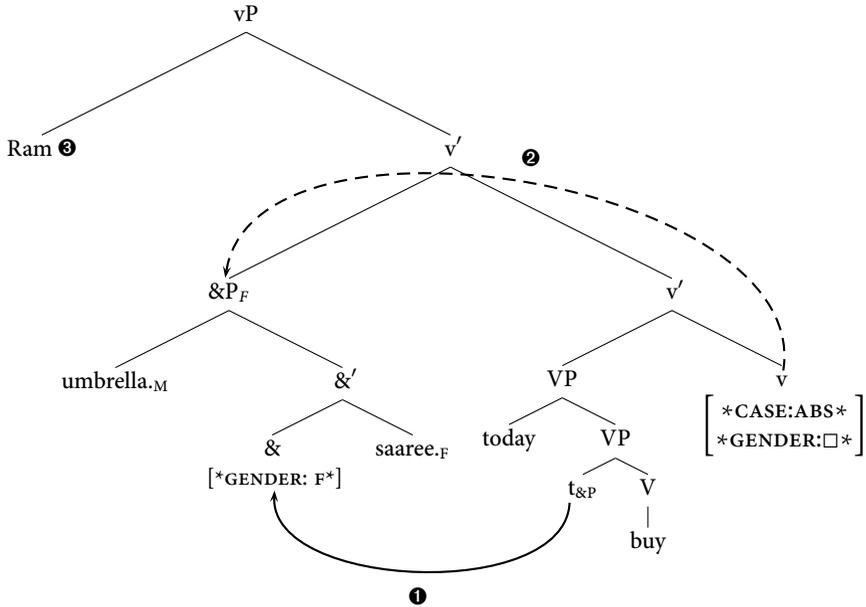
This order of operations will result in the &P projecting the features of only the second conjunct.

- (74) (MOVE) > $\uparrow\text{AGR}\uparrow$ > MERGE > $\downarrow\text{AGR}\downarrow$:



Crucially, at the vP level, the fact that $\uparrow\text{AGR}\uparrow$ applies first means that movement of the object &P to Spec-vP will be enforced to avoid a crash. Evidence that &P is in fact higher than the canonical object position (sister of V) is shown by the fact that an adverb can occur between the object &P and the verb in (70). Therefore, MOVE applies first feeding $\uparrow\text{AGR}\uparrow$ and thus gender agreement and absolutive assignment to the object &P. The following operation is MERGE which introduces the external argument *Ram*.

(75) (MOVE) > ↑AGR↑ > MERGE > ↓AGR↓:



The relative orderings of $\uparrow\text{AGR}\uparrow$ and MERGE ensure that it is the moved object with which v agrees as the $\uparrow\text{AGR}\uparrow$ applies before MERGE. When T is merged, it will assign ergative to the external argument *Ram*. We see here that the general mechanism outlined in this paper can be extended to other cases of CCA in other languages with promising results. The typological differences between the locus of gender agreement (e.g. T vs. v) may be a contributing factor to why CCA takes somewhat different forms in Hindi and Serbo-Croatian and furthermore why LCA *in situ* is possible in Hindi but not in Serbo-Croatian.

5. Conclusion

In this paper, we have argued that the notion of ‘closest’ in Closest Conjoint Agreement is illusory. What may look like linearly conditioned agreement on the surface can in fact be handled with a relatively standard approach to Agree (assuming both Upward and Downward Agree as possibilities). What we then need to derive the various patterns of conjoint agreement is to assume variability in the order of application of basic syntactic operations. Do-

ing so entails entertaining some degree of fallibility of operations in order for them to be successively ‘counterfed’. The advantage of this approach is that one can retain the basic assumption that &P computes its own gender values. This assumption was abandoned in approaches such as Bošković (2009) and Bhatt and Walkow (2013) but seems necessary for Resolved Agreement. Thus, in accounting for Closest Conjunct Agreement, one loses the explanation of the more readily available option of Resolved Agreement (a.k.a. default agreement). Our approach does not suffer from this drawback since the standard case is the most transparent (in the sense of Kiparsky 1973) as both operations apply. Cases of Closest Conjunct Agreement (LCA and FCA) are derived from one (or both) of the Agree operations applying ‘too early’ and thus being counterfed by MERGE. They are ‘opaque’ in the sense that it is not clear from looking at the surface representation why a certain Agree operation failed to apply – this is to do with the derivational history.

The assumption that the basic order of operations is fixed throughout the derivation makes interesting predictions with regard to the optionality of movement. The availability of certain types of agreement (FCA vs. LCA) depends on the position of the conjunct phrase (postverbal vs. preverbal). It is this fact that gives the impression that this is a linear phenomenon. We have shown that whether the &P moves (and becomes preverbal) or remains *in situ* follows from the order of operations computing the gender at the &P level. If an operation applies early at &P and is thus counterfed (e.g. $\uparrow\text{AGR}\uparrow$ in the case of LCA), then this operation will also apply early at TP requiring MOVE to apply before it and thus move the &P to Spec-TP and avoid a crash.

The main benefit of this approach is that it is possible to derive all the patterns in question from the factorial typology of four basic syntactic operations. Furthermore, there is no order which does not lead to an attested pattern. Additionally, the assumption of *Uniform Order of Operations* (26) leads to correctly ruling out LCA postverbally in Serbo-Croatian. As a result, it is not necessary to stipulate mechanisms of deactivation (Bošković 2009, Bhatt and Walkow 2013) in order to circumvent Minimality (for LCA) or further complicate the Agree mechanism (i.e. extend it into the postsyntactic component) in order to be able to make reference to linear order. It is not that our analysis is without somewhat non-standard assumptions. The fallibility of syntactic operations such as Agree is not yet widely assumed (cf. Preminger 2011, 2014), however we believe that recent work has shown that variability in the order of syntactic operations can be successful in deriving variation in languages

(cf. Müller's 2009 analysis of argument encoding). Furthermore, maintaining the order of syntactic operations has been shown to make correct predictions with regard to wh-movement in ergative languages (Assmann et al. to appear). The challenge for an approach such as the present one is how it can extend to head-final languages such as Hindi. In Section 4.3, we have shown that the mechanism is flexible enough to handle this kind of typological diversity. As the empirical domain surrounding conjunct agreement becomes clearer (e.g. with regard to the agreement possibilities with more than two conjuncts), one will require a system powerful enough to handle a degree of variability across languages. However, the main message of this paper should be that once one scratches below the surface, phenomena which at first blush seemed to require either complicated, non-standard syntactic mechanisms or complex post-syntactic PF machinery, can in fact be sufficiently, if not better, handled in syntax proper.

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