Closest Conjunct Agreement is an Illusion:
Evidence from gender agreement in Serbo-Croatian

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Abstract

Much recent work on *Closest Conjunct Agreement* has argued that agreement must be sensitive to linear order. In this paper, we argue that the 'closest' aspect of this phenomenon is in fact illusory. What may, at first glance, seem like linearly-conditioned agreement can instead by 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 derives only the attested patterns in Serbo-Croatian and rules out ungrammatical structures without recourse to linear order.

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 they make linearity relevant for Agree (Bhatt & Walkow 2013; Marušič et al. 2015). 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 takes place in syntax or is post-syntactic) and the exact mechanism of agreement. We will focus 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 Merge, Move and Agree. The main claim is that all patterns of conjunct agreement can be derived in Narrow Syntax from the order in which these operations apply at the &P level, and subsequently, TP. The operations available to discharge the features on & are MOVE, MERGE, and both Upward (Spec-Head) Agree ↑AGR↑ and standard Downward Agree ↓AGR↓ to discharge its features.[1] Since an operation such as Spec-Head Agree (↑AGR↑) can only apply if a specifier is present, and the operation MERGE provides this, these two operations can potentially interact. In a derivation where MERGE precedes ↑AGR↑, the necessary environment for ↑AGR↑ to apply will be created (thus MERGE feeds ↑AGR↑) (1). If ↑AGR↑ applies before MERGE, however, it applies 'too early' to be fed by MERGE and is therefore *counterfed* (Kiparsky 1973) (2).

(1)   MERGE > ↑AGR↑:

          XP

   YP ❶   X′

             X   WP

      ❷

(2)   ↑AGR↑ > MERGE:

          XP

   YP ❷   X′

          ✘ X   WP

      ❶
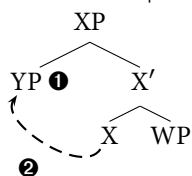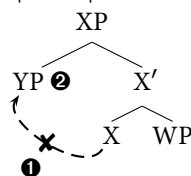
Resolved Agreement is the result of MERGE feeding both Agree operations, as it is ordered before both of them. LCA results from counterfeeding of ↑AGR↑ by MERGE, which causes the &-head to Agree only with the lower conjunct and project its features further to &P. FCA results from counterfeeding of ↓AGR↓ by MERGE, which causes the &-head to Agree only with the higher conjunct and project its features. 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 ↑AGR↑ or ↓AGR↓ 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 the attested pattern of *Highest Conjunct*

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[1]In 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.

Agreement discussed by Marušič et al. (2015) 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 Slovenian, and Section 5 provides some concluding remarks.

2   Patterns of conjunct agreement in Serbo-Croatian

The primary empirical focus of this paper will be placed on gender agreement with conjoined NPs.[2] We will discuss the following 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 last conjunct in a preverbal subject).Additionally, we analyse the pattern of Highest Conjunct Agreement (agreement with the first, hierarchically highest, conjunct in a preverbal subject), which has gone unnoticed in previous accounts on Serbo-Croatian (Corbett 1991; Bošković 2009). All the patterns to be tackled in this paper have also been recorded and attested in experimental studies conducted among native speakers of Slovenian (Marušič et al. 2015), as well as recently with speakers of Bosnian/Croatian/Serbian within a large-scale experimental project (see Willer-Gold et al. 2015).[3] Each pattern is presented in turn below, although the main focus of this paper will rest on the derivation of Closest Conjunct Agreement in gender features. For the purposes of this discussion, we leave aside the discussion of number agreement, as number agreement with two conjoined NPs is mostly plural, which seems to indicate that it might involve a mechanism that is separate from agreement in gender, i.e. semantic 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

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[2]Following Bošković (2005 and subsequent work), we assume that Serbo-Croatian does not project a DP. The issue of whether DP is projected in nominal expressions in this language is still a matter of debate (see Progovac 1998 for arguments in favour of a DP analysis), but since in our analysis nothing hinges on the presence of the DP layer, it can be adapted to either conception of the nominal phrase.

[3]We would like to thank the participants of the project "Coordinated Research in the Experimental Morphosyntax of South Slavic Languages" (EMSS) at University College London for confirming the data, as well as for fruitful discussion on the theoretical implications thereof.

the examples below illustrate (3)-(6), 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.

(3)   [&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)

(4)   [&P Sve majke   i   kćerke]   su išle   / *išli   po prodavnicama.
      all mother.FPL and daughter.FPL are go.PRT.FPL *go.PRT.MPL in shops
      'All mothers and daughters went to the shops.'   (F+F=F)

(5)   [&P Dečaci i   devojčice] su zajedno pošli   u školu.
      boy.MPL and girl.FPL   are together start.PRT.MPL in school
      'Boys and girls started going to school together.'   (M+F=M)

(6)   [&P Okolnosti   i   vremena] su bili   teški   za sve stanovnike.
      circumstance.FPL and time.NPL are be.PRT.MPL difficult.MPL for all inhabitants
      'The circumstances and times were hard for all the inhabitants.'   (F+N=M)

(7)   Priredbi su prisustvovali [&P deca   i   učiteljice].
      play   are attend.PRT.MPL   child.NPL and teacher.FPL
      'Children and teachers attended the play.'   (M=N+F)

As the examples above show, Resolved Agreement is freely available both with preverbal and postverbal subject &Ps.

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, as presented in (8)–(9).

(8)   [&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.'   (N+F=F)

(9)   [&P Okolnosti   i   vremena] su bila   teška   za sve stanovnike.
      circumstance.FPL and time.NPL are be.PRT.NPL difficult.NPL for all inhabitants
      'The circumstances and times were hard for all the inhabitants.'   (F+N=N)

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

(10) *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.'   (*F=N+F)

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 (11).

(11)   Po   dvorištu su razdragano kljucale   [_{&P} kokoške i   pilići].
       across yard   are cheerfully peck.PRT.FPL   hen.FPL and chicken.MPL
       'Hens and chicken pecked cheerfully in the yard.'   (F=F+M)

One pattern that has gone unnoticed in previous literature (Corbett 1991; Bošković 2009), but has recently been shown to be a legitmate agreement strategy by Marušič et al. (2015) and Willer-Gold et al. (2015), is the pattern of *Highest Conjunct Agreement* (i.e. preverbal FCA). In this case, the verb agrees with the highest conjunct, i.e. with the first conjunct in a preverbal &P (12).

(12)   [_{&P} Krave i   mladunci] su mirno   pasle   po   polju.
            cow.FPL and young.MPL are peacefully graze.PRT.FPL across field
       'Cows and their young grazed peacefully in the field.'   (F+M=F)

Highest Conjunct Agreement is puzzling since it constitutes agreement with the linearly furthest conjunct. Thus, there is an important contrast between (12) and Lowest Conjunct Agreement in (10) that must be captured.

2.4   Agreement with three conjuncts

In cases where a subject &P consists of three conjuncts, speakers of Serbo-Croatian again employ the strategies of Resolved Agreement and Closest Conjunct Agreement described above. The verb will either show resolved masculine agreement, or agreement that corresponds to the gender feature of the closest conjunct. What is not possible, however, is agreement with the middle conjunct (*Medial Conjunct Agreement*):

(13)   [_{&P} Haljine, odela i   suknje] su juče   prodate   / *prodata   /
            dress.FPL suit.NPL and skirt.FPL are yesterday sell.PRT.FPL   sell.PRT.NPL
       prodati.
        sell.PRT.MPL
       'Dresses, suits and skirts were sold yesterday.'

(14)   Juče   su prodate   / *prodata   / prodati   [_{&P} haljine, odela   i
       yesterday are sell.PRT.FPL   sell.PRT.NPL sell.PRT.MPL   dress.FPL suit.NPL and
       suknje].
       skirt.FPL
       'Dresses, suits and skirts were sold yesterday.'

Instances of feminine agreement in (13) and (14) reflect the Closest Conjunct Agreement strategies (First and Last Conjunct Agreement), [4] while masculine reflects Resolved Agreement. Neuter agreement (agreement with the medial conjunct) is ungrammatical in both cases. The same patterns were recorded in Marušič et al. (2015) experimental study on Slovenian and should be ruled out by any theory of conjunct agreement.

2.5 Data summary

The patterns for conjoined NPs presented in the previous sections are summarised in the table in (15).

(15) *Patterns of conjunct agreement in Serbo-Croatian:*

	preverbal	postverbal
Resolved Agreement	✓	✓
First Conjunct Agreement	✓	✓
Last Conjunct Agreement	✓	✗
Medial Conjunct Agreement	✗	✗

From a theoretical viewpoint, conjunct agreement poses several challenges. Firstly, it is desirable for a theory to be able to derive both Resolved Agreement and Closest Conjunct Agreement by means of a unified mechanism. Furthermore, the theory needs to capture the fact that Resolved Agreement seems to target both conjuncts, i.e. &P as a whole, unlike Closest Conjunct Agreement, which seems to take into account only the features of individual conjuncts. Another challenge faced by previous theories is to also explain how with Closest Conjunct Agreement, Agree seems to be sensitive to linearity rather than c-command. In the specific case of Serbo-Croatian, Furthest Conjunct Agreement and agreement with the middle of three conjuncts need to be ruled out by the eventual mechanism of agreement. And finally, the biggest challenge for a purely narrow-syntactic account of the phenomenon is to explain how the verb manages to target the structurally lower conjunct in Last Conjunct Agreement, without violating some rigid syntactic principle such as Minimality (by probing past the closer, hierarchically higher NP). We provide a theory that can successfully face all the challenges listed, relying on the basic syntactic

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[4]Theoretically, feminine agreement in (13) could also be an instance of Highest Conjunct Agreement, which is not entirely unexpected, since the strategy is independently available, albeit highly marginal. On the other hand, feminine agreement in (14), used for the purpose of illustrating FCA, even though it might look like it could also denote agreement with the lowest (furthest) conjunct, should be interpreted as First Conjunct Agreement. As shown in (10), Lowest Conjunct Agreement is not a grammatical and acceptable option, as supported by (i):

(i) Juče   su prodati / *prodate / *prodata [&P nakit,   odela i haljine].
    yesterday are sell.PRT.MPL sell.PRT.FPL sell.PRT.NPL jewelry.M suit.NPL and dress.FPL
    'Dresses, suits and skirts were sold yesterday.'

Agreement with the furthest, and hierarchically lowest conjunct is therefore generally disallowed.

operations AGREE, MERGE and MOVE, the timing of their application and their interaction. 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), Dutch (Koppen 2005, 2008), Slovenian (Marušič et al. 2007, 2015), Russian and (Serbo-)Croatian (Bošković 2009, 2010; Franks & Willer-Gold 2014). 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 & Walkow (2013). Most of the accounts above are syntactic in nature, however many recent proposals have suggested that at least 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 extended to Russian in Bošković (2010). According to Bošković (2009), FCA and LCA are the result of a unique process which relies on the 3-stage operation Agree (Chomsky 2000): 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. We will discuss Bošković's proposal on the basis of the FCA and LCA examples in (16) and (17) respectively.

(16) [&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.'

(17) 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.'

An important starting assumption is that the participle is a single ϕ-probe, which probes for number and gender features of the noun together (following Bejar 2003). Another assumption is that features on lexical items are characterised as valued/unvalued and interpretable/uninterpretable in the spirit of Pesetsky & Torrego (2007). The process of Last Conjunct Agreement (17) proposed in this account proceeds following the steps in (18) – (21).

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

(18) [PrtP   Participle$_{u\phi:}$ ...   [&P$_{number}$ NP1$_{gender}$ &   NP2$_{gender}$]]

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 author) and they are assumed to count as equidistant.

(19) [TP   [PrtP   Participle$_{u\phi:}$ ...[&P$_{number}$ NP1$_{gender}$ &   NP2$_{gender}$]]]

Step 3: To prevent a crash due to lack of valuation, another cycle of Agree is instantiated, resulting in targeting &P and NP2, because NP1 was deactivated as goal after the first Agree cycle (i.e. its uninterpretable gender feature was deleted after Match, unlike the number feature of the &P, which is interpretable, and therefore not deleted after Match).

(20) [TP   [PrtP   Participle$_{u\phi:}$ ...[&P$_{number}$ NP1$_{gender}$ &   NP2$_{gender}$]]]

Step 4: Since the probe bears an EPP feature, movement of the &P or one of the NPs is required. Since NP$_2$ now as a valuator cannot be extracted, the only option is to move the whole &P to subject position, which results in the LCA pattern.

(21) [TP   T   [PrtP   Participle$_{u\phi:}$ ...[&P$_{number}$ NP1$_{gender}$ &   NP2$_{gender}$]]]

The derivation of First Conjunct Agreement (17) is essentially the same process, the only difference being that the pied-piping dilemma in (19) does not arise, as the probe does not have an EPP feature in this derivation. Since there is no conflict between the two valuators with respect to the target of EPP-driven movement, the gender features on the verb can be provided by NP1 and the conjunct phrase can stay *in situ*, thereby yielding postverbal FCA. Thus, the availability of LCA or FCA is tied to the presence of an EPP feature on the probe. For LCA, the EPP feature

is the reason for the movement paradox in (19), which leads to deactivation of the higher NP, forcing the probe to target the lower conjunct on second cycle of Agree and thereby derive what, on the surface, looks a violation of Minimality.

Bošković (2009) provides a uniform non-language specific account incorporating conjunct agreement into an existing mechanism of Agree. Furthermore, the approach is syntactic and does not invoke any notion of linearity. However, there are some empirical problems with this account pertaining to both number and gender agreement. Firstly, the account only focuses on deriving FCA and LCA, while putting Resolved Agreement to one side, treating it as a separate phenomenon. Thus, it is clear that whichever mechanism derives Resolved Agreement (i.e. agreement with both conjuncts) will crucially be distinct from the mechanism deriving patterns of CCA. Furthermore, Bošković's account assumes that the only difference between FCA and LCA is in whether EPP-movement, and therefore pied-piping, is required or not. This predicts that LCA should always be preverbal, whereas FCA should be restricted to postverbal positions. While the former prediction is correct, the latter is not. The new, previously undiscussed pattern of *Highest Conjunct Agreement* (preverbal FCA) from Serbo-Croatian that we presented in the previous section (repeated here as (22)), as well as experimental findings from Slovenian (see Marušič et al. 2015), and Serbo-Croatian (see Willer-Gold et al. 2015) show that this prediction is wrong, and preverbal FCA is a legitimate strategy of conjunct agreement.

(22)   [$_{\&P}$ Krave i   mladunci] su mirno   pasle   po   polju.
         cow.FPL and young.MPL are peacefully graze.PRT.FPL across field
         'Cows and their young grazed peacefully in the field.'   (F+M=F)

Under Bošković's account, the presence of an EPP feature on the probe results in triggering the second cycle of Agree due to the existence of two possible movement targets. Thus, if the &P moves to preverbal position, it is due to the existence of only one possible movement target, i.e. &P, since NP2, the valuator of gender features, is immovable on its own. In order to derive (22), the problem of ambiguity of movement target must not arise, i.e. the probe must be able to target NP1. The question is then why NP1 pied-pipes &P at all, since the entire mechanism of deactivation relies on the fact that NP1 can move on its own. Thus, the difference between FCA and LCA cannot only be tied to the presence of movement as the account, as it stands, incorrectly predicts that preverbal FCA should not be possible. Moreover, Bošković (2009) has to assume optionality of an EPP feature in Serbo-Croatian, which further conditions the resulting type of conjunct agreement, however 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 NP_1 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. The problem with this analysis is that, for some speakers, LCA seems to be possible even when the first conjunct is masculine. An example is given in (23).
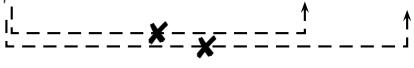
(23) Računari   i   mašine   su upravljale fabrikom, te je dosta radnika
     computers.MPL and machines.FPL are run.PRT.FPL factory   so is a.lot.of workers
     otpušteno.
     fired
     'Computers and machines ran the factory, so a lot of workers were fired.'

According to the account, LCA when NP$_1$ is masculine should be ruled out. As (23) shows, this is a problematic result.
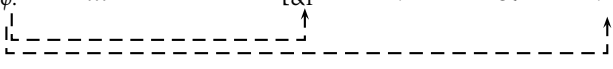
The final problem with Bošković's (2009) is that is makes incorrect predictions with regard to LCA with three conjuncts. Recall from (13), repeated below as (24), that agreement with the middle conjunct is not possible.

(24) [$_{&P}$ Haljine, odela   i   suknje] su juče   prodate   / *prodata   /
         dress.FPL suit.NPL and skirt.FPL are yesterday sell.PRT.FPL   sell.PRT.NPL
     prodati   .
      sell.PRT.MPL
     'Dresses, suits and skirts were sold yesterday.'

Under Bošković's account, LCA is derived by the first Agree operation failing due to ambiguity of target (NP$_1$ vs. &P). As a result, the NP$_1$ node is deactivated (indicated here by a strikethrough).

(25) [$_{PrtP}$ Participle$_{u\phi:}$ ...   [$_{&P}$ NP1   &   NP2   &   NP3]]]

The next step, is to instance a second cycle of Agree as a repair mechanism. At this point there should not be any conflict in the pied-piping target as the medial conjunct cannot be extracted on its own, so the &P would be moved, resulting in the features of the medial conjunct being realised on the verb.

(26) [$_{PrtP}$ Participle$_{u\phi:}$ ...   [$_{&P}$ ~~NP1~~   &   NP2   &   NP3]]]

As shown by the data in (24), this predicts that agreement with middle of three conjuncts should be possible in preverbal position. Thus, this constitutes a serious incorrect empirical prediction of Bošković's account. It is unclear what non-stipulative solution could be proposed in order to make the medial conjunct 'invisible' for this second cycle of Agree.

In sum, Bošković's analysis seeks to derive the distinction between FCA and LCA on the basis of whether movement to Spec-TP is required or not. If movement is enforced by the presence of an EPP feature, then a movement paradox arises resulting in deactivation of the closest NP as a target for movement/agreement. A later cycle will then only be able to target NP2 for agreement and have NP2 pied-pipe the entire &P to sentence-initial position, thereby deriving preverbal LCA. Thus, the kind of CCA (whether first or last conjunct) is conditioned by the requirement for movement. We have shown that this makes the incorrect prediction that preverbal FCA should never be possible, contrary to fact. Furthermore, the deactivation mechanism crucial in deriving postverbal FCA will backfire in the case of three conjuncts, predicting agreement with the second of a three conjunct sequence to be possible. One positive aspect of this analysis is that there are no appeals to linearity or PF mechanisms – the entire account resides in Narrow Syntax. We believe this general approach to be on the right track, however, we offer a radically different implementation. Whereas Bošković has the type of CCA follow from the EPP property of T, we turn this on its head and make movement to Spec-TP contingent on the kind of conjunct agreement. Before we discuss this analysis, we will turn to a number of other accounts that claim that agreement must be made sensitive to the linear promixity of probe and goal in some relevant sense.

3.2   Post-syntactic Agree

3.2.1   Bhatt and Walkow (2013)

[Bhatt & Walkow](2013) propose an account of conjunct agreement, which strives to capture a subject/object asymmetry in Hindi-Urdu: subjects show Resolved Agreement, whereas objects show Closest Conjunct Agreement. In their account Agree involves two stages, Matching and Valuation and deactivation plays an important role in capturing this asymmetry.

First, note that conjoined subjects in Hindi-Urdu always show Resolved Agreement in number and in gender (27):

(27)   a.   [&P Sita   aur Ramesh] gaa rahe   hãĩ   / *rahaa   hai
              Sita.F and Ramesh.M sing PROG.MPL be.PRS.PL / PROG.MSG be.PRS.SG
              'Sita and Ramesh are singing.'   (FSG+MSG=MPL)
      b.   [&P Mona   aur Sita] gaa rahe/rahii   hãĩ   / *rahaa   hai
              Mona.F and Sita.F sing PROG.MPL/PROG.F be.PRS.PL / PROG.MSG be.PRS.SG
              'Sita and Ramesh are singing.'   (FSG+FSG=F/MPL)
                                                                    ([Bhatt & Walkow 2013](:956)

Conjoined objects, however, exhibit patterns of CCA, which is full agreement with a single DP in both gender and number, as shown by the ungrammaticality of default masculine plural agreement.

(28) a. Ram-ne [_{&P} ek thailaa aur ek petii] (aaj) uthaa-yii / *-yaa / ???-ye
Ram-ERG a bag.M and a box.F (today) lift-PRF.FSG / -PRF.MSG / -PRF.MPL
'Ram lifted a bag and a box.' (MSG+FSG=FSG)
   b. Mona-ne bazaar-me dekh-aa th-aa [_{&P} ek ghoraa aur kai
Mona-ERG bazaar-in see.PFV-MSG be.PST-MSG a horse.MSG and many
kutte].
dog.MPL
'Mona had seen a horse and many dogs in the market.' (MSG=MSG+MPL)

(Bhatt & Walkow 2013:958ff.)

One of the main assumptions in Bhatt & Walkow (2013) is that Agree is separated into two steps – *Match* (selecting the goal) and *Valuation* (exchanging feature values, leading to deactivation). T and *v* are active due to them bearing unvalued ϕ-features, while DPs are active by virtue of having unvalued case features. Valuation of the respective features during Agree deactivates these syntactic elements. Once a goal DP has been deactivated, it is no longer available as a source for valuation, but it is still visible for Matching by another probe (and as such it can stop the probe from looking further down, thereby blocking successful Agree with lower goals).

In the simple case of RA, ϕ-features from both DPs are present at &P due to 'some mechanism of feature resolution' (Bhatt & Walkow 2013:973). This mechanism of feature resolution is never made explicit, but we can conceive of the features of the DPs being somehow connected to the &P node (i.e. by featural multiple dominance, for example). Under Agree, T's ϕ-features are valued by the &P subjects (copying the feature values of both conjuncts), while the case feature of the conjunct phrase is valued as nominative by T.

(29) Subject conjunct agreement (Bhatt & Walkow 2013:974)

The asymmetry between subjects and objects is then derived by the fact that with object conjunct agreement, *v* assigns case to the &P prior to T probing. This bleeds Agree between T and &P, since the &P has already received case. It is assumed that *v* assigns accusative case to &P, also agreeing with it in ϕ-features by virtue of *v* bearing an unvalued ϕ-probe (30). Subsequently, &P counts as deactivated for ϕ-agreement in later cycles of Agree. When T probes, it will probe past the ergative-marked subject (it is assumed that ergative is a θ-related case associated to Spec-*v*P, p.975) and target the &P. Since &P's ϕ-features were deactivated previously upon case assignment and concomitant ϕ-agreement by *v*, its features are deactivated as a potential goal. Thus, only Match (the first step of Agree) can be established, but no Valuation of features can take place.

(30) Object conjunct agreement (Bhatt & Walkow 2013:974)

Since &P is still syntactically visible, T cannot probe further down and target one of the individual conjuncts. Since the &P node is linked to the elements inside &P, T then has an indirect link to each of the DPs inside the conjunct phrase. In this case, valuation will take place post-syntactically. Post-syntactic resolution of CCA is a repair mechanism, i.e. an attempt by PF to

provide values on heads that can morphologically express them (Bhatt & Walkow 2013:976). The conditions on whether agreement results in FCA or LCA are translated into two algorithms that will trigger Valuation based on the linearly closest conjunct (Bhatt & Walkow 2013:980).

It is not obvious how this account could be extended to cover the relevant Serbo-Croatian data. Unlike Hindi-Urdu, Serbo-Croatian shows true optionality between RA and CCA in most cases, as well as the non-linear Highest Conjunct Agreement strategy. Furthermore, there is no subject/object asymmetry. Following Bhatt & Walkow (2013), the only type of agreement with subjects is predicted to be RA. Additional assumptions about (de)activation of &P by prior case assignment would have to be made, that is, in cases of CCA, the subject conjunct phrase would have to (optionally) be deactivated by a different case-assigning head before T probes. Bhatt & Walkow (2013) offer 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. They claim that 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 used to rescue the derivation. Thus, Hindi and SC differ in their respective triggers for CCA. Moreover, it remains puzzling as to why Resolved Agreement (taking into account gender values of both conjuncts) is possible at all, if the &P does not pick up the values of each of its conjuncts. As we have seen, Bhatt & Walkow's explanation is therefore tantamount to saying that the &P in SC optionally computes its gender, and if it does not, then CCA takes place as a repair strategy. Furthermore, Highest Conjunct Agreement is entirely unexpected on this approach, since it involves neither RA nor CCA, but agreement with the hierarchically highest NP, which none of the strategies in the paper is able to capture. Finally, data on bidirectional agreement in Slovenian, noted by Marušič et al. (2015:51) pose an additional challenge (see Section 4.4.2 for data and discussion).

To summarise, Bhatt & Walkow's account is designed to cover a specific set of data from Hindi pertaining to the asymmetries between subject and object conjunct agreement, which do not exist in other languages such as Serbo-Croatian. They provide algorithms for calculating CCA, but it is unclear whether this goes beyond simply restating the observed patterns. It is clear that their conjecture that CCA in Serbo-Croatian constitutes a 'repair strategy' is clearly untenable given the pervasiveness of RA. Furthermore, it unclear to what extent the system is restrictive. For example, it would have to be explained exactly how the unattested patterns of postverbal LCA or Medial Conjunct Agreement could be ruled out on principled grounds, beyond saying that the relevant algorithms simply do not exist.

3.2.2 Marušič, Nevins and Badecker (2015)

Another prominent recent account on conjunct agreement that argues that at least one part of the agreement process is carried out post-syntactically is proposed in Marušič et al. (2015). Marušič et al. (2015) carried out experiments on conjunct agreement in Slovenian, on the basis of which they were able to identify three conjunct agreement strategies: agreement with the closest conjunct (CCA), agreement with the highest conjunct, and agreement with the entire &P

(RA). They illustrate all three types of agreement with the Slovenian example in (31).

(31) [&P Krave   in   teleta]   so odšla   / odšle   / odšli   na pašo.
       cow.FPL and calf.NPL are go.PRT.NPL go.PRT.FPL go.PRT.MPL on graze
      'Cows and calves went grazing.'   (Marušič et al. 2015:52)

In their account, the &P computes its own number features via a function 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. The impossibility of gender computation is the primary source of variation, among other sources, present at different levels of the derivation.

The first level of optionality concerns the difference in derivation of Resolved Agreement (default agreement, assumed to have &P as the source of valuation) and agreement with a single conjunct. Default masculine agreement is the result of computation of agreement in a grammar in which the verbal probe only targets the &P node, which is hierarchically the highest target, without looking inside and reaching any of its constituents (this grammar has a 'no peeking' preference, which simply means that the grammar would rather tolerate default values for unvalued features than target the individual conjuncts within the &P). The probe thus finds a value for number available on the &P, but since the &P is not specified for gender, default gender value is inserted.[5] The reason why the probe on the participle would just stop at the &P and not inspect the daughter NPs is, however, not made explicit. We could assume that probing inside the &P would trigger a defective intervention effect of some sort (cf. Bhatt & Walkow 2013), where the &P would be an intervener for agreement with a lower NP goal, but this would be at odds with assumptions for Agree that the authors adopt to account for agreement with single conjuncts (see below). The 'no peeking' preference, which is the initial source of variation in speakers' grammars in Slovenian (determining whether probing stops at the &P or continues further to individual conjuncts), thus lacks clearer motivation and formal implementation.

Assuming that a speaker's grammar does not tolerate default values and seeks to agree with an element with valued features, the second source of variation in agreement patterns lies in determining the closest conjunct that would value the probe's features. The closest conjunct can either be the hierarchically higher conjunct, or the one that is linearly closer to the probe, depending on the timing of the copying of features from the goal to the probe and flattening of the structure of &P during linearization. Marušič et al. (2015:61) 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 transfers 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 linearization of structure of &P, while NP_1 is still structurally and hierarchically in a higher position than NP_2, and is thus the preferable goal. Agreement with the linearly closer conjunct

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[5]There 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.

(agreement with NP_2 when the subject is preverbal, and agreement with NP_1 when the subject is postverbal) is the result of Agree-Copy happening after flattening of the structure of &P, which is a linearization process by which &P is transformed from a hierarchically ordered structure into a set of linearized terminals. In this case, the NP from which the probe copies the value is the one that is linearly closest to the verb.

Despite accounting for the data from Slovenian, an important issue that arises concerns the nature of the process of linearization. In Closest Conjunct Agreement, it seems that any information about the hierarchical structure of the &P is no longer available to the verb, it can only 'see' the closest conjunct, and copy the value from it. The question is how the reference to hierarchical order is restricted in this kind of agreement, and conversely, how the reference to linear order is circumvented 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, p.c.).

In general, since it is not made clear exactly which elements within the NP are identified by Agree-Link as potential valuators and also how the 'linear closeness' is actually defined, it is difficult to assess the prediction made by the system. Assuming that the conjuncts are complex NPs, or contain NP or PP modifiers, the question arises whether NPs that would be linearly closer to the verb could count as potential valuators (see the following Section 3.2.3).

3.2.3 General problems with linearization-based accounts of CCA

It is clear from the preceding discussion that most recent approaches to CCA have resigned themselves to building some notion of linearity into their agreement mechanism. This is part of a recent trend in syntactic theory where more and more of the burden of labour usually assigned to syntax is siphoned off into PF (e.g. head movement; Chomsky 1995; Merchant 2001; Schloorlemmer & Temmerman 2012; Platzack 2013, extraposition Chomsky 1986; Rochemont 1985; Truckenbrodt 1995, case and agreement; Bobaljik 2008; Baker & Kramer 2014; Baker 2015). Doing so allows us to have a 'pseudo-syntax' that is not quite as constrained as Narrow Syntax (i.e. not only sensitive to hierarchy). We have argued that this may have both conceptual and empirical problems. For instance, Marušič et al. (2015:69) show that CCA is not a case of attraction, i.e. an NP inside a post-nominal modifier in one of the conjuncts is not targeted for agreement. The question is, however, how a naïve, linearly-oriented PF agreement mechanism can distinguish between a head noun and a linearly closer modifier in an already linearized structure. Consider (32), for example:

(32)   Crteži   šuma   i   slike   jezera   su prodate/*prodata.
        drawing.MPL forest.GEN.FPL and painting.FPL lake.GEN.NPL are sell.PRT.FPL/sell.PRT.NPL
        'Drawings of forests and pictures of lakes were sold.'

In this structure, the noun in each conjunct occurs with a post-nominal genitive modifier. If we now have preverbal LCA and agreement is linearly-sensitive, the verb will 'agree with linearly closest conjunct' (Marušič et al. 2015:60). The question that now arises is why the verb does not target the linearly closest NP (i.e. the genitive modifier). If we are dealing with a linearized, flat structure, then information about hierarchy, constituency and even headedness is completely lost. A postsyntactic agreement mechanism would however have to be sensitive to constiuency and headedness and would thereby only differ from agreement in Narrow Syntax in that it is free to ignore hierarchy. This problem can be tackled by first creating 'Agree-Links' in the syntax (Arregi & Nevins 2012), however here it must be ensured that syntax never targets an NP other than the head noun of the conjunct. In the approach by Marušič et al. (2015), a 'Peeking Grammar' would have to have to be restricted in such a way and in the approach by Bhatt & Walkow (2013), the mysterious links they assume that the NPs inside a conjunction have to the &P node would have to be restricted in a similar way. As such, a linearity-based approach does not only constitute a shift towards 'pseudo-syntax' at PF, it also requires further complications to the syntactic component. To clarify, postulating syntax-like operations on the PF branch is not undesirable *a priori* – it may well be a necessary evil, if a purely syntactic account emerges as untentable. However, it must first be conclusively demonstrated that the phenomenon in question cannot be adequately derived in Narrow Syntax before giving up on it altogether. In the following sections, we will argue that jettisoning agreement from the Narrow Syntax on the basis of CCA is unwarranted. If we modify the conditions under which syntactic operations apply and pay closer attention to their potential orderings and interactions, then it is very much possible to derive all and only those patterns of conjunct agreement that we find, without recourse to linear proximity.

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 (Chomsky 1995). A head bears a set of operation-triggering features, e.g. a c-selectional feature [•N•] triggering External Merge. In the face of 'indeterminacies in rule application' (Müller 2009), i.e. if 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 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 & Müller 2007, Müller 2011). This, of course, raises the 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* (↓AGR↓) and

Upward (Spec-Head) Agree[6] (↑Agr↑) (cf. Abels 2012).[7] We claim that these operations can, in principle, apply in any order to discharge the relevant feature(s) on a given head. Doing so, however, will have (sometimes negative) consequences, i.e. it may prevent a subsequent operation from applying (by bleeding it). To illustrate, suppose we want a head X to agree with a phrase YP in its specifier. Then we require the operations Merge, that creates a specifier, and ↑Agr↑, that triggers Spec-Head Agree. If Merge applies first and is then followed by ↑Agr↑ (33), for example, this will result in an order where Merge feeds application of ↑Agr↑. If the reverse order (↑Agr↑ > Merge) were to apply, then ↑Agr↑ would not find a goal since Merge would have not yet applied to create a specifier and therefore a target for ↑Agr↑ (34).

(33)   Merge > ↑Agr↑:
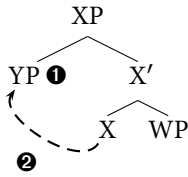
(34)   ↑Agr↑ > Merge:
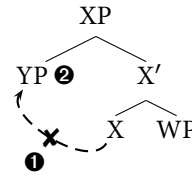
The latter is an instance of *counterfeeding* of ↑Agr↑ as it would have applied if the order had been the reverse. Under this approach, it is assumed that a single application of Merge discharges *all* c-selectional feature simultaneously. This means that if a head merges both a complement and a specifier and Merge precedes ↓Agr↓, for example, then both arguments are first merged (35) and then ↓Agr↓ applies (36). Therefore, the notion of cyclicity here is that each projection (XP) is a cyclic domain (cf. McCawley 1988) in contrast to a more narrow definition of Strict Cyclicity (Chomsky 1973:243).

(35)   Merge:
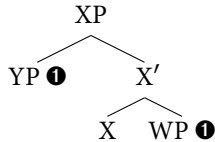
(36)   ↓Agr↓:

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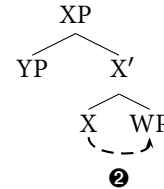
[6] Note that, assuming a local, derivational syntax, Upward Agree can only ever be Spec-Head Agree since there will be no other higher structure present at the point at which ↑Agr↑ applies – thus ↑Agr↑ is always trivially Spec-Head Agree. Syntactic objects introduced by higher heads will come too late to undergo this type of Agree in that cycle.

[7] The operations under this architecture are still 'feature-driven' but in a slightly different sense. An operation such as movement is not triggered by an individual feature (e.g. •N•) 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 different ways to check these features. Application of Merge will check the relevant c-selectional feature. If there is no such feature, its application is vacuous (but it nevertheless still applies in some sense, albeit without tangible effects).

4.1.2   Uniform Order of Operations

In the previous section, we proposed that the order of operations is in principle free, however, not all orders will yield a licit derivation. Additionally, we assume that the order of application of operations is maintained throughout the derivation. 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′-movement of ergatives. Accordingly, we also assume that whichever order of operations is decided on for a particular head[8], this order must be maintained on every other head at later stages in the derivation. This can be summarized by the following principle:

(37)   *Uniform Order of Operations*:
        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.

This assumption will allow us to predict whether a particular order of operations results in EPP movement, or not. For our purposes, it will mean that at least the order of operations applying at the &P level must be repeated at TP. There are a number of ways to implement this idea formally, however we will not flesh out the proposals. At present, we are simply assuming that the order of operations is a syntactic primitive to which the derivation has access, much like the numeration. This may raise concerns of whether this requires non-Markovian power viz. memory across phases. This problem can be circumvented by a simple implementation where a higher head X obtains the relevant order from next lowest head Y via an Agree operation. Another viable alternative would be to assume (37) as a transderivational constraint (e.g. in Optimality Theory; Prince & Smolensky 1993; Heck & Müller 2013) that filters any derivations that do not conform to the previously established order of operations at the previous cycle. We will remain agnostic with regard to the exact implementation of (37), but will simply demonstrate its predictive power in the analysis to follow.

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:[9]

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

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[8] Alternatively, one could restrict this to phases, given appropriate assumptions about phasehood, e.g. every phrase is a phase (Müller 2011).

[9] The counterpart *Merge over Move* (Chomsky 2000) is typically motivated on the basis of data pertaining to movement and expletive insertion. Since Serbo-Croatian lacks expletives, it is perhaps not surprising that the latter does not hold.

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 (39) also holds, which is a combination of the *Earliness Principle* and the assumption that certain operations apply only if they 'have an effect on outcome' (cf. EPP insertion in Object Shift, Chomsky 2001:60f.).[10]

(39)   *Earliness/Optionality Condition on Move*:
       MOVE applies as early as possible and only if it has a (positive) effect on outcome.

Thus, MOVE is an optional an operation, but if it does apply, it must precede MERGE, apply as the first operation and have a positive effect on outcome (i.e. not result in a crash).

4.1.4 Fallibility of Agree

Another important component of the analysis to follow can be summarized as follows:

(40)   *Fallibility of ϕ-agreement*:
       If α is a fallible probe in a language L, then the derivation crashes as soon as α cannot find a goal for ϕ-agreement.

Recent work by Preminger (2014) has argued that Agree is a fallible operation. Our system takes this claim to its logical conclusion and states that all operations are, in principle, fallible. In order to be able to model opaque interactions such as counterfeeding as shown in (34), it is necessary that certain operations can underapply, i.e. fail. However, there is one proviso for ϕ-agreement. We assume that a language can contain fallible ϕ-probes and that these probes can be situated on different heads in different languages. Our claim is that the ϕ-probe on T is infallible in Serbo-Croatian, i.e. Agree may not fail in this case (see Sections 4.4.1 and 4.4.2 for an extension to Hindi and Slovenian). Thus, when T probes for a gender value, it must find a goal on its first attempt, otherwise the derivation will crash. Crucially, the same will not hold for operations inside the &P, for example. Although this may seem to fly in the face of Preminger's conclusions, we will show that the restrictiveness of the resulting system justifies this assumption. Furthermore, there are some conceptual and empirical reasons hinting at the fallibility of ϕ-agreement on &P. First of all, gender agreement in a conjunction cannot be viewed as a 'one

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[10]This assumption of Earliness is mainly made for reasons for exposition since it will vastly reduce the number of operations one has to entertain.

chance operation' since in the default case (Resolved Agreement), it is assumed that the gender probe will obtain a value from each conjunct. As such, features like these, which have to 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. 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 (41), where only movement leads to gender agreement on the participle.

(41)   *Participle Agreement in French* (Kayne 1989):

    a.   Paul a   repeint   / *repeint-es   les chaises
        Paul has repainted   repainted-FPL the chairs.FPL
        'Paul has repainted the chairs.'

    b.   Je me demande [combien   de tables]$_k$ Paul a   *repeint   / repeint-es   t$_k$
        I me ask   how.many of tables.FPL Paul has repainted   repainted-FPL
        'I wonder how many tables Paul has repainted.'

Implementing the analyses of Kayne (1989) and 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. Thus, 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.[11]

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 (see Anagnostopoulou (2003); Bejar (2003); Chomsky (2000); Marušič et al. (2015); Preminger (2014); Sigurðsson (1996); Sigurðsson & Holmberg (2008); Shlonsky (1989) for various applications of separate probes) 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 (42):[12]

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[11] However, we believe that exactly on which heads ϕ-probes count as fallible/infallibile is subject to parametric variation. Thus, we do not claim that ϕ-agreement on T is fallible in every language, but at least in some. It is therefore not necessarily the case that our assumptions here are incompatible with Preminger's findings.

[12] As noted in the introduction, we will abstract away from number agreement in the following discussion since number agreement is resolved as plural – only gender agreement exhibits Closest Conjunct Agreement.

(42)

&P$_{M,F}$
DP$_M$ &′
        &   DP$_F$
     [GENDER: M,F]
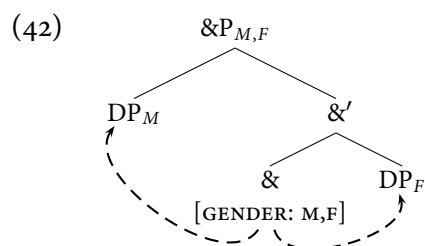
As noted above, we assume that order in which basic operations apply is in principle free (but only some will result in licit derivations). The different orders of operations on & will result in the &-head obtaining different values for its gender feature. The orders deriving the patterns discussed in Section 2 are given below:

(43) *Possible orders 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. FCA, the fact that ↓AGR↓ applies before MERGE means that ↓AGR↓ is counterfed by MERGE and the &-head will not agree with the highest conjunct. The patterns above will each be discussed in detail below. In the following section, we will present the derivations of all patterns of conjunct agreement (RA, LCA, FCA) on the basis of the example (8) repeated below.

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

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

Example (44) 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). With a postverbal conjunct phrase (45), 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) (cf. patterns of agreement in Slovenian in (31)). 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 (3)-(6) showed that RA may yield different patterns of agreement.[13] Here, we concentrate on examples (44) and (45) 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 to default agreement) and that movement to a pre-verbal position appears to be optional.

We can capture this by assuming that Resolved Agreement is the result of MERGE preceding, and therefore feeding the operations ↑AGR↑ and ↓AGR↓. The relative order of ↑AGR↑ and ↓AGR↓ does not play a role at &P, and thus both orders in (46) result in RA:

(46)   *Orders for Resolved Agreement*:

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

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

Let us first illustrate a derivation involving the order in (46a) with the example in (44). As MOVE applies vacuously at the &P (no effect on outcome), the first operation to apply is MERGE where the &-head merges its two argument NPs (47). Next, ↑AGR↑ applies and the conjunction copies the gender value from the higher NP (48). Subsequently, ↓AGR↓ applies (49) and the conjunction copies the value from the lower NP.

(47)   MERGE:

---
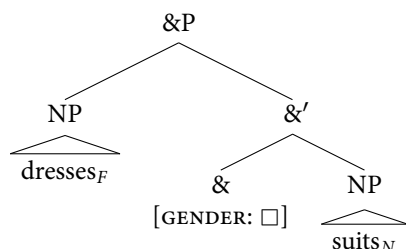
[13]It should be noted here that two feminine conjuncts do not trigger default agreement if they are animate. Still, feminine inanimate conjuncts can trigger default agreement, and so can neuter conjuncts, either animate or inanimate. We consider the default masculine agreement in these cases to be the 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).

(48)   ↑AGR↑:
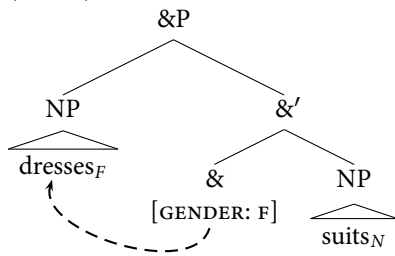
(49)   ↓AGR↓:
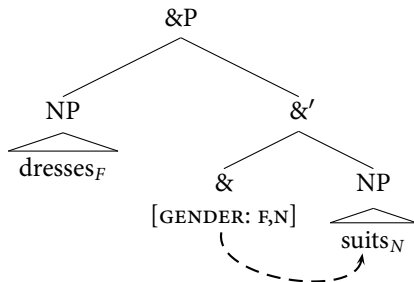
After Agree has taken place, the features of the conjuncts are present at &P and available for agreement with T. Since the values (N+F) do not match, they are resolved to masculine. Assuming that order of operations in (46a) has to be maintained at TP, Move will apply only if it does not have a negative effect on outcome, i.e. as long it does not lead to a crash. So we now need to determine whether Move applies or not. Since Merge applies vacuously at TP (since there is nothing in the numeration left to merge[14]), 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:

---

[14]Note that we assume that the functional sequence V-*v*-T is not derived by the Merge operation, but rather automatically with reference to some functional sequence (cf. Adger 2003). For example, Merge on T will only pertain to External Merge of a specifier but not involve merging *v*P, or whichever projection T combines with.

(50)   (Merge) > ↑Agr↑ > ↓Agr↓:

```
                        TP
                       /  \
            ❶ ✗ Crash      vP
                 T        /  \
                 |   v+sold   VP
                are         /    \
              [φ:□]       t_V    &P_{F,N}
                                /      \
                              NP        &'
                            dresses_F  /   \
                                      &     NP
                                          suits_N
```
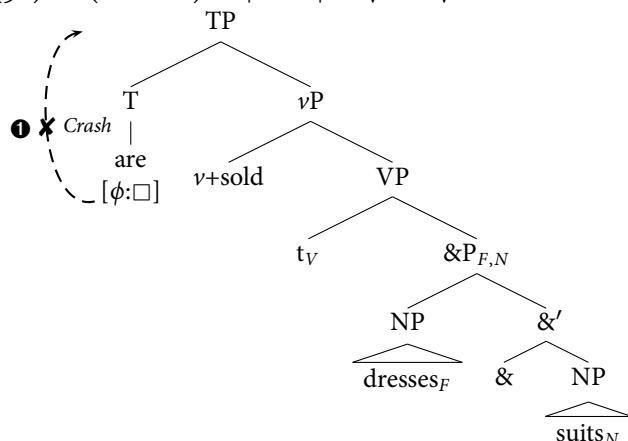
If Move does apply, however, it will result in movement of &P and thereby *feed* ↑Agr↑, avoiding a crash:

(51)   Move > (Merge) > ↑Agr↑ > ↓Agr↓:

```
                        TP
                      /     \
              &P_{F,N}        T'
              /    \         /   \
            NP      &'      T      vP
         dresses_F / \ ❷    |     /  \
                  &   NP    are  v+sold  VP
                    suits_N [φ:□]        /  \
                                       t_V   t_{&P}

                          ❶
```
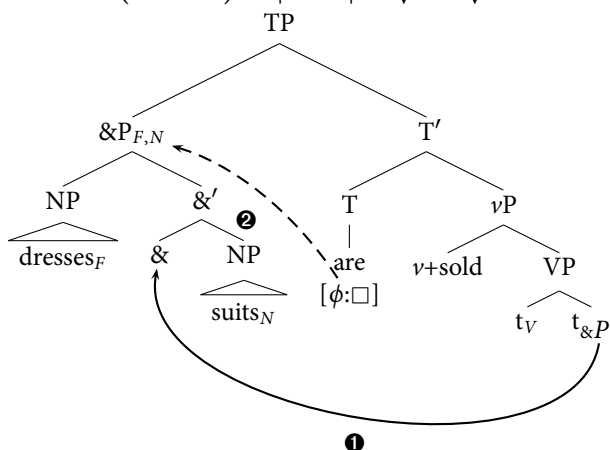
Thus, the order in (46a) derives resolved agreement in preverbal position since the order of operations at &P (↑Agr↑ > ↓Agr↓) forces movement of the conjunct phrase at TP. As for the remaining ↓Agr↓, it applies vacuously in this case, since T's gender feature is already saturated by the first Agree operation. This follows from our assumption that T in SC is a one-time probe (recall from Section 4.1.4) and therefore, at the TP level, the first Agree operation necessarily needs to find the value for T's gender feature. The following Agree then always applies vacuously and has no effect on outcome. The second order of operations in (46b) at &P level will give the exact same outcome as in (47)-(49), 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 order provides ↓Agr↓ as the first

operation to apply after vacuous application of MERGE, MOVE cannot apply as doing so would bleed ↓AGR↓:

(52)　　MOVE> (MERGE) > ↓AGR↓ > ↑AGR↑:
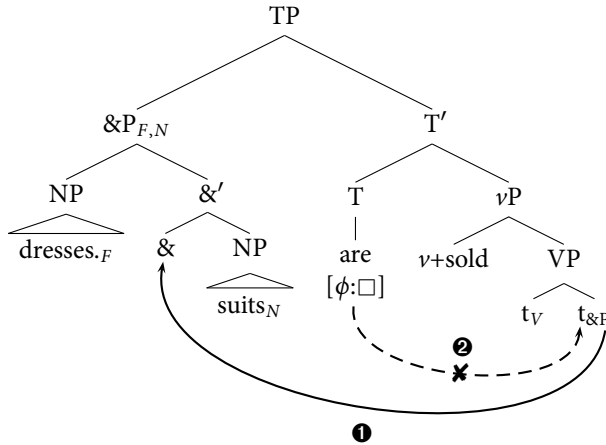
Thus, the application of MOVE with this order is blocked. The only way to avoid a crash at TP with this order of &P operations is to leave the conjunct phrase *in situ* (i.e. have MOVE not apply) and then T will agree with &P via ↓AGR↓ in this position:

(53)　　(MERGE) > ↓AGR↓ > ↑AGR↑:
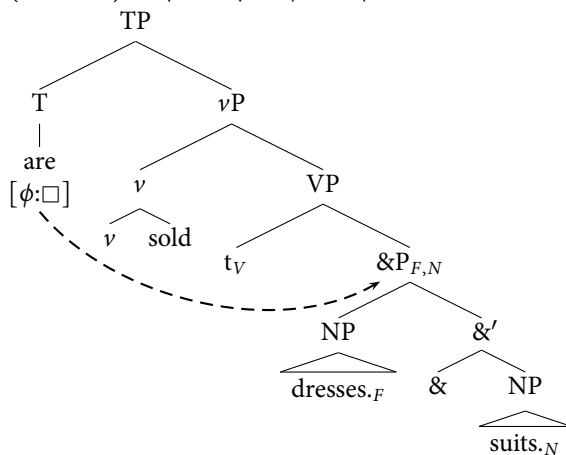
The two possible orders of operations at &P correlate with the possibility for RA to occur both pre- and postverbally. The operation immediately following MERGE at &P determines whether MOVE must apply at TP. In the following sections, we will see this idea in action again in the analysis of Closest Conjunct Agreement.

4.2.2   Last Conjunct Agreement

Last Conjunct Agreement (LCA) is a pattern of CCA in which the verb agrees with the sec-ond/last conjunct when the &P is in a preverbal position. Recall from the examples (44) and (45) (repeated below) that LCA is only acceptable when the conjunct phrase is in preverbal position. It is entirely ungrammatical if the &P is postverbal.

(54)   [&P Sve haljine   i   sva odela]   su juče   prodata   .
           all dress.FPL and all suit.NPL are yesterday sell.PRT.NPL
        'All dresses and all suits were sold yesterday.'

(55)   *Juče   su prodata   [&P sve haljine   i   sva odela].
        yesterday are sell.PRT.NPL   all dress.FPL and all suit.NPL
        'All dresses and all suits were sold yesterday.'

The central claim of this paper is that the nature of 'closest' is in Closest Conjunct Agreement entirely illusory. What we in fact have in the case of LCA, for example, 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. In order to have an &P that has only inherited the features of the second conjunct, the Agree operation targetting the first conjunct (↑AGR↑) will have to fail to apply. We can achieve this with an order of operations in which ↑AGR↑ applies too early, i.e. before the conjuncts have been merged. The relevant order is given in (56).

(56)   (MOVE) > ↑AGR↑ > MERGE > ↓AGR↓

Here, MERGE applies after ↑AGR↑, an instance of counterfeeding. The derivation proceeds as follows: MOVE does not apply.   ↑AGR↑ applies before MERGE. Since there is no goal that this operation can target, it does not find a goal (57) and thus applies vacuously. The next operation MERGE introduces the conjuncts via External Merge (58). Finally, ↓AGR↓ applies and the &-head receives the gender value of only the lowest conjunct (59). As a result, the &P node bears the features of only the second conjunct.
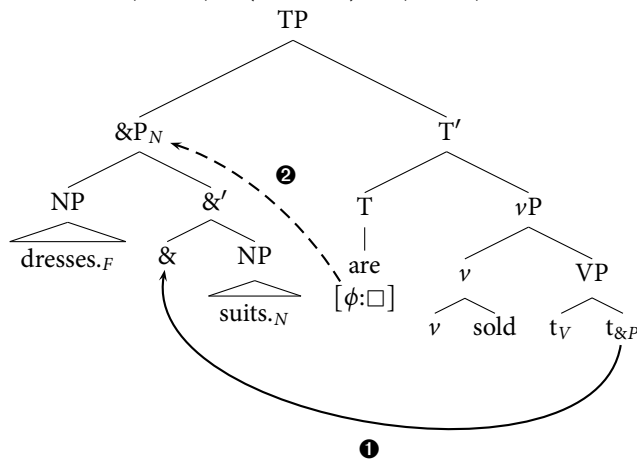
(57)   ↑AGR↑:

&P
|
&
[GENDER:□]

❶

(58)   MERGE:

&P
|
NP   &′
| |
dresses_F   &   NP
        [GENDER: □] |
                      suits_N

(59)   ↓Agr↓:

&P_N
├── NP
│   └── dresses_F
└── &′
    ├── &
    │   [GENDER: N]
    └── NP
        └── suits_N
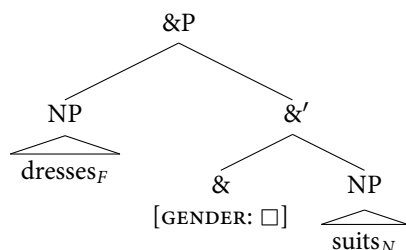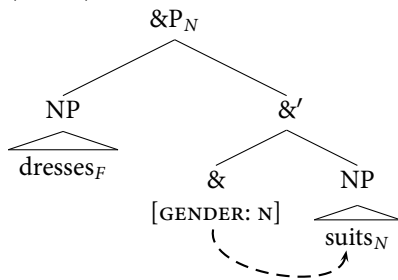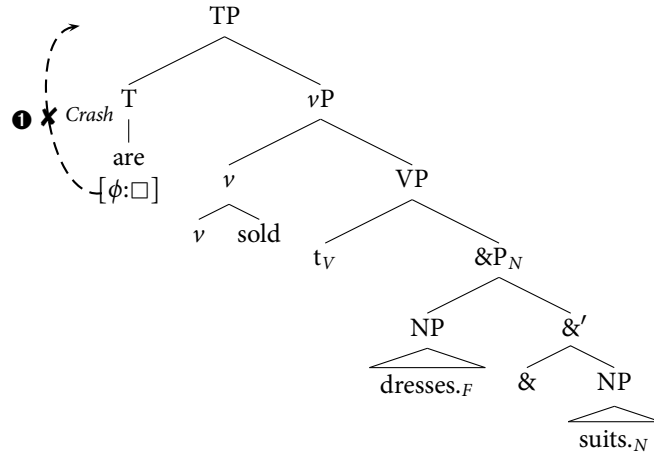
At the TP level, the previous order of operations must be maintained. There are again two possible scenarios depending on whether Move applies or not. If Move takes place, it will feed the next operation ↑Agr↑ and Agree will find a goal in T's specifier (60):

(60)   Move > ↑Agr↑ > (Merge) > ↓Agr↓:

TP
├── &P_N
│   ├── NP
│   │   └── dresses._F
│   └── &′
│   ├── &
│   └── NP
│   └── suits._N
└── T′
    ├── T
    │   are
    │   [φ:□]
    └── vP
        ├── v
        │   ├── v
        │   └── sold
        └── VP
            ├── t_V
            └── t_&P

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.

(61)   ↑Agr↑ > (Merge) > ↓Agr↓:

```
                    TP
           ┌─────────┴─────────┐
           T                   vP
    ❶ ✗ Crash │         ┌───────┴───────┐
         are             v              VP
        [φ:□]       ┌────┴────┐    ┌─────┴─────┐
                    v    sold  tᵥ          &Pₙ
                                      ┌──────┴──────┐
                                     NP            &′
                                   dresses.F   ┌────┴────┐
                                               &        NP
                                                      suits.N
```

This means that Move *has* to apply at the TP level with the order deriving LCA inside the &P (56), there is no optionality. As a result, we rule out cases of LCA postverbally since movement to Spec-TP (i.e. feeding of ↑Agr↑) is the only way to avoid a crash. This correctly derives the fact that postverbal LCA, or *Lowest Conjunct Agreement* (55), is not possible.

4.2.3   First Conjunct Agrement

First Conjunct Agreement (FCA) is the pattern of CCA in which the verb agrees with the first conjunct in a postverbal subject conjunct phrase. Recall from the example under discussion (repeated again below) that in preverbal position, FCA is marginal/accepted by some speakers (62), whereas the canonical case of FCA (also cross-linguistically) is in a postverbal position. In (63) it looks like the verb is agreeing with linearly closest conjunct (the first).

(62)   ?[&P Sve haljine   i   sva odela]   su juče   prodate.
            all dress.FPL and all suit.NPL are yesterday sell.PRT.FPL
            'All dresses and all suits were sold yesterday.'

(63)   Juče   su prodate   [&P sve haljine   i   sva odela].
         yesterday are sell.PRT.FPL   all dress.FPL and all suit.NPL
         'All dresses and all suits were sold yesterday.'

We will see that there are a number of possible orders that can derive FCA. One such order involves counterfeeding of ↓Agr↓ in (64).

(64)   (Move) > ↓Agr↓ > Merge > ↑Agr↑

The idea is the same as with previous cases, since ↓Agr↓ applies 'too early', the &-head will not agree with the last conjunct because it is not yet present in the structure. The derivation proceeds as follows: Move does not apply and ↓Agr↓ is counterfed by Merge (65). Merge introduces the two NP arguments (66). Finally, ↑Agr↑ applies agreeing with the higher NP in &'s specifier, and
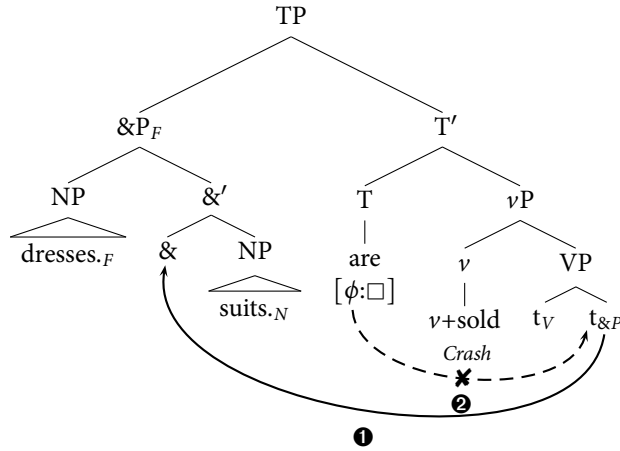
only the features of the higher NP are projected to the &P (67). The result is a conjunct phrase that bears only the gender feature of the first conjunct.

(65)   ↓Agr↓:

&P
|
&
[GENDER: □]

(66)   Merge:

&P

NP   &′

dresses_F

&   NP

[GENDER: □]   suits_N

(67)   ↑Agr↑:

&P

NP   &′

dresses_F

&   NP

[GENDER: F]   suits_N
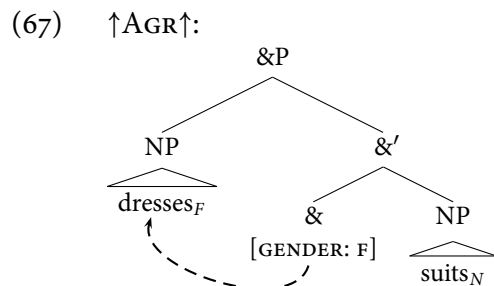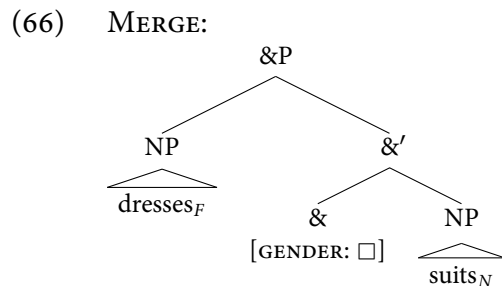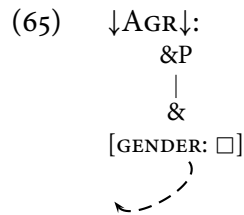
The same operations apply at TP level again, yielding two possible options depending on whether Move applies. Since ↓Agr↓ applies early in this case, Move applying before ↓Agr↓ will result in bleeding of ↓Agr↓.[15] The derivation will crash, as moving the &P to Spec-TP bleeds the subsequent ↓Agr↓ operation, which will not find a goal in its c-command domain, as illustrated in (68).

---

[15] In general, one may wonder why ↓Agr↓ cannot target the object if the subject has moved too Spec-TP. The result would be object agreement (in the case of a transitive verb) rather than a crash. Assuming a phase-based model of syntax where (at least) *v*P is a phase, only elements in the edge of *v*P would be accessible to T and therefore object agreement would be ruled out.

(68)   MOVE > ↓AGR↓ > (MERGE) > ↑AGR↑:

```
                        TP
              ┌──────────┴──────────┐
            &P_F                    T′
         ┌────┴────┐          ┌──────┴──────┐
        NP        &′          T            vP
        │       ┌──┴──┐       │         ┌───┴───┐
     dresses._F &    NP      are        v       VP
               │    suits._N [φ:□]       │     ┌──┴──┐
                                       v+sold  t_V  t_&P
                                       Crash
```

The other option where MOVE does not apply will converge as ↓AGR↓ is not bled by MOVE. Here, ↓AGR↓ will agree with the &P bearing features of the first conjunct (69):

(69)   ↓AGR↓ > (MERGE) > ↑AGR↑:

```
                TP
          ┌──────┴──────┐
          T             vP
          │        ┌─────┴─────┐
         are       v           VP
        [φ:□]     ┌─┴─┐    ┌────┴────┐
                  v  sold  t_V      &P_F
                                 ┌───┴───┐
                                NP       &′
                               │       ┌──┴──┐
                            dresses._F &    NP
                                           suits._N
```
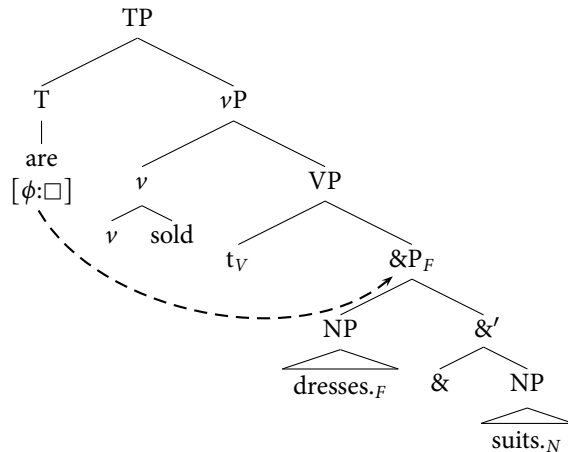
The pattern outlined in this section derives FCA as a result of T agreeing with the whole &P, which has inherited the features of its highest conjunct. As with LCA, we argue that the impression that it is agreeing with the linearly closest conjunct is an illusion. In the following section, we discuss 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 (43), there are two final possible orderings of operations in which both operations ↑AGR↑ and ↓AGR↓ are counterfed by MERGE, repeated here in (70).

(70)   a.   (MOVE) > ↓AGR↓ > ↑AGR↑ > MERGE
       b.   (MOVE) > ↑AGR↑ > ↓AGR↓ > 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 □ in (71)).

(71)
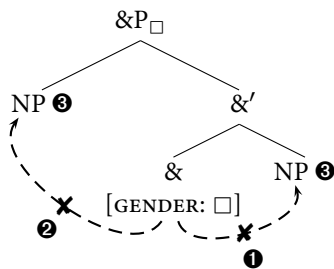
At TP, the order of operations in (70a) will again result in postverbal FCA. If MOVE applies, it will bleed ↓AGR↓, as T will not find a goal, leading to a crash:

(72)   MOVE > ↓AGR↓ > ↑AGR↑ > (MERGE):
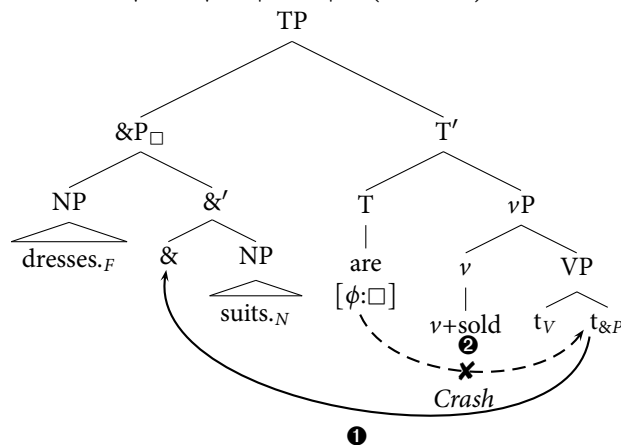
If MOVE does not apply, then the next operation ↓AGR↓ finds the &P. In this case, the root node of &P is not a legitimate goal for Agree since it does not have a valued gender feature. Instead, the closest goal for T is the structurally higher first conjunct in Spec-&P and T agrees with this:

(73)   ↓Agr↓ > ↑Agr↑ > (Merge):
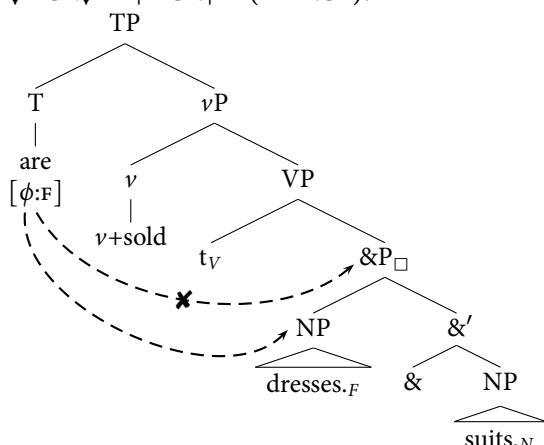
The order of operations in (70b), on the other hand, results in the rare pattern of preverbal FCA, or *Highest Conjunct Agreement* (74).

(74)   [&P Krave   i   mladunci] su mirno   pasle   po   polju.
           cow.FPL and young.MPL are peacefully graze.PRT.FPL across field
       'Cows and their young 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, ↑Agr↑ will not find a goal. Thus, in the order where Move applies, movement of the &P feeds ↑Agr↑. 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 (73), ↑Agr↑ can also 'look inside' the &P and find the structurally higher, first conjunct:[16]

---

[16]This implies that the operation ↑Agr↑ is actually best defined as Agree under m-command (the traditional notion of Spec-Head Agree). Thus, the only difference between ↓Agr↓ and ↑Agr↑ would be a difference in c-command vs. m-command.

(75)   MOVE > ↑AGR↑> ↓AGR↓ > (MERGE):

```
                              TP
                    ┌─────────┴─────────┐
                  &P□                    T′
              ┌────┴────┐          ┌─────┴─────┐
             NP        &′          T           vP
            /  \     ┌──┴──┐       |        ┌───┴───┐
          cows.F    &     NP      are     t&P      v′
                   /    /  \     [φ:□]          ┌───┴───┐
                  &   calves.N                 v        VP
                                             ┌─┴─┐
                                             v  grazed  tV across field
```
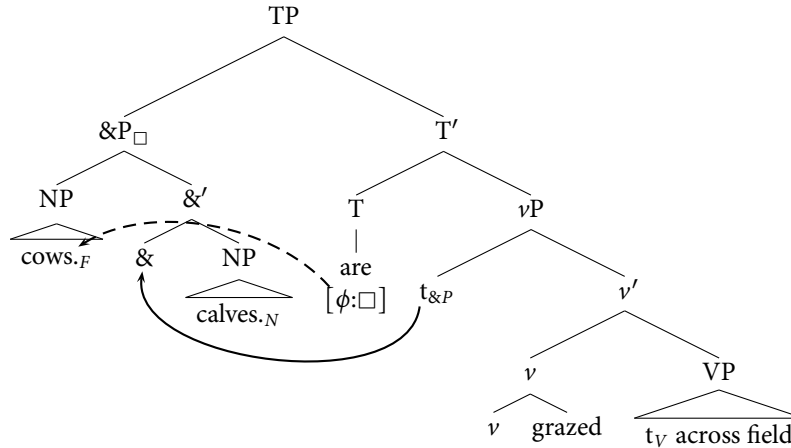
4.3   Agreement with three conjuncts

Recall from examples (13)–(14), repeated here as (76)–(77), that when the &P contains three conjuncts, RA and CCA are possible, but agreement with the middle conjunct is impossible. In this section, we show how the system proposed above correctly derives the RA and CCA patterns, placing a special focus on ruling out agreement with the middle conjunct.

(76)   [&P Haljine,   odela   i   suknje] su juče   prodate   / *prodata   /
           dress.FPL suit.NPL and skirt.FPL are yesterday sell.PRT.FPL   sell.PRT.NPL
       prodati.
        sell.PRT.MPL
       'Dresses, suits and skirts were sold yesterday.'

(77)   Juče   su prodate   / *prodata   / prodati   [&P haljine,   odela   i
       yesterday are sell.PRT.FPL sell.PRT.NPL sell.PRT.MPL   dress.FPL suit.NPL and
       suknje].
       skirt.FPL
       'Dresses, suits and skirts were sold yesterday.'

There are two proposals in the literature when it comes to the structure of the &P with multiple conjuncts (see Weisser 2015 and references therein):

(78)   *One conjunction head with multiple specifiers:*
       [&P dresses [&’ suits [&’ & skirts]]]

(79)   *Multiple conjunction heads:*
       [&P dresses [&’ & [&P suits [&’ & skirts]]]]

Following Johannessen (1998); Munn (1987); Zoerner (1995); Progovac (1998a,b); Weisser (2015), we adopt the structure in (79) for the &P with multiple conjuncts (see Progovac (1998a,b) for an

overview of the literature and Weisser (2015) for compelling evidence in favour of the structure with multiple &-heads based on the studies of derived clausal coordination). Thus, for the &P in (76) and (77) we assume the following structure:

(80)   *&P with multiple conjuncts:*
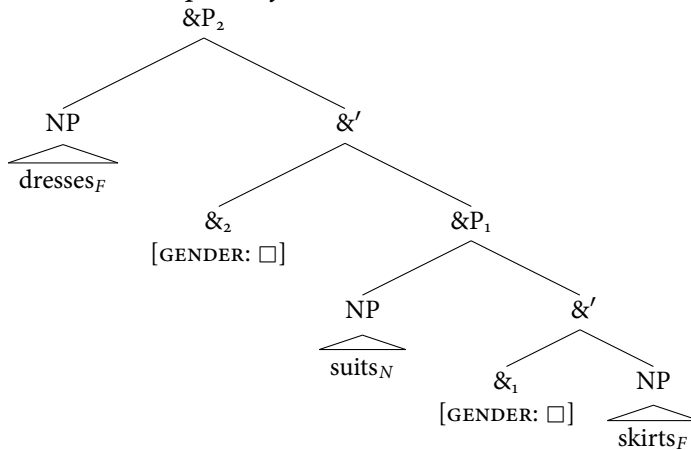
In the structure in (80), both &-heads function as probes. Patterns of conjunct agreement with such &Ps will be derived by the operations in (43), which are subject to the *Uniform Order of Operations* (37), i.e. whatever order of operations applies at the $\&P_1$, the same order needs to be repeated at $\&P_2$, as well as in the rest of the derivation.

Deriving Resolved Agreement under these assumptions then becomes trivial, as both &-heads agree with both their arguments, after which features of all conjuncts are projected to the higher &P. Recall that RA is derived by the first two orders in (81), where MERGE feeds both Agree operations.

(81)   (MOVE) > MERGE> ↑AGR↑ > ↓AGR↓ → Resolved Agreement (preverbal)
       (MOVE) > MERGE> ↓AGR↓ > ↑AGR↑ → Resolved Agreement (postverbal)

Under the first order, where ↑AGR↑ > ↓AGR↓, the $\&_1$-head merges both of conjuncts and agrees with both of them, projecting both features at the $\&P_1$.

(82)
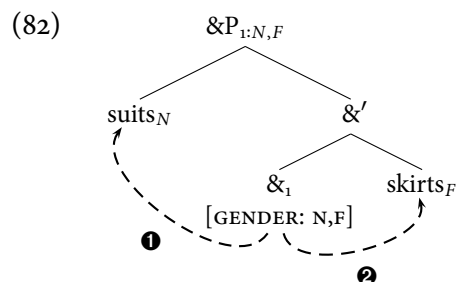
The $\&_2$-head then merges with both of its arguments, $\&P_1$ and the higher NP, agreeing first with the NP via ↑AGR↑ and then with $\&P_1$ via ↓AGR↓, projecting all three features.

(83)

&P$_{2:F,N,F}$
├─ NP
│   └─ dresses$_F$
└─ &′
    ├─ &$_2$ [GENDER: N,F,F]
    └─ &P$_{1:N,F}$
        ├─ NP
        │   └─ suits$_N$
        └─ &′
            ├─ &$_1$ [GENDER: N,F]
            └─ NP
                └─ skirts$_F$

(with dashed movement arrows labelled ❶ and ❷)
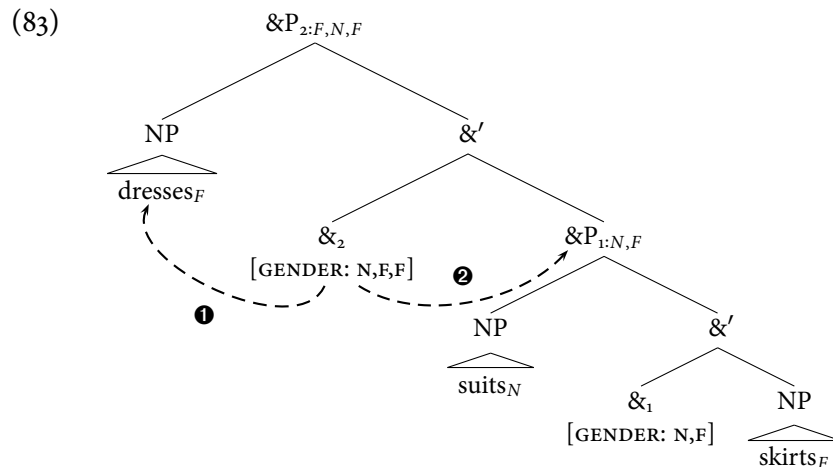
Crucially, the other order deriving Resolved Agreement, where ↓AGR↓ > ↑AGR↑, gives the same result at the &P level, as both &-heads agree with both of their arguments, so the features of all three conjuncts are projected at &P$_2$. Subsequently, operations on T have to be repeated in the same order as the one that applies at the &P. This implies that with the order MOVE > (MERGE) > ↑AGR↑ > ↓AGR↓, movement has to apply in order to feed ↑AGR↑, yielding preverbal RA. With the second order, MOVE > (MERGE) > ↓AGR↓ > ↑AGR↑, movement cannot apply, otherwise it will bleed ↓AGR↓. The &P thus stays *in situ*, yielding postverbal RA.

Not going into details of derivations of all the possible orders for reasons of space, we focus on the only order above in which features of the middle conjunct could potentially be targeted – the FCA order (which is the result of counterfeeding of ↓AGR↓ by MERGE at &P):

(84)   (MOVE) > ↓AGR↓ > MERGE > ↑AGR↑ → First Conjunct Agreement

In the case of three conjuncts, this order also yields FCA, as ↓AGR↓ applies too early, before &-head's arguments are merged, so the &-head only agrees with the highest conjunct, projecting its features. Under this order, ↓AGR↓ applies first and, since nothing is yet merged as &$_1$'s complement, it does not find a goal. MERGE introduces both NP arguments, after which ↑AGR↑ applies and &P$_1$ projects only the features of the higher argument:

(85)   ↓AGR↓ > MERGE > ↑AGR↑:

&P$_{1:N}$
├─ suits$_N$
└─ &′
    ├─ &$_1$ [GENDER: N]
    └─ skirts$_F$

(with dashed movement arrows labelled ❶ and ❷)
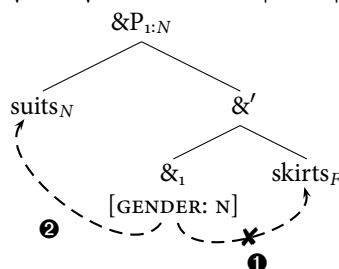
Note that now only the features of the middle conjunct are present at $\&P_1$ and could potentially serve as the goal for Agree. If $\&P_2$ were to now agree with just $\&P_1$, then we would derive the unwanted case of *Medial Conjunct Agreement*. However following the *Uniform Order of Operations*, the order of operations established at an earlier cycle ($\&P_1$) has to be repeated at $\&P_2$: $\downarrow$AGR$\downarrow$ is again counterfed by MERGE, so $\&_2$ only agrees with the highest conjunct, and the features of the middle conjunct never reach the $\&P_2$ level to then be picked up by T.

(86) $\downarrow$AGR$\downarrow$ > MERGE > $\uparrow$AGR$\uparrow$:
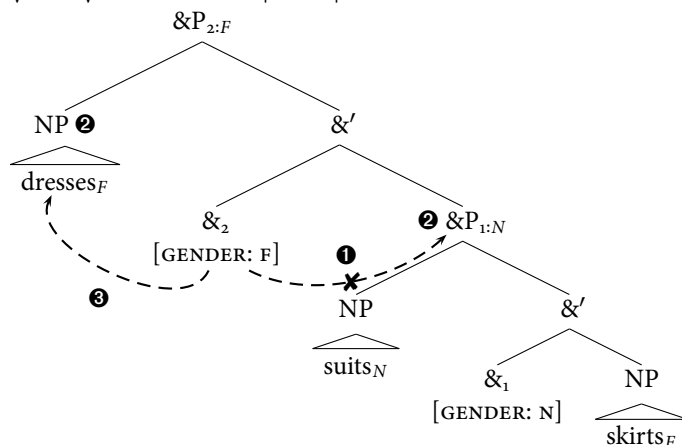
As operations on T have to be repeated in the same order, in the case of FCA, the early application of $\downarrow$AGR$\downarrow$ requires the $\&P$ not to move, otherwise its movement would result in a crash caused by bleeding $\downarrow$AGR$\downarrow$. The $\&P$ thus stays in postverbal position.

In the current system, the only way to project only the features of the middle conjunct to $\&P_2$ would be to change the order established at $\&P_1$ to $\uparrow$AGR$\uparrow$ > MERGE > $\downarrow$AGR$\downarrow$. Since changing the order in the course of the derivation is disallowed by the *Uniform Order of Operations* (37), such derivation would be illicit. As a result, agreement with the middle conjunct is successfully ruled out. Finally, since $\uparrow$AGR$\uparrow$ functions via m-command, even if we were to adopt the structure of multiple conjunctions with multiple specifiers of a single $\&$-head (suggested in (78)), the system developed here predicts that only the highest NP will be targeted by $\uparrow$AGR$\uparrow$ (since the middle conjunct would not be the closest m-commanded goal). Thus, the present system excludes *Medial Conjunct Agreement*, regardless of the exact analysis of multiple coordination one wishes to adopt.

4.4   Cross-linguistic implications

4.4.1   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 & Walkow 2013). In this section, we will show that the mechanism of conjunct agreement

presented here can deal with the data presented in Bhatt & Walkow (2013). We will see that Closest Conjunct Agreement in a head-final language such 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 (87).

(87)   Basic agreement in Hindi (Bhatt & Walkow 2013:954)

    a.   Rahul-ne   kitaab par.h-ii   thii
        Rahul.M-ERG book.F read-PFV.F be.PST.FSG
        '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
        'Rina has to write a ghazal.'

Recall from the discussion in Section 3.2.1 that the assumption that v assigns case to the object &P was crucial for ensuring its deactivation and therefore unavailability for Agree. If we adopt the assumption that v assigns case to the object, 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 object case assignment. Thus, the derivation of (87a) would look as follows:

(88)
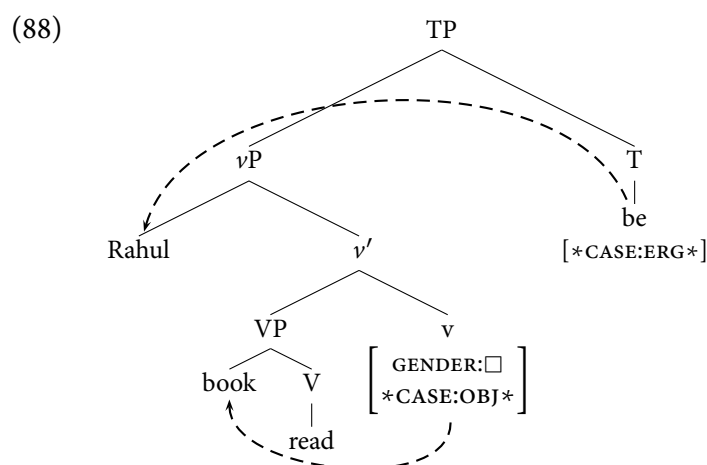
Bhatt & Walkow (2013) show that there is an asymmetry between conjoined subjects and objects. Conjoined subjects only allow for Resolved Agreement (89), whereas conjoined objects tend to result in Closest Conjunct Agreement (90):

(89)   [&P Ram   aur Sita] gaa rahe   hãĩ   / *rahii   hai.
        Ram.M and Sita.F sing PROG.MPL be.PRS.PL   *PROG.F be.PRS.SG
        'Sita and Ramesh are singing.'

(90) Main-ne [&P ek chaataa   aur ek saaRii]   (aaj) khariid-ii.
      I-ERG   an umbrella.MSG and a saaree.FSG today buy-PERF.FSG
      'I bought an umbrella and a saree.'   ([Kachru 1980](#):147)

We can account for these data as follows: If we want to derive the apparent link between gender agreement and case assignment in Hindi, then we should place both operations on *v*.[17] 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 (89) will be as follows:

(91)   (MOVE) > MERGE > ↑AGR↑ > ↓AGR↓:
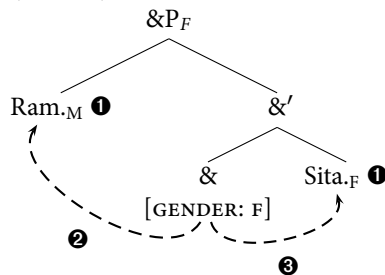
Now, this order of operations must be repeated at all later cycles following (37). The cycle of interest is *v*P rather than TP since *v* is the fallible probe in contrast to Serbo-Croatian. MOVE applies vacuously since there is nothing to move. Next, MERGE applies on *v* merging the external argument, &P. Subsequently, ↑AGR↑ assigns 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 to default masculine, as in Serbo-Croatian:

(92)   (MOVE) > MERGE > ↑AGR↑ > ↓AGR↓:
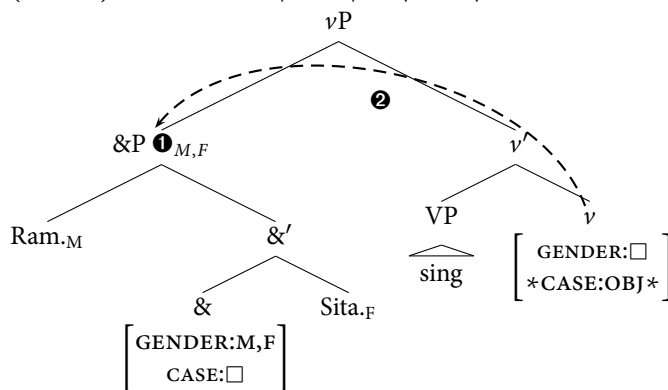
For the example (90) where we have agreement with the linearly closest conjunct, we will analyse this as LCA *in situ*. Recall that the order deriving LCA has ↑AGR↑ apply before MERGE and

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[17]The 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.
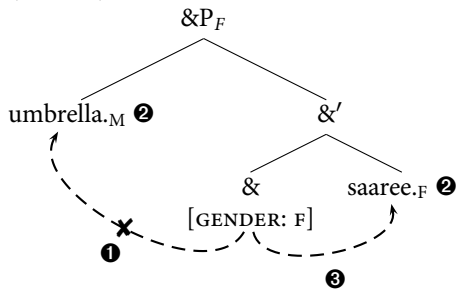
thereby be counterfed:

(93)   *Order deriving LCA*:
        (Move) > ↑Agr↑ > Merge > ↓Agr↓

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

(94)   (Move) > ↑Agr↑ > Merge > ↓Agr↓:

Crucially, at the vP level, the fact that ↑Agr↑ applies 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 (90). Therefore, Move applies first feeding ↑Agr↑ and thus gender agreement and case assignment to the object &P. The following operation is Merge, which introduces the external argument *Ram*.

(95)   (Move) > ↑Agr↑ > Merge > ↓Agr↓:
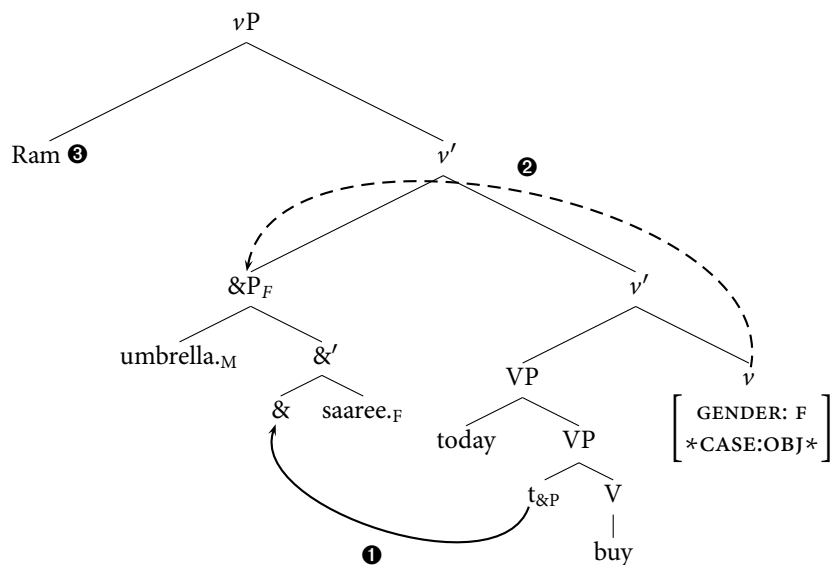
The relative orderings of ↑Agr↑ and Merge ensure that it is the moved object with which v agrees as the ↑Agr↑ applies before Merge. We see here that the general mechanism outlined in this paper can be extended to capture LCA *in situ* in Hindi, an impossible derivation in Serbo-

Croatian. 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.

4.4.2 Sandwiched Agreement

Andrew Nevins and Franc Marušič (p.c.) have pointed out that cases of so-called *sandwiched agreement* pose a potential problem for the model of conjunct agreement proposed here. Consider the following example from Marušič et al. (2007) in which the conjunct phrase is 'sandwiched' between two participles and each one agrees with the linearly closest noun phrase:

(96) Včeraj   so   bile   [&P krave   in   teleta] prodana.
      yesterday be.PST.3.PL be.PRT.FPL   cow.FPL and calf.NPL sold.NPL
      'Yesterday cows and calves were sold.'   (Slovenian, Marušič et al. 2015:51)

In the present system, the &P node hosts either information about the first conjunct, the last conjunct or both (for Resolved Agreement). Therefore, even if we assume there are two probes in the structure above, they should both pick up whichever information happened to be projected to the &P node, and we would never expect an asymmetry between agreeing elements. While these structures remain a potential challenge for all theories of conjunct agreement, we will demonstrate that our system is capable of handling these cases, given the right assumptions. First, since there are two loci of agreement, it seems reasonable to assume that there are two distinct probes in this structure, each targeting a different goal. A theory like the one pursued thus far with just T as the single probe and a secondary link to the participles would struggle to capture this fact. Thus, let us assume that the probes in this structure are *v* and T respectively (as we assumed for the analysis of Hindi in the previous section). *v* probes for gender and passes on its value to the participle in V and T probes for gender and passes the resulting value to the perfect auxiliary participle. Furthermore, it seems plausible to suggest that once a feature has been targeted for Agree, it is then subsequently inactive or 'invisible' for later Agree operations (this is a fundamental assumption in the analyses of Bošković 2009 and Bhatt & Walkow 2013). Furthermore, a striking fact about (96) is that the conjunct phrase appears to have been scrambled to a preverbal position below the first participle *bile* in the middle field. This will follow naturally once we assume that we are dealing with LCA at the &P level and that *v* is the infallible probe in this structure.

At the &P, the order of operations will be the typical LCA order we encountered in the previous section (counter-feeding of ↑AGR↑). This results in the gender feature of the second conjunct being present at the &P node (97).

(97) (Move) > ↑Agr↑ > Merge > ↓Agr↓:

$$\&P_N$$

cows$_F$ ❷ &′

&$_1$ [GEN: N] calves$_N$ ❷

❶ ✗ ❸
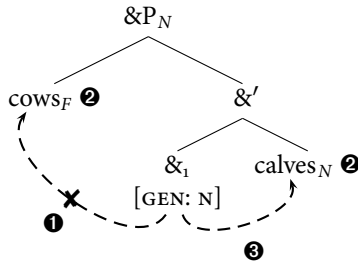
At the vP level, since the order previously determined at the &P had ↑Agr↑ apply early and v is an infallible probe in this structure, it then follows that Move must apply in order to feed ↑Agr↑. Thus, the conjunct phrase moves to Spec-vP, i.e. into the pre-verbal 'sandwiched' position, and then ↑Agr↑ applies taking the value at the &P node (neuter).

(98) Move> ↑Agr↑ > Merge > ↓Agr↓:

$$v\text{P}$$

&P$_N$ ❷ v′

cows$_F$ &′ v [GEN:N] VP

& [GEN: N] calves$_N$ V t$_{DP}$

❶
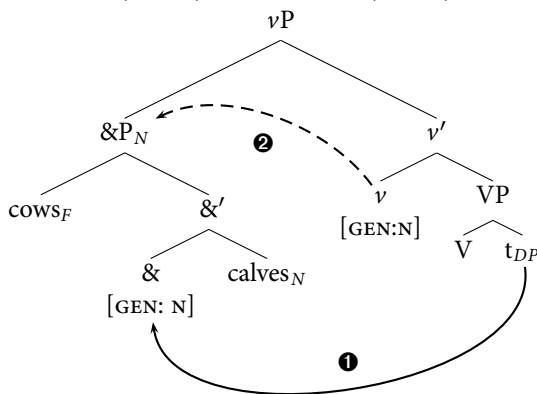
Subsequently, the participle phrase (PartP) is merged, followed by the second gender probe on the T head. At this point, the same order of operation applies, however, since T is not the infallible probe in this structure, no movement is necessary and &P stays put. The next relevant operation to apply is ↓Agr↓. As mentioned above, we will adopt the assumption in Bošković (2009); Bhatt & Walkow (2013) that a goal is deactivated/inaccessible for later cycles of Agree, i.e. a goal is only accessible for a single cycle of Agree. As a result, since the lower v already entered an Agree relation with the neuter feature of the &P, this is not a potential goal for T. Subsequently, T will target the next highest goal, the first conjunct, and copy its feminine feature. In a later step, the relevant features of T and v and realized on the participle auxiliary and the lexical verb respectively.

(99) MOVE> ↑AGR↑ > MERGE > ↓AGR↓:
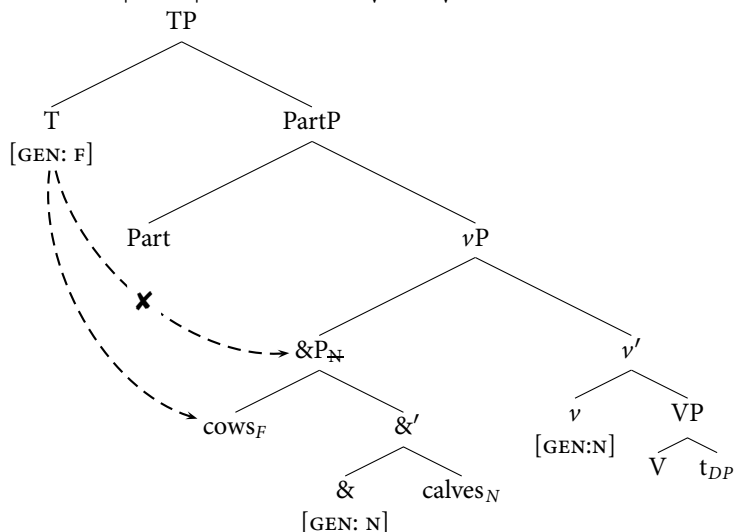
Therefore, what looks likes the most extreme case of linearly conditioned agreement, i.e. two probes each agreeing with the linearly closest conjunct, can be handled in the present system without any major additional stipulations. Thus, cases of 'sandwiched agreement' do not constitute a major problem for the approach developed here.

5 Conclusion

In this paper, we have argued that the notion of 'closest' in Closest Conjunct 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 conjunct agreement is to assume variability in the order of application of basic syntactic operations. Doing 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 & 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 has to do with the derivational history. Interestingly, the most opaque cases (e.g. preverbal FCA), which involve counterfeeding of both Agree operations

turn out to also be rare.

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. ↑Agr↑ 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 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* (37) leads to correctly ruling out LCA postverbally in Serbo-Croatian. 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, 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 alignment systems). 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 4.4, 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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