The interaction of gender, number and class features on nouns in Bosnian/Croatian/Serbian[*]

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1   Introduction and overview

Problem: According to their agreement patterns, the so-called *hybrid nouns* in Bosnian/Croatian/Serbian (henceforth:BCS) seem to have two kinds of gender – natural gender (reflecting the gender of the referent) and grammatical gender (assigned formally). While in the singular they always trigger natural (masculine) agreement, alternation between the two (masculine or feminine) obtains in the plural:

(1) a. Moj   novi   komšij-**a**   me je juče   poseti-**o**.
          my.NOM.MSG new.NOM.MSG neighbour-NOM.MSG me is yesterday visit.PRT-MSG
          'My new neighbour visited me yesterday.'

     b. Moj-**e**   nov-**e**   komšij-**e**   su me juče   posetil-**e**.
          my-NOM.FPL new-NOM.FPL neighbour-NOM.FPL are me yesterday visit.PRT-FPL
          'My new neighbours visited me yesterday.'

     c. Moj-**i**   nov-**i**   komšij-**e**   su me juče   posetil-**i**.
          my-NOM.MPL new-NOM.MPL neighbour-NOM.MPL are me yesterday visit.PRT-MPL
          'My new neighbours visited me yesterday.'

Claim: I argue that alternations in the plural are a result of the same underlying syntactic mechanism of agreement, which essentially involves *cyclicity and intervention effects caused by plural number*.

- Natural gender is featurally more complex, containing more atomic units organised in a feature hierarchy (Harley & Ritter 2002).

- Natural and grammatical gender are located at different functional projections in syntax, natural gender being lower in the structure.

- Gender probe is relativised (Béjar & Rezac 2009; Preminger 2014) towards natural gender features in BCS, deriving the preference for natural gender agreement in the singular.

- Plural number is hosted by a functional projection NumP, above the natural gender and below the grammatical gender.

- Gender and number agreement are two separate operations that can be carried out in different orders with respect to each other. The variable orders together with intervention by NumP lead to the agreement alternation in the plural.

Outline:

2 Patterns of agreement of Class II nouns in BCS

In this section I will show that BCS nouns of Class II fall into subclasses that trigger one of the following agreement patterns:

TYPE OF NOUN	SINGULAR AGREEMENT	PLURAL AGREEMENT
natural masculine (*vladika* 'bishop')	masculine (natural)	masculine (natural) / feminine (grammatical)
gender variable (*mušterija* 'customer')	masculine/feminine (natural)	masculine/feminine (natural) / feminine (grammatical)
natural feminine (*majka* 'mother')	feminine (natural)	feminine (natural)
grammatical feminine (*stolica* 'chair')	feminine (grammatical)	feminine (grammatical)

Table 1: Summary of gender agreement patterns with Class II nouns

All Class II nouns are able to trigger feminine agreement and are therefore treated as having feminine grammatical gender. The interesting case are the nouns that can have varying agreement patterns in the plural (see the marked cells in Table 1).

2.1 Nouns with natural masculine and grammatical feminine gender

- Include nouns such as *vladika* 'bishop', *vojvoda* 'duke', *gazda* 'landlord', *starešina* 'head, senior', *drvodelja* 'carpenter', *bekrija* 'tippler', *kolega* 'colleague', *komšija* 'neighbour', among others (Stanojčić & Popović 1992; Stevanović 1989).

- They denote human animate male referents, hence they are assigned natural masculine gender.

- In the singular, they always trigger masculine agreement (straightforwardly reflecting the natural gender on the noun), but in the plural, they can trigger either masculine or feminine agreement:

(2)   a.   Moj-∅/*moj-**a**   nov-**i**/*nov-**a**   komšij-**a**   me je juče
         my-MSG/my-FSG new-MSG/new-FSG neighbour-MSG me is yesterday
         poseti-**o**/*posetil-**a**.
         visit.PRT-MSG/visit.PRT-FSG
         'My new neighbour visited me yesterday.'
   b.   Moj-**e**/moj-**i**   nov-**e**/nov-**i**   komšij-**e**   su me juče
         my-FPL/my-MPL new-FPL/new-MPL neighbour-MPL are me yesterday
         posetil-**e**/posetil-**i**.
         visit.PRT-FPL/visit.PRT-MPL
         'My new neighbours visited me yesterday.'

- Feminine agreement in the plural indicates that they seem to be treated as grammatically feminine nouns by the grammar, which is why they have been treated in the literature as having both masculine and feminine gender features (Corbett 1983, 2010; Wechsler & Zlatić 2000, 2003, 2012; Alsina & Arsenijević 2012a,b).

2.2   Nouns with variable natural gender and grammatical feminine gender

- Include nouns such as *budala* 'fool', *varalica* 'cheater', *kolovođa* 'leader in traditional dances', *mušterija* 'customer', *propalica* 'loser, failure', *pijanica* 'drunkard', *skitnica* 'wanderer, drifter', *sluga* 'servant', *sudija* 'judge', among ohers (Stevanović 1989).
- *Gender variable nouns* – nouns to which either masculine or feminine natural gender can be assigned, without any change in form. In order to disambiguate between the two genders, it is necessary to know the context.
- Nouns from this group have either masculine or feminine natural gender, but their grammatical gender is feminine.
- In the singular, agreement reflects the natural gender of the noun.

(3)   a.   Naš-**a**   redovn-**a**   mušterija   je dobil-**a**   popust.
           our-FSG regular-FSG customer.FSG is get.PRT-FSG discount
           'Our regular (female) customer got a discount.'
      b.   Naš-∅   redovn-**i**   mušterija   je dobi-**o**   popust.
           our-MSG regular-MSG customer.MSG is get.PRT-MSG discount
           'Our regular (male) customer got a discount.'

- In the plural, alternations between natural and grammatical gender agreement are possible.

(4)   Naš-**e**/naš-**i**   redovn-**e**/redovn-**i**   mušterije   su dobil-**e**/dobil-**i**   popust.
      our-FPL/our-MPL regular-FPL/regular-MPL customer.FPL are get-PRT.FPL/get-PRT.MPL discount
      'Our regular customers got a discount.'

2.3   Nouns with natural feminine gender

- Include nouns such as *majka* 'mother', *sestra* 'sister', etc. They denote female referents.
- Their morphosyntactic gender transparently reflects the biological one.

(5)   a.   Pametn-**a**   devojčic-**a** je otišl-**a**   u šetnju.
           smart-FSG girl-FSG   is go.PRT-FSG in walk
           'A smart girl went for a walk.'
      b.   Pametn-**e**   devojčic-**e** su otišl-**e**   u šetnju.
           smart-FPL girl-FPL   are go.PRT-FPL in walk
           'Smart girls went for a walk.'

2.4   Nouns with grammatical feminine gender

- Include include nouns such as *stolica* 'chair, *kuhinja* 'kitchen', etc. They denote inanimate objects.
- Their morphosyntactic gender is assigned formally.

(6)   a.   Drven-**a**   stolic-**a**   je stajal-**a**   u kuhinji.
           wooden-NOM.FSG chair-NOM.FSG is stand.PRT-FSG in kitchen
           'A wooden chair was standing in the kitchen.'
      b.   Drven-**e**   stolic-**e**   su stajal-**e**   u kuhinji.
           wooden-NOM.FPL chair-NOM.FPL are stand.PRT-FPL in kitchen
           'Wooden chairs were standing in the kitchen.'

2.5   Interim summary

Descriptive generalisations:

1. All the nouns from Class II are grammatically feminine. There is no restriction on their natural gender – it can be feminine, masculine, variable, or undesrpecified.

2. Both natural and grammatical gender features can be present on a single noun.

3. Agreement mechanisms in BCS seem to be able to operate on both kinds of gender. Consequently, gender features on nouns must be sufficiently similar in structure for Agree to recognise them. The gender features also need to be sufficiently different for the Agree mechanisms to target natural gender in the singular and allow for alternations in the plural.

4. Gender agreement needs to see the plural number, meaning in turn that agreement for gender must be sensitive to number information on the noun.

3   Previous accounts

Most of the previous accounts treat masculine Class II nouns as "special", and their agreement patterns as exceptional. I will show that, in fact, these nouns follow regular agreement patterns, and the only special thing about them is that the have two gender features (where I follow previous literature).

Corbett (1991, 2007, 2010):

- Nouns of dual gender in BCS are 'hybrids' and therefore subject to 'usual constraints on such nouns', i.e. they can control 'syntactic agreement' (grammatical gender agreement) and 'semantic agreement' (natural gender agreement).

Wechsler & Zlatić (2000, 2003, 2012):

- An HPSG account, elaborate constraints on gender assignment, either according to class features, or semantic gender.
- Even though intuitively appealing, the analysis ultimately does not derive the obligatoriness of natural (semantic) agreement in the singular and optionality between natural and grammatical agreement in the plural.

Minimalist accounts dealing with gender agreement in BCS are still scarce[1] (but see Landau 2015 for a recent proposal on agreement with hybrid nouns in Hebrew). An account dealing with the nouns above needs to capture the following:

1. the difference in structure and representation of semantic and syntactic gender features and their location within the hierarchical structure of a nominal phrase

2. mechanisms of Agree that targets gender features, yielding different agreement patterns

3. an appropriate explanation for the causes of alternations in the plural.

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[1]Some Minimalist accounts that touch upon gender features in general in BCS through dealing with different agreement phenomena include Bošković (2009) (dealing with conjunct agreement) and Arsenijević & Gračanin-Yuksek (2015) (dealing with agreement in relative clauses). Both approaches would have to be extended to explain either the existence of two types of features on the same noun (Bošković 2009), or assuming that two kinds of features are present, in what circumstances Agree targets each of them Arsenijević & Gračanin-Yuksek (2015).

4   Analysis

- The proposal I develop captures the patterns from Section 2 by means of relativised probing, cyclicity in application of Agree operations, and intervention effects.

- I start by proposing the position of number and (two) gender features within the DP.

- Afterwards, I develop a theory of Agree that can distinguish between the two types of gender features, systematically operating on them in a different way.

- I show how plural number, located between the two gender features, triggers intervention effects for Agree.

4.1   The structure of DP in BCS

4.1.1   Gender on nouns

Adopting the framework of Distributed Morphology (Halle & Marantz 1993; Harley & Noyer 1999), I follow Kihm (2005); Lowenstamm (2008); Acquaviva (2009); Kramer (2014) in treating gender as a morphosyntactic feature supplied in the course of the derivation.

Natural gender features: I assume that *natural gender is a feature introduced by the nominalising head.*

(7)   Nominalizer *n* + a category-free root (Halle & Marantz 1993; Harley & Noyer 1999)

$$n\text{P}_{[gen:,\ anim:]}$$
$$n_{[gen:,\ anim:]} \qquad \sqrt{root}$$
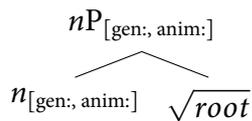
- A language has a limited number of nominalizers and each of them can merge only with certain roots. The possible combinations of nominalizers and corresponding roots are regulated by licensing conditions (Acquaviva 2009, 2014; Kramer 2009, 2014).

- I propose that BCS has three different nominalizers that build the four types of Class II nouns discussed in Section 2, all of which will be phonologically realised as the suffix *-a* in nominative singular.

(8)   a. $n_{m[gen:m,anim:+]}$[2] $+ \sqrt{vladik-}$ 'bishop'... → biologically masculine   (cf. Section 2.1)

b. $n_{f[gen:f,anim:+]} + \sqrt{majk-}$ 'mother'... → biologically feminine   (cf. Section 2.3)

c. $n_{\varnothing} + \sqrt{stolic-}$ 'chair'... → grammatically feminine inanimate   (cf. Section 2.4)

- Roots for gender variable nouns, such as $\sqrt{budal-}$ 'fool' (cf. Section 2.2) can be optionally licensed under n_m, n_f or $n_{\varnothing}$, deriving nouns with natural masculine, natural feminine, or grammatical feminine gender, respectively.

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[2]I assume that animacy is also a feature introduced by the nominalizer. Animacy together with gender are what constitutes natural gender, as explained shortly below.

Grammatical gender features: I assume that *grammatical gender features are present on a higher functional projection, GenP* (Bernstein 1993; Picallo 2008).

- GenP is assigned feminine gender with Class II nouns by a redundancy rule in the grammar of BCS. This rule specifies Class II nouns as grammatically feminine by supplying grammatical gender on them on the basis of their declension class (cf. redundancy rules in Chomsky 1965; Harris 1991; Wechsler & Zlatić 2000, and Scheffler 2004 for hybrid nouns in BCS).
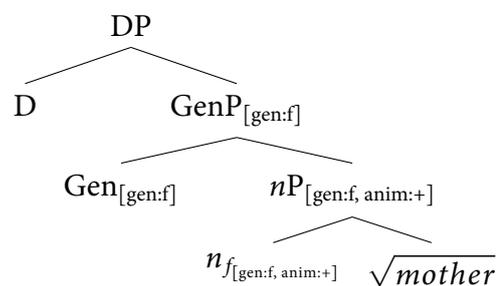
(9) $\text{Gen}_{[gen:\square]} \to \text{Gen}_{[gen:f]}/n_{[\text{class II}]}$

> **The consequence of the current approach:** *two positions for gender features on nouns* – natural gender is lower on *n*, while grammatical gender is on Gen.
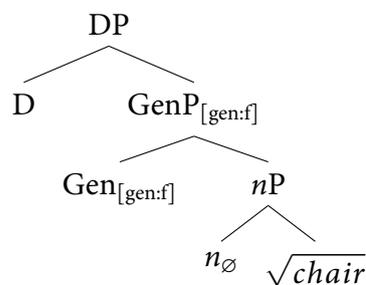
(10)   Nouns with natural masculine gender (cf. Section 2.1)
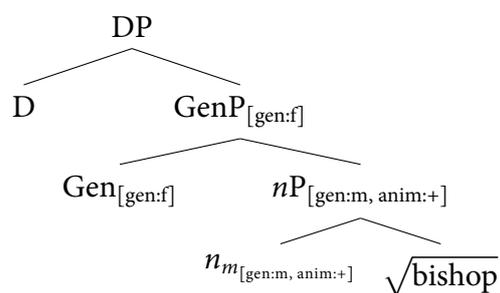
(11)   Nouns with natural feminine gender (cf. Section 2.3)

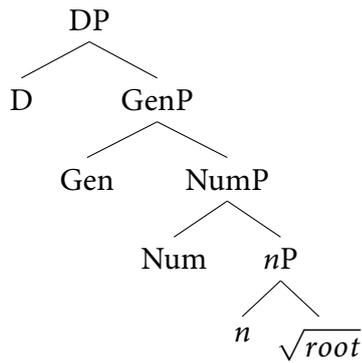(12)   Grammatically feminine inanimate nouns (cf. Section 2.4)

- Gender variable nouns like *budala* 'fool' (cf. Section 2.2) can be structured as either (10), (11), or (12), depending on the nominalizer the root is merged with, yielding nouns with natural masculine, natural feminine or grammatical feminine gender, respectively.

4.1.2   Number on nouns

- I assume that number on nouns in BCS is specified on the DP within the functional projection NumP (Picallo 1991; Bernstein 1993; Borer 2005; Acquaviva 2008; Harbour 2008).
- NumP is projected only in the plural (Kratzer 2007). Singular number is therefore treated as the absence of number (see Béjar & Rezac 2003; Anagnostopoulou 2005; Adger & Harbour 2007 for a similar treatment of third person features).

> I propose that NumP, when present, is projected between *n*P and GenP. As I argue below, this can straightforwardly capture the influence of nominal number marking on gender agreement.
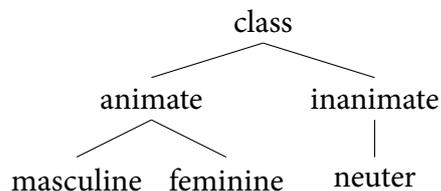
(13)   Structure of DP in BCS

```
            DP
          /    \
         D     GenP
              /    \
            Gen    NumP
                  /    \
                Num     nP
                       /  \
                      n   √root
```

4.2   Feature hierarchies, relativised probing and the mechanics of Agree

4.2.1   Feature geometric approach to ϕ-features

I adopt the *feature geometry* approach to ϕ-features (Harley & Ritter 2002; McGinnis 2005; Béjar & Rezac 2009; Georgi 2012, 2013; Nevins 2007; Preminger 2011, 2014).

- The underlying idea is that person, number and gender features are in a hierarchical entailment relationship with respect to one another. The complexity of a feature is reflected in the number of nodes it contains (every node in the hierarchy entails the presence of all the nodes above it).
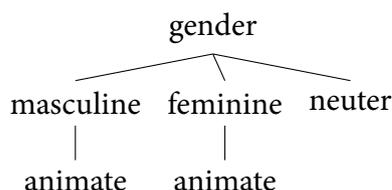- Harley & Ritter (2002) hierarchy for gender:

(14)
```
                    class
                  /       \
             animate     inanimate
             /     \          |
      masculine  feminine   neuter
```

I propose an adaptation of the hierarchy that can capture gender in BCS (and possibly languages with the same mixed gender system).

- I see the category 'class' being re-interpreted as gender in BCS (morphological class features in BCS are connected to gender features via redundancy rules, cf. (9)).
- I propose that gender is the more general category, dominating the animacy node (see (15)).
- Consequently, all nominals in BCS contain the gender node, but those that have natural gender also contain the additional 'animate' node below it. Natural gender is therefore more complex than grammatical gender, since it contains an animacy node in addition to a gender node.

(15)   Modified hierarchy for gender

```
                  gender
                /    |    \
        masculine feminine neuter
            |        |
         animate  animate
```

> *Natural gender* is in fact just a featural composite, consisting of gender and animacy features. *Grammatical gender* is less marked in the geometry and consists of the gender feature alone.

Schematically, the two types of gender will be represented as follows:

(16)   Natural gender:
$$\begin{bmatrix} \text{gen:m/f} \\ \text{anim:+} \end{bmatrix}$$

(17)   Grammatical gender:
$$\begin{bmatrix} \text{gen:m/f/n} \end{bmatrix}$$

4.2.2   Relativised probing

Assumptions on Agree under the Relativised probing approach (Béjar 2003; Béjar & Rezac 2003, 2009; Georgi 2012, 2013; Nevins 2007, 2011; Preminger 2014):

- A probe can be relativised toward a certan type of feature (i.e. a feature of certain complexity).
- Gender probe in BCS is relativised towards natural gender:[3]

(18) $$\begin{bmatrix} *\text{gen:}\square* \\ *\text{anim:}\square* \end{bmatrix}$$

- Condition on Agree: The goal needs to have the same structure as the probe (cf. Béjar 2003).
- Result: The probe can skip certain phrases in its search domain as potential goals if they do not have the features of corresponding complexity.
- If the probe does not find the right goal, Agree does not result in valuation, which triggers a second cycle of Agree.
- Consequences for gender agreement in the current system:

(19)   Agree with GenP (no valuation):

PROBE	GOAL: GenP	AGREE
$*$gen:$\square*$ $*$anim:$\square*$	[gen:f]	✗

(20)   Successful Agree for natural gender:

PROBE	GOAL: nP	AGREE
$*$gen:$\square*$	[gen:f]	✓
$*$anim:$\square*$	[anim:+]	✓

- If the probe does not find natural gender on nP, a new cycle of Agree is initiated. The probe's features are reduced up to the root node [$*$gen:$\square*$] (see Béjar 2003), leading the probe to only look for gender features, disregarding animacy.
- At this point, GenP, as the closest goal with the corresponding feature, is able to value the probe's features, resulting in valuing the probe with grammatical gender features.

4.2.3   Modelling number intervention – separate probing and order of operations

Assumptions on order and domains of Agree:

1. *Probing for number and gender features are performed separately by means of two Agree operations* (see Anagnostopoulou 2003; Béjar 2003; Chomsky 2000; Laka 1993; Marušič, Nevins & Badecker 2015; Preminger 2014; Sigurðsson 1996; Sigurðsson & Holmberg 2008; Shlonsky 1989 for various applications of this proposal).

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[3]I will use the notation [$*$F:$\square*$] introduced in Heck & Müller (2007) to denote an unvalued probe feature.

- Both probes for number and gender are located on the same head Béjar & Rezac (2009).
- I assume that the order of application of Agree operations they trigger is underspecified (Müller 2009; Georgi 2014, Assmann et al. to appear): probing for number can be ordered prior to probing for gender, or gender probing can be ordered before number probing.
- I assume that the operation-triggering features are ordered on a stack and this order determines probe feature discharge.

(21)   Gender Agree > Number Agree

$$\left[\begin{array}{c} \left[\begin{array}{c} *\mathrm{gen}:\square* \\ *\mathrm{anim}:\square* \end{array}\right] \\ \left[\,*\#:\square*\,\right] \end{array}\right]$$

(22)   Number Agree > Gender Agree

$$\left[\begin{array}{c} \left[\,*\#:\square*\,\right] \\ \left[\begin{array}{c} *\mathrm{gen}:\square* \\ *\mathrm{anim}:\square* \end{array}\right] \end{array}\right]$$

2. *In case of multiple Agree operations, one Agree operation can only apply within the domain established by the previous Agree operation.*

   - After an Agree operation has been carried out, the phrase projected by the head bearing the goal feature, and all syntactic objects dominated by the phrase, become inaccessible for further Agree operations.
   - The subsequent Agree operation needs target the structure that is within the domain of the previous Agree – between the probe and the goal targeted in the first Agree operation (cf. locality constraints on movement *Shortest Move* (Richards 2001) or *Approach the Probe Principle* (Branigan 2012, 2013)).
   - In current terms: assuming the order in (22), if Agree targets NumP, it renders that NumP, and all the phrases dominated by it, inaccessible for further Agree operations, so the subsequent Agree operation cannot target *n*P.

(23)
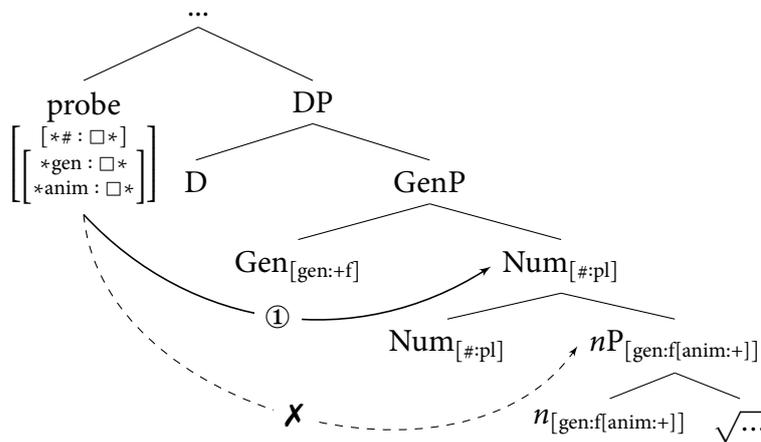
3. *Failed Agree results in default valuation*

   - Agree needs to be carried out in appropriate circumstances once it is triggered, but its failure to find a goal does not result in a crash (Preminger 2014). In the case at hand, if the $[\,*\#:\square*\,]$ probe does not find a phrase that contains number features, the number feature of the probe will be supplied as singular by default.

4.3   Deriving the patterns

4.3.1   Nouns with natural masculine gender

Recall that natural gender on these nouns is specified as [gen:m[anim:+]] on their *n*P, reflecting the fact that these nouns denote male entities, while GenP is specified as [gen:f], reflecting the grammatical gender. The aim is to derive the alternations in the plural.

Gender Agree > **Number Agree**

- [∗gen:□[anim:□]∗] probe is discharged first. Since the *n*P contains both gender and animacy features, valuation of the probe with natural gender will be successful.
- The subsequent Number Agree will also be successful as it applies to a domain dominating *n*P.

(24)   **Natural masculine gender:** [∗gen:□[anim:□]∗] > [∗#:□∗]
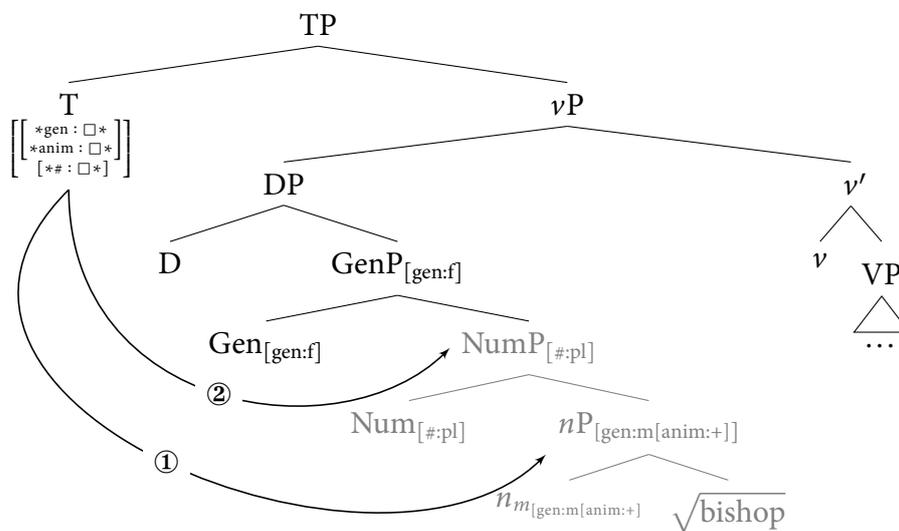
Agreement process:

① Agree (T[∗gen:□[anim:□]∗], *n*P[gen:m[anim:+]]) ⇒ T[gen:m[anim:+]]

② Agree (T[∗#:□∗], NumP[#:pl]) ⇒ T[#:pl]

☞ As a result, T's gender feature is valued by natural masculine gender.

Number Agree > **Gender Agree**

- After discharging the [∗#:□∗] probe, the NumP which provides the value for this probe is rendered opaque for further Agree operations. Any subsequent Agree operation has to apply to a phrase dominating NumP.
- Gender Agree cannot target the lower *n*P and therefore cannot reach the natural gender feature value. Gender Agree thus fails to find a target, which initiates the second cycle of Agree.
- In the second cycle, the gender probe is reduced in such a way to look only for [∗gen:□∗] feature. Such a feature is accessible on GenP, which provides T with the value grammatical feminine.

(25) **Grammatical feminine gender:** [∗#:□∗] > [∗gen:□[anim:□]∗]
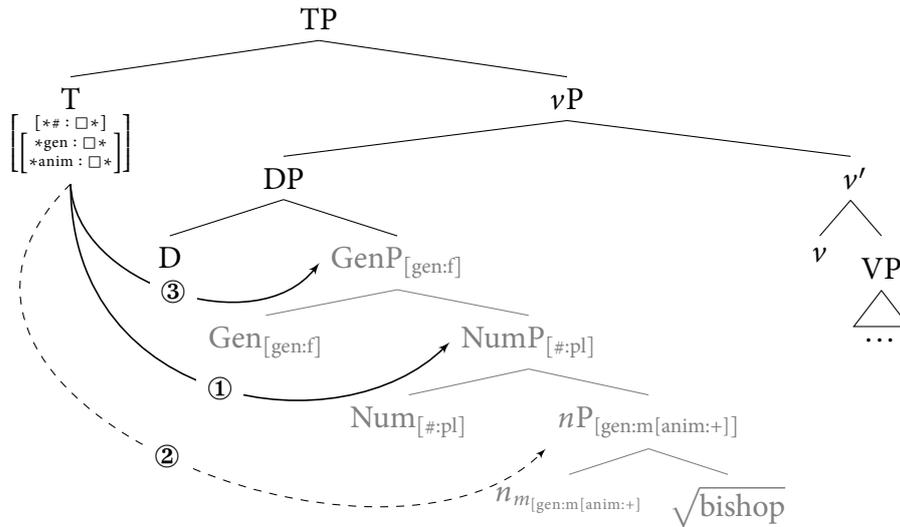
Agreement process:

① Agree (T[∗#:□∗], NumP[#:pl]) ⇒ T[#:pl]

② Agree (T[∗gen:□[anim:□]∗], nP[gen:m[anim:+]]) ⇒ fail

③ Agree (T[∗gen:□∗], GenP[gen:f]) ⇒ T[gen:f]

☞ As a result, T's gender feature is valued as grammatical feminine.

Singular nouns

- Recall that NumP is assumed not to be projected in the singular.
- Assuming that Gender Agree precedes Number Agree, [∗gen:□[anim:□]∗] will be discharged first and the probe will be valued by the natural gender feature of the *n*P.
- The subsequent [∗#:□∗] probe will not find a goal as there is no number feature on DP. Number Agree thus fails and the number feature of the probe is valued as singular by default.
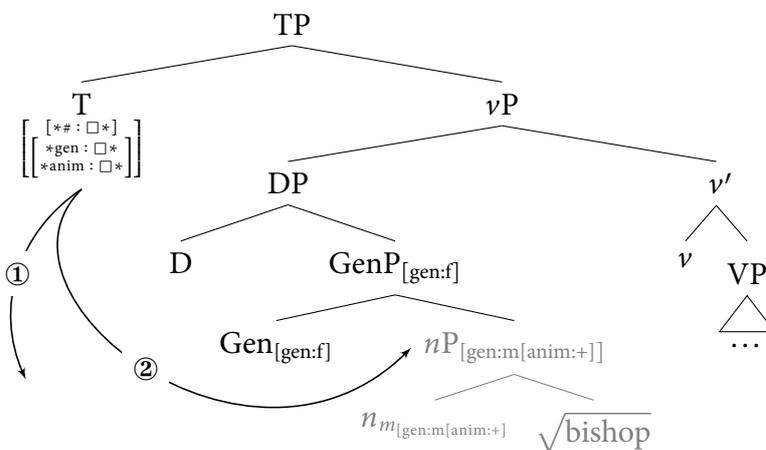
(26) Singular agreement ([∗gen:□[anim:□]∗]>[∗#:□∗]):
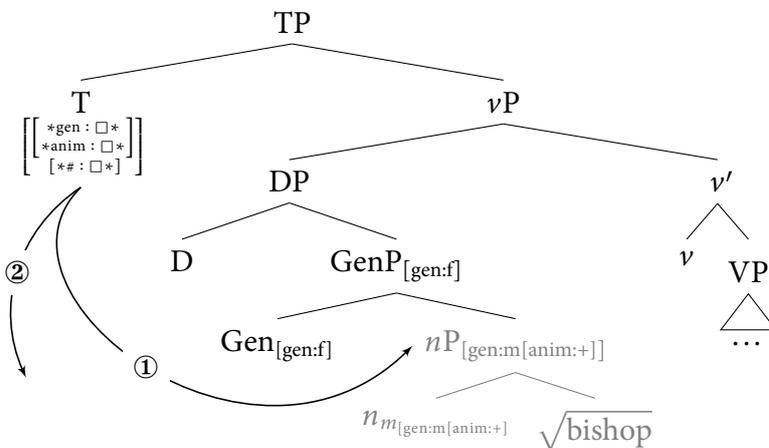
Agreement process:

① Agree (T[∗gen:□[anim:□]∗], nP[gen:m[anim:+]]) ⇒ T[gen:m[anim:+]]

② Agree (T[∗#:□∗]) ⇒ fail, no NumP

☞ As a result, gender probe on T will always be valued by natural gender, as there is no NumP to act as intervener to gender agreement. This is the desired result since, such nouns invariably show masculine agreement in the singular.

- The reverse order of operations yields the same result.
- The [∗#:□∗] probe will not find a corresponding valued feature on DP. This Agree operation fails and the unvalued number feature is valued as singular by default.
- None of the phrases on DP is affected by Number Agree, so the subsequent [∗gen:□[anim:□]∗] probe can reach nP and the natural masculine gender feature on it.

(27)   Singular agreement ([∗#:□∗]>[∗gen:□[anim:□]∗]):

Agreement process:

① Agree (T[∗#:□∗]) ⇒ fail, no NumP

② Agree (T[∗gen:□[anim:□]∗], nP[gen:m[anim:+]]) ⇒ T[gen:m[anim:+]]

☞ This ensures that the gender probe on T will always be valued by natural gender, in case there is no NumP to act as intervener to gender agreement.

4.3.2   Nouns with natural feminine gender

Recall that nouns with natural feminine gender (cf. Section 2.3) have the features [gen:f[anim:+]] on their nP, and [gen:f] on the GenP, as a reflection of belonging to Class II.

Gender Agree > Number Agree

- The [∗gen:□[anim:□]∗] probe will be discharged before the [∗#:□∗] probe.
- Since the nP contains both gender and animacy features, valuation of the probe with natural gender will be successful. The subsequent Number Agree will also be successful as it applies to a domain dominating nP.

(28) **Natural feminine gender**: [∗gen:□[anim:□]∗] > [∗#:□∗]
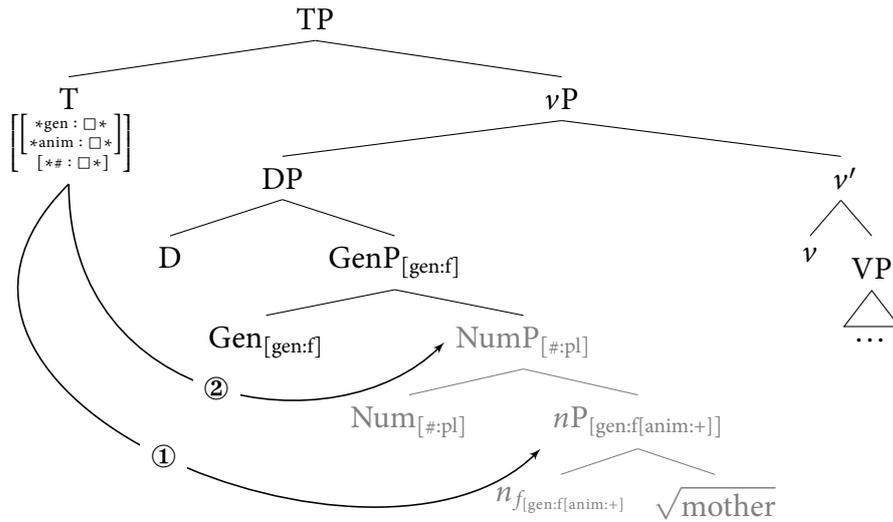
Agreement process:

    ① Agree (T[∗gen:□[anim:□]∗], nP[gen:f[anim:+]]) ⇒ T[gen:f[anim:+]]

    ② Agree (T[∗#:□∗], NumP[#:pl]) ⇒ T[#:pl]

☞ As a result, T's gender feature is valued as natural feminine.

Number Agree > **Gender Agree**

- The reverse order of Agree operations leads to grammatical gender agreement, but the surface result is the same with these nouns, as both gender features are feminine. The process in (29) is the same as (25) above:

(29) **Grammatical feminine gender**: [∗#:□∗] > [∗gen:□[anim:□]∗]
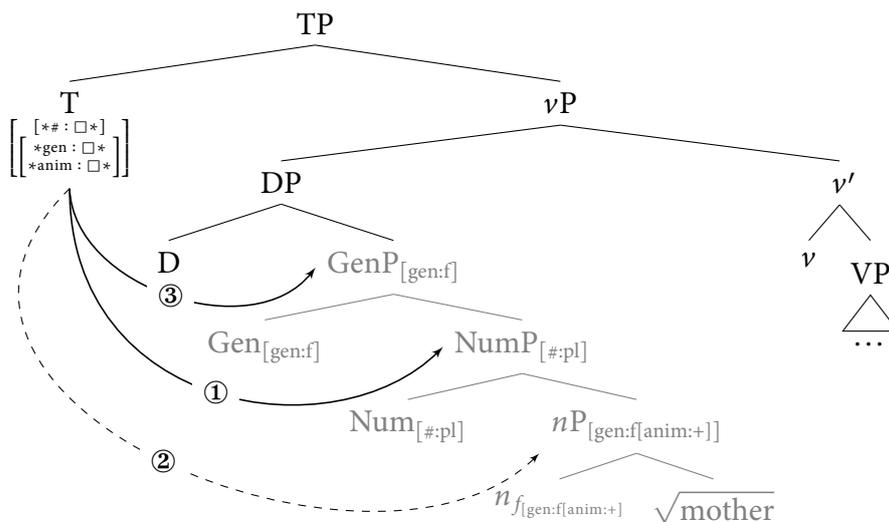
Agreement process:

① Agree (T[∗#:□∗], NumP[#:pl]) ⇒ T[#:pl]

② Agree (T[∗gen:□[anim:□]∗], nP[gen:f[anim:+]]) ⇒ fail

③ Agree (T[∗gen:□∗], GenP[gen:f]) ⇒ T[gen:f]

☞ As a result, T's gender feature is valued as grammatical feminine.

4.3.3   Nouns with grammatical feminine gender

Recall that grammatically feminine nouns have no gender features on *n*P. They only have the [gen:f] value on GenP. GenP is therefore the only possible target for Gender Agree.

Gender Agree > Number Agree

- Agree for natural gender will inevitably result in non-valuation of probe's features, as they cannot be provided by the *n*P.
- This triggers the new cycle of Gender Agree in which the probe looks only for [∗gen:□∗] feature. Yet, since Number Agree is the next operation in line, I assume it applies right after Agree for natural gender. This follows under the assumption that all instances of first-cycle Agree precede instances of second-cycle Agree. Alternatively, Number Agree, being an obligatory operation, precedes the second-cycle Gender Agree, which is a repair mechanism.
- After the successful Number Agree, the gender probe carries out the second cycle of gender agreement, targeting the GenP.

(30)   **Grammatical feminine gender**: [∗gen:□[anim:□]∗] > [∗#:□∗]
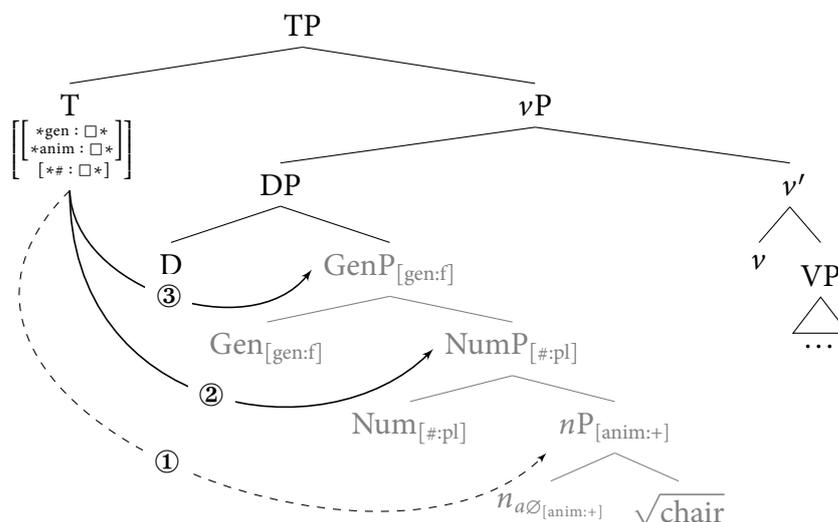
Agreement process:

① Agree (T[∗gen:□[anim:□]∗], *n*P[anim:+]) ⇒ fail

② Agree (T[∗#:□∗], NumP[#:pl]) ⇒ T[#:pl]

③ Agree (T[∗gen:□∗], GenP[gen:f]) ⇒ T[gen:f]

☞ As a result, T's feature is valued as grammatical feminine.

- If the reverse order of operations applies, the derivation involves the same steps as (25) and (29) above. After T's number probe has been valued successfully, gender probe cannot target the nP, in which case natural gender agreement fails. The second cycle of Gender Agree is initiated, where the gender feature of the probe [∗gen:□∗] is valued by the gender feature from GenP.

4.3.4 Gender variable nouns

- Recall from Section 4.1.1 that gender variable nouns can have natural masculine, natural feminine or grammatical feminine gender.

- If a noun is assigned natural masculine gender under n_m, the agreement it triggers follows the patterns from Section 4.3.1.

- If a noun is assigned natural feminine gender under n_f, the agreement patterns will reflect those presented in Section 4.3.2.

- If a noun is assigned grammatical feminine under $n_\varnothing$, it behaves like the nouns in 4.3.3. The only target for gender features is GenP, which means that such noun can only ever trigger grammatical feminine agreement.

5 Conclusions

- I have argued that alternations in the agreement patterns with hybrid nouns follow from the structural complexity of gender features, their position in the DP and the differences in the ordering of Agree operations and, crucially, on the Cycle-like locality condition on Agree.

- A unified treatment of natural and grammatical gender within the feature-geometric approach captures their similarities (they both have the gender node), as well as differences (natural gender has an additional animacy node below, making it more complex and more marked).

- The structure of gender features also allows for modelling the preference for natural gender agreement in the singular. Making the gender probe sensitive to the difference in structural complexity of the features under relativised probing, relativising it towards natural gender, yields exactly the appropriate patterns.

- Locating gender features in different structural positions provides a handle on their different behaviour in singular and plural. Their position is what causes them to be targeted by Agree operations differently.

- The assumption of underspecification of order of Agree operations correctly models the optionality between grammatical and natural gender agreement and Locality restrictions on cyclic application of Agree operations provide a derivational model of number intervention effects.

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