

The syntax of gender features: The morphologist's guide to feature-bundling traps¹

Guiding question: are ϕ -features special?

- current theories of syntax treat ϕ -features fundamentally differently than other syntactic features, both in terms their geometry and the types of syntactic relations they enter
- an example: special theories of agree that allow for feature value comparisons, a reconciliation of multiple valuation sources etc. (Béjar, 2000; Deal, 2015, 2022, among others)
- but not special theories of agree for case, *wh*-features, Edge Features etc.

This talk:

- ϕ -features are not special but their bundling configurations may yield opaque morphological realizations
- case study: gender in Czech
- I argue for a system where the gender feature can - and does - undergo feature movement that results in feature bundling with features of higher functional projections
- in a nutshell, what appears to be a (up to) 4-way gender value distinction, a morphological realization of the following gender distribution in the nominal spine:
- the resulting system yields a methodological conundrum: I demonstrate that some of the diagnostics used in the literature to probe the gender feature in fact target other features the gender feature bundles with
- to uncover the underlying narrow syntax feature structures our diagnostics must carefully separate post-syntactic reflexes from their syntactic underpinning

Overarching goals:

- to propose a syntax-centred analysis of the gender system, and
- to propose a methodological framework for separating morphological and semantic effects of features from their syntactic representation

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1 What is grammatical gender?

- a nominal feature that can be reflected in the inflection on the nominal or on elements agreeing with the nominal
 - grammatical gender often idiosyncratically associated with lexical items
- ⇒ how to capture the connection to the lexical root while attributing it syntactic feature properties
- Option I: to formalize gender as a (syntactic) feature based on syntactic distribution properties
 - e.g., Borer (2005): gender is akin to classifiers in classifier languages
 - e.g., Veselovská (2018): a nominal category defining feature, located on n
 - Option II: to associate gender with the lexical root because of its tight relationship with properties of the root
 - e.g., Acquaviva (2014): a late insertion index associated with the root
 - e.g., Kramer (2015): gender is a grammatical feature associated with n

Sidenotes:

- descriptive literature sometimes characterizes gender distinctions based on the form of the nominal itself (or its meaning)
- highly problematic for languages that structurally represent a declension class in addition to a gender feature
- Harris (1991): gender and class may but do not have to coincide in their morphological realization
- the inflection on the nominal itself often reflects its declension class, instead of the gender feature
- the semantics characterizations often in violation of the Y-model
- I don't discuss conceptual/semantic gender here, but see, for example, Kučerová (2018) for a particular implementation of how grammatical features could be mapped onto semantic representations at the syntax-semantics interface

Starting observation:

- in general, syntactic features do not require to have an overt morphological counterpart (case in English, number or tense in languages that morphologically don't mark them...)
- yet, we tend to assume that a language has a gender feature only when we see a morphological reflex of it

(3) *Depictives: 4-way gender system in singular:*

- | | | |
|----|--|----|
| a. | Viděla jsem Petra namalovan- ého na obraze.
saw.PP AUX.1SG Petr.MA.SG.ACC painted.MA.SG.ACC on picture
'I saw Petr depicted in the painting.' | MA |
| b. | Viděla jsem hrníček namalovan- ý na obraze.
saw.PP AUX.1SG teacup.MI.SG.ACC painted.MI.SG.ACC on picture
'I saw a teacup depicted in the painting.' | MI |
| c. | Viděla jsem Marii namalovan- ou na obraze.
saw.PP AUX.1SG Marie.F.SG.ACC painted.F.SG.ACC on picture
'I saw Marie depicted in the painting.' | F |
| d. | Viděla jsem kotě namalovan- é na obraze.
saw.PP AUX.1SG kitten.N.SG.ACC painted.N.SG.ACC on picture
'I saw a kitten depicted in the painting.' | N |

Interim summary:

- the singular system displays a three- to four-way gender distinction
- either a syncretism between inanimate and animate masculine in the nominative set, or as an animacy split of the masculine feature in the non-nominative set
- M, F and N appear distinct

Agreement patterns with a nominal in plural:

- Standard Czech only displays a 3-way distinction in plural
- no neutralization of animacy
- instead, the feminine and the inanimate masculine share their morphological realization

(4) *3-way gender system in plural:*

- | | | |
|----|--|-----------|
| a. | Chlapci byli namalován- i na obraze.
boys.MA.PL.NOM were.MA.PL painted.MA.PL.NOM on picture
'Boys were depicted in the painting.' | MA |
| b. | Hrníčky byly namalovan- é na obraze.
teacups.MI.PL.NOM were.F/MI.PL painted.F/MI.PL.NOM on picture
'Teacups were depicted in the painting.' | MI ⇒ MI/F |
| c. | Dívky byly namalovan- é na obraze.
girls.F.PL.NOM were.F/MI.PL painted.F/MI.PL.NOM on picture
'Girls were depicted in the painting.' | F ⇒ MI/F |
| d. | Děvčata byla namalován- a na obraze.
girls.N.PL.NOM were.N.PL painted.N.PL.NOM on picture
'girls were depicted in the painting.' | N |

Agreement patterns with a conjunction of singular conjuncts (no feature mismatch):

- even though there is a designated neuter plural agreement form, the agreement with two coordinated neuter singular nominals is the syncretic feminine/masculine inanimate plural, instead of the expected neuter plural

⇒ only two patterns: animate (MA) versus all other grammatical genders (MI/F/N)

- (5) a. Petr a Pavel byli namalován-i na
Petr.MA.SG.NOM and Pavel.MA.SG.NOM were.MA.PL painted-MA.PL.NOM on
obrazě.
picture
'A saucer and a teacup were depicted in the painting.' MA+MA ⇒ MA.PL
- b. Talířek a hrníček byly namalován-y na
saucer.MI.SG.NOM and teacup.MI.SG.NOM were.F/MI.PL painted-F/MI.PL.NOM on
obrazě.
picture
'A saucer and a teacup were depicted in the painting.' MI+MI ⇒ MI/F.PL
- c. Maruška a Františka byly namalován-y na
Maruška.F.SG.NOM and Františka.F.SG.NOM were.F/MI.PL painted-F/MI.PL.NOM on
obrazě.
picture
'Maruška and Františka were depicted in the painting.' F+F ⇒ MI/F.PL
- d. Kotě a štěně *byla/ byly
kitten.N.SG.NOM and puppy.N.SG.NOM *were.N.PL/ were.F/MI.PL
*namalován-a/ namalován-y na obrazě.
*painted-N.PL.NOM/ painted-F/MI.PL.NOM on picture
'A kitten and a puppy were depicted in the painting.' N+N ⇒ MI/F.PL / *N.PL

- neuter plural agreement with a coordination is possible only when both conjuncts are neuter plural

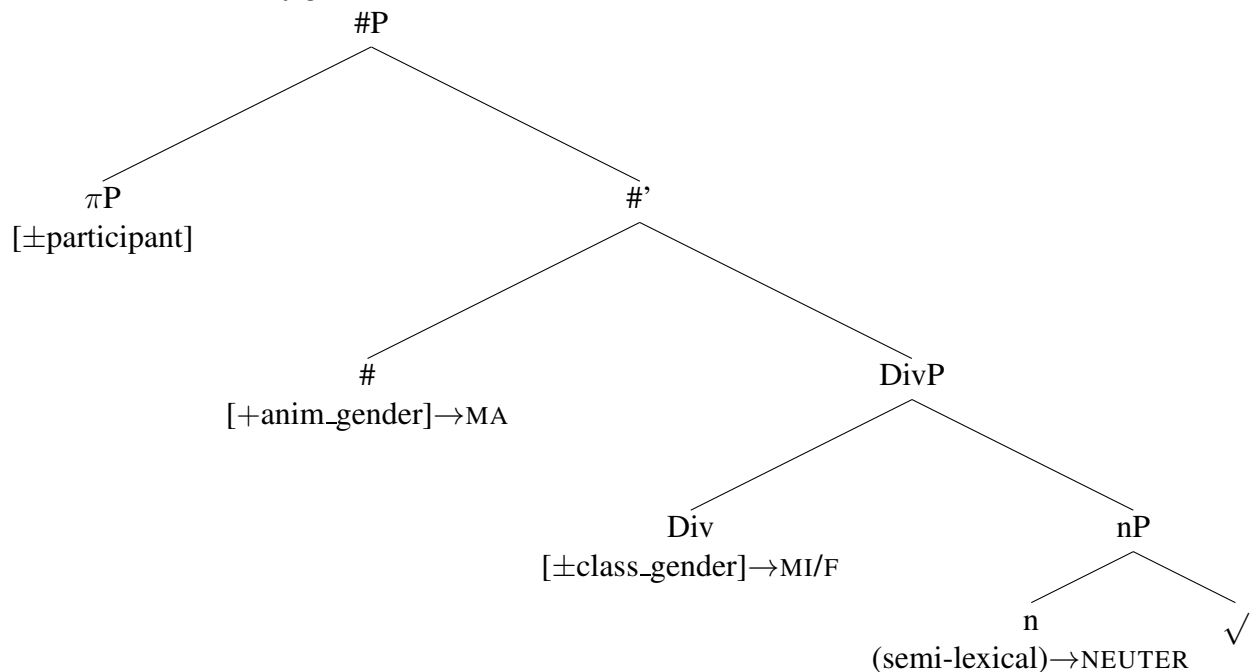
- (6) Děvčata a štěňata byla namalován-a na obrazě.
girls.N.PL.NOM and puppy.N.PL.NOM were.N.PL painted-N.PL.NOM on picture
'Girls and puppies were depicted in the painting.' N.PL+N.PL ⇒ N.PL

2.1 Interim summary

- Czech seems to have
 - 3 to 4 distinct genders in singular, and
 - 2 to 3 in plural
- the number of distinct genders appear sensitive to the presence of another feature
- singular gender seems to interact with case: M splits between MI and MA in the context of [+CASE] feature
- plural gender seems to depend on whether there is number valued as plural in syntax (MI and F merge), or whether plural is constructed from more than one singular feature (N merges with MI and F)
- crucially, different features yield different splits of the gender set

- the rest of the talk argues that this gender distribution results from a feature movement to higher functional projections
- in particular, I will argue that the distribution we've seen in this section, follows from this structure:

(7) *Schematic structure of gender realization in Czech:*



2.2 What is it about neuter?

- existing literature on Slavic attributes the behaviour of the coordination paradigm either to markedness, or to gender underspecification, largely because of neuter plural being syncretic with feminine singular²
- in Czech, agreement with a neuter plural nominal is syncretic with feminine singular in nominative but not in non-nominative cases

(8) *Nominative: Syncretic-like*

- T-a mal-á dívka skákal-a.
that-F.SG small-F.SG girl.F.SG jumped.IMP.PP-F.SG
'That small girl kept jumping.'
- T-a mal-á děvčata skákal-a.
that-N.PL small-N.PL girl.N.PL jumped.IMP.PP-N.PL
'Those small girls kept jumping.'

(9) *Non-Nominative: Non-syncretic*

²Most literature looks at Serbo-Croatian but the pattern there plays out somewhat differently than in Czech. See Wechsler and Zlatić 2003; Alsina and Arsenijević 2012; Arsenijević 2016; Despić 2017 for details.

- a. Pozorovali jsme **t-u** mal-**ou** dívku.
watched AUX.1PL this-F.SG. small-F.SG. girl.F.SG.ACC
'We watched the small girl.'
- b. Pozorovali jsme **t-a** mal-**á** děvčata.
watched AUX.1PL this-N.PL small-N.PL girls.N.PL.ACC
'We watched the small girls.'

- in agreement with non-nominative nominals attested in agreeing depictives, the neuter plural agreement pattern clearly emerges as distinct from feminine singular as well

(10) *Accusative agreement:*

- a. Viděla jsem Marii namalovan-**ou** na obraze.
saw.PP AUX.1SG Marie.F.SG.ACC painted-F.SG.ACC on picture
'I saw Marie depicted in the painting.'
- b. Viděla jsem děvčata namalovan-**á** na obraze.
saw.PP AUX.1SG girls.N.PL.ACC painted-N.PL.ACC on picture
'I saw girls depicted in the painting.'

(11) *Dative agreement:*

- a. Věřila jsem Marii namalovan-**é** na obraze.
trusted.PP AUX.1SG Marie.F.SG.DAT painted-F.SG.DAT on picture
'I trusted Marie depicted in the painting.'
- b. Věřila jsem děvčatům namalovan-**ým** na obraze.
trusted.PP AUX.1SG girls.N.PL.DAT painted-N.PL.DAT on picture
'I trusted girls depicted in the painting.'

- if N.PL could be construed as F.SG, we would still need to encode neuter as separate for non-nominative cases
 - moreover, this hypothesis incorrectly predicts that agreement with conjunctions should be $N.PL+N.PL = F.SG+F.SG \Rightarrow MI/F.PL$, instead of the attested $N.PL+N.PL \Rightarrow N.PL$
- \Rightarrow syncretism with F.SG not a likely explanation but some form of an underspecification might still be at play

2.2.1 Neuter as morphological realization of Failed Agree

- in failed agree configurations (Béjar 2003 and much following work), neuter cross-linguistically displays properties of a morphological realization of the lack of a valued or matched gender feature (e.g., Wechsler and Zlatić 2003; Kramer 2009; Arsenijević 2016; Despić 2017)
- in Czech, the absence of a suitable goal (Nominative DP; NOM) yields N.SG marking on agreeing predicates, for example, weather predicates and impersonal passives, or predicates agreeing with quirky subjects, sentential subjects, and infinitival subjects

- (12) Udělalo se mu špatně.
made.PP. N.SG REFL him sick.ADV
'He became sick.'

quirky subject

- (13) Pršelo.
rained.PP. N.SG
'It rained.' *weather predicate*
- (14) Tancovalo se.
danced.PP. N.SG REFL
'They danced.' *impersonal passive*
- (15) Učit se na zkoušku bylo nudné.
to-study REFL at exam was.PP. N.SG boring. N.SG
'To study for an exam was boring.' *infinitival subject*

2.2.2 Neuter in mixed gender coordinations:

- (16) *Feature resolution in mixed gender coordinations (modelled after Panevová and Petkevič 1997):*

1st conjunct	2nd conjunct	gender
MA	α	MA, where $\alpha \in \{MA, MI, F, N\}$
MI	α	MI/F, where $\alpha \in \{MI, F, N\}$
F	α	MI/F, where $\alpha \in \{MI, F, N\}$
N.SG	N.SG	MI/F
N.SG	N.PL	MI/F
N.PL	N.PL	N

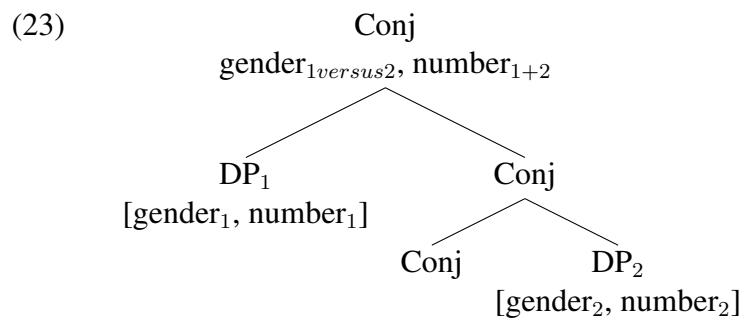
- (17) Petr a Pavla randili.
Petr.MA.SG and Pavla.F.SG dated.PP.MA.PL
'Peter and Paula dated.' MA + F = MA
- (18) Kotě a pes jedli ze stejné misky.
kitten.N.SG and dog.MA ate.PP.MA.PL from same bowl
'The kitten and the dog ate from the same bowl.' N + MA = MA
- (19) Kotě, kočka a pes jedli ze stejné misky.
kitten.N.SG cat.F.SG and dog.MA ate.PP.MA.PL from same bowl
'The kitten and the dog ate from the same bowl.' N + F + MA = MA
- (20) Kotě a dobytek jedly ze stejné misky.
kitten.N.SG and cattle.MI.SG ate.PP.MA.PL from same bowl
'The kitten and the cattle ate from the same bowl.' N + MI = MI
- (21) Kotě a kočka jedly ze stejné misky.
kitten.N.SG and cat.F.SG ate.PP.F.PL from same bowl
'The kitten and the dog ate from the same bowl.' N + F = F
- (22) Kočka a dobytek jedly ze stejné misky.
cat.F.SG and cattle.MI.SG ate.PP.MI/F.PL from same bowl
'The kitten and the dog ate from the same bowl.' F + MI = MI/F

- would treating N as an underspecified gender account for the mixed gender pattern?³

³Proposed, for example, in Despić (2017) for Serbo-Croatian.

What do we know about feature resolution in coordinations?

- features of a coordinated DP are computed as a combination of post-syntactic (semantic) and morpho-syntactic features (Farkas and Zec, 1995; King and Dalrymple, 2004; Heycock and Zamparelli, 2005, among others)⁴
- the label of the coordinated DP separately tracks number and gender, where
 - the value of number is additive (e.g., because it is based on semantic plurality, Munn 1993; Bošković 2009; Bhatt and Walkow 2013), and ...
 - the value of gender is comparison based



- (24) *The gender computation in the coordination label where the number is plural:*
- marked valued gender (masculine animate; MA) detected in one of the conjuncts \Rightarrow MA.PL
 - only N.PL detected \Rightarrow N.PL
 - all other configurations \Rightarrow MI/F.PL
- we can model the pattern by a feature comparison and markedness, however, it doesn't look like feature behaviour in other other parts of syntax⁵

What if...

- although the conjunction agreement pattern looks like an exceptional pattern, when we put the animacy-based split (MA) and the number-based split (N.PL) aside, the gender system displays the same syncretism pattern as other Indo-European gender systems, e.g. German
- that is, the distribution we expect if gender structurally occupies the same position as classifiers
- if gender is (located on) a classifier head (DIV in Borer 2005's terminology), then it is predicted to be in the complementary distribution with the realization of division, i.e., plural marking in these languages
- the conjunction pattern then looks like the predicted distribution (except for MA and N.PL)

⁴Strictly morpho-syntactic (e.g., Marušič et al. 2015) and semantic approaches have been proposed as well (e.g., Lasersohn 2013).

⁵But see, for example, the entailment system in Béjar (2000) and another system of feature comparison in Deal (2015, 2022) that tried to incorporate this type of morpho-syntactic facts into narrow syntax.

- that is, the syncretic pattern is the realization of plurality with no reference to gender

⇒ so perhaps the right question is

- (i) why we see a separate neuter marking with plural nominals, instead of why we don't see a separate neuter marking in agreement with conjunctions, and
- (ii) why MA is not in the complementary distribution with plural like other grammatical genders

3 Towards an analysis

- I'm going to argue for a system where
 - the grammatical gender occupies a classifier head and therefore is in the complementary distribution with the plural marking
 - MA is a realization of the gender feature in a *higher* structural position bundled with PERSON/CASE and therefore (i) not in the complementary distribution with plural, and (ii) 'activated' only when [+PERSON/+CASE]
 - N.PL is a realization of a *lower* structural position and therefore (i) not in the complementary distribution with plural, and (ii) 'activated' only when number not based on an atomicized structure ([−DIV])

3.1 Feature resolution is about person, not gender

- although the predicate agreement with coordinations appears to be with gender and number, the corresponding syntactic probe cannot target gender and number directly
- the resolution pattern is attested only when the agreeing predicate probes for person feature (e.g. Czech past participles) (Kučerová, 2017)
- when the probe only has unvalued gender and number features (e.g., adjectival predicates), the feature resolution profile plays out differently
- a resolution only acceptable for MA and F that can be semantically construed as animate
- the combinations of inanimate genders speakers yield the syncretic MI/F but judged by speakers as downgraded
- for combinations of masculine animate and neuter, speakers fail to identify plausible agreement (agreement gaps; labelled as ⊛)⁶

(25) *Feature resolution without a person probe (adjectival predicate agreement)*

- a. Petr a Pavla byli unavení.
Petr.MA.SG and Pavla.F.SG were.PP.MA.PL tired.PP.MA.PL
'Peter and Paula were tired.'

MA + F = MA

⁶Or a derivation crash. Thanks to Alan Munn for suggesting this symbol.

- b. Pes a kočka byli unavení.
dog.MA.SG and cat.F.SG were.PP.MA.PL tired.PP.MA.PL
'A/the dog and a/the cat were tired.' MA + F = MA
- c. ??Kočka a kotě byly unavené.
cat.F.SG and kitten.N.SG were.PP.F.PL tired.PP.F.PL
'A/the cat and a/the kitten were tired.' F + N = ??MI/F
- d. ??Dobytěk a kotě byly unavené.
cattle.MI.SG and kitten.N.SG were.PP.MI.PL tired.PP.MI.PL
'The cattle and the kitten were tired.' MI + N = ??MI/F
- e. ??Dobytěk a kočka byly unavené.
cattle.MI.SG and cat.F.SG were.PP.MI.PL tired.PP.MI.PL
'The cattle and the cat were tired.' MI + F = ??MI/F
- g. ⊗ Pes a kotě byli ??unavené/ ??unavení/
dog.MA.SG and kitten.N.SG were.PP.MA.PL tired.PP.MI/F.PL/ tired.PP.MA.PL/
??unavená.
tired.PP.N.PL
Intended: 'A/the dog and a/the kitten were tired.' MA.SG + N = ???
- h. ⊗ Psi a Děvčata byli ??unavené/ ??unavení/
dogs.MA.PL and kitten.N.SG were.PP.MA.PL tired.PP.MI/F.PL/ tired.PP.MA.PL/
??unavená.
tired.PP.N.PL
Intended: 'The dogs and the girls were tired.' MA.PL + N.PL = ???

Syncretism at play?

- morphological explanation unlikely
- PP forms highly syncretic but there is syncretism in the adjectival paradigm as well
- in fact, the downgraded forms *are* syncretic forms
- note also, that the morphological distinction between MA and N is the same for past participles and adjectives, yet only the adjectival agreement has a gap

Gender resolution as a side-product of person agreement

- we know that a coordination feature resolution is based on semantic plurality
- we also know that person is necessary for establishing semantic plurality because of its structural association with a semantic index (Sudo, 2012; Kučerová, 2019)

⇒ coordination feature resolution patterns are based on the person feature, not on the gender feature

Consequences for gender representation:

- if MA can feed a feature resolution, it must formally share properties with person
- if MA and N cannot form a semantic plurality, N must lack any structural connection to person
- MI and F then seem to be somewhere in between

3.2 Feature bundling as a result of grammaticalization of animacy?

Desiderata:

- we want a structural representation that will treat
 - MI and F as a classifier
 - MA as structurally interacting with CASE/PERSON
 - N.SG being classifier-like, while N.PL not sharing properties of person and its corresponding syntactic structure

but...

- not only must the system account for syntactic interactions with other features (person, number, case) in Czech, it must also account for the variation attested in the gender system cross-linguistically

Observation:

- languages that display a special behaviour of grammatical gender features, meaning, languages where grammatical gender appears to bundle with other features within the extended nominal domain (primarily, person, number but also case, for example in Moroccan Berber), are languages in which there is a distinct gender value for an animate gender
- furthermore, in the two language families primarily informing this talk (Slavic & Afro-Asiatic), the animate gender (masculine animate) arose as part of grammaticalization of an older gender system

Grammaticalization for animacy

- historically, noun classes in Proto-Indo-European were originally based on animacy (\pm animacy)
- grammatical gender as a three-way distinction emerged only in their later development, with the animate gender splitting into feminine and masculine (Brugmann, 1891; István, 1959; Matasović, 2004, among others)
- animacy in some Slavic languages re-emerged only later; for Czech, the change took place from the 15th to the 16th century (see e.g., Lamprecht 1986, 133–137), and it coincided with the emergence of a new case system

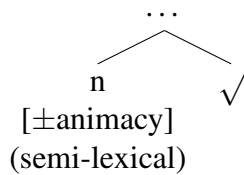
Syntax of grammaticalization?

- grammaticalization as a process that creates a more complex functional structure, both syntactically and semantically
- von Stechow (1995): lexical or semi-lexical categories get grammaticalized as functional categories/meanings
- Roberts and Roussou (2003): the process of grammaticalization is technically based on head movement
- since functional heads are bundles of features or maybe a single feature, I suggest that grammaticalization can arise via feature movement as well

3.3 Grammaticalization of gender

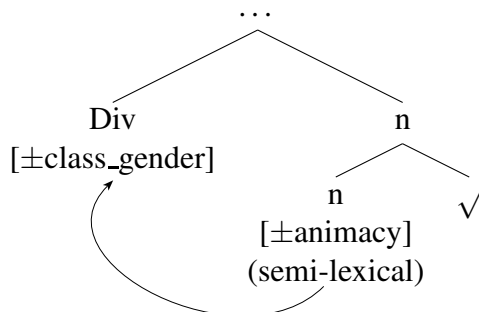
- technically, a feature movement of semi-lexical gender feature to a higher functional projection
- the Proto-Indo-European gender system was closely tied to lexical semantics → lexical-functional representation (not a genuine syntactic feature, yet)
- technically, a gender index associated with the root or perhaps a nominalizing feature associated with n^7

(26) *A simplified structure of proto-Indo-European gender:*



- if all grammaticalization involves head or feature movement to a higher functional projection, then the emergence of grammatical gender system as a three way system must have involved a feature movement from n to a higher functional projection
- adopting Borer (2005), such a movement targeted the Div head, the locus of nominal countability and classifiers
- → emergence of a grammatical gender as a classifier (still preserved in languages like German or Icelandic)

(27) *A simplified structure of emergence of the classifier gender system:*



- the emergence of animacy triggered yet another round of feature movement → to the cardinal projection (#P of Borer 2005)
- crucially, the #P projection is also the locus of the person feature (den Dikken, 2019)⁸
- that is, the second feature movement brings the gender feature to the local domain of the person feature, but also to the domain of number ranging over atomicized structures

⁷This effectively looks like the type of representation proposed for gender, for example, by Kramer 2009, 2015; Acquaviva 2014, 2019

⁸den Dikken (2019) argues for π P to be in the specifier of DivP, however, his structure collapses Borer's Div and Cardinal (#) projection.

- neuter is the lack of the gender feature (as in Kramer 2009; Arsenijević 2016, and others), where ...
 - N.SG is a singulative representation in the absence of a classifier
 - N.PL is an atomicized representation in the absence of a classifier
- masculine animate is the grammatical gender bundled with person

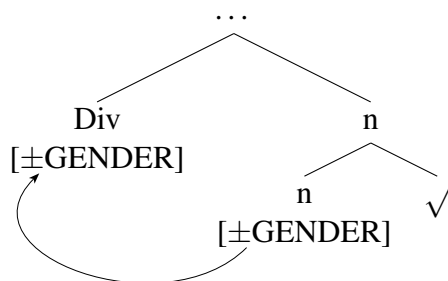
Assumptions:

- the root idiosyncratically associated with a gender index
- ⇒ only accessible as part of late root insertion; restricts which roots can be late inserted in the given syntactic structure (e.g., Acquaviva 2014)

Syntax of classifier genders:

- *n* merged with the [\pm GENDER] feature
- DIV probes for ‘classifier’ ⇒ \pm GENDER moves to DIV
 - +GENDER on DIV ⇒ F ⇒ Criterion Freezing (Rizzi, 2007)
 - –GENDER on DIV ⇒ M ⇒ no Criterion Freezing, feature available for further attraction

(30)

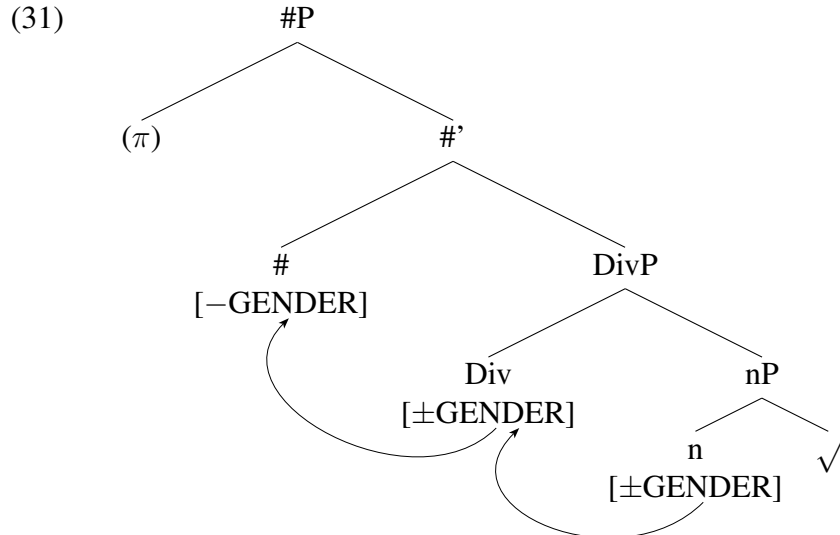


- since the cardinal head # can merge π P in its specifier, I argue it comes with an unvalued PERSON feature
- [+PERSON] yields Criterion Freezing and requires a local merge to satisfy the feature¹⁰
- this can either done by merging π P in the Spec of #P (for 1st and 2nd person only, den Dikken 2019)¹¹, or ...
- by feature movement to the # head

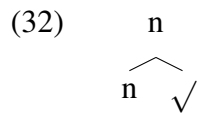
¹⁰[+CASE] seems to have the same structural effect as [+PERSON]; I'm still working the connection out but I have some data suggesting that [+CASE] and [+PERSON] are in the complementary distribution.

¹¹This line predicts that the person composition of 1st and 2nd person pronouns is different than that of 3rd person pronouns. This prediction seems to be borne out, for example, in the domain of associative pronouns. Interestingly, e.g., Russian does not display structural differences of this sort for pronouns but, interestingly, Russian does not have the animate masculine dimension either.

- when no π phrase is merged, the # head probes for a GENDER feature in the structure
- ⇒ since [+GENDER] can no longer move (Criterion Freezing), only [-GENDER] moves to #



- when no GENDER is merged on n , there is no feature to be triggered by higher functional head
- the morphological output of the unvalued gender feature is NEUTER



Consequences:

- the basic system only uses one binary feature [\pm GENDER], yet, it derives different ranges of realizations
- in singular, the system outputs:
 - M for [-GENDER]
 - F for [+GENDER]
 - N for no GENDER
 - when [+PERSON]/[+CASE] is part of the input, the system realizes [-GENDER] either as MA or as MI¹²
 - moreover, when there is no presuppositional specification of a conceptual gender, the system outputs MA as the syntactic gender that associates with person
- in the plural pattern, the system outputs:

¹²Something needs to be said about how the person dimension can be idiosyncratically associated with only certain roots in the lexicon. A straightforward way to do this, would be to either create a complex feature, or to include person on n which would allow for a local checking relationship during late insertion. Both implementations run into a number of incorrect predictions.

- no gender marking for [\pm GENDER] on the DIV head because classifier gender is in the complementary distribution with plural marking
- [$-$ GENDER] on # is no longer in the complementary distribution and yields separate plural marking

What about NEUTER?

- NEUTER is the morphological realization of a bundle with no gender feature
- the first consequence is that when agree fails to value gender, the morphological output is NEUTER
- second, when agreement targets a coordination of two singular neuters, there is no gender input \Rightarrow the system realizes the Div-based plural marking \Rightarrow the output is the same as for the classifier gender (MI/F) because that's effectively plural marking with no reference to gender
- the missing piece is the separate plural marking for N.PL and a coordination of two (and more) N.PLs
- Arsenijević (2016), based on Serbo-Croatian data, proposed that neuter plural is not a plurality based on individuals but instead it is a collective or such
- although Czech collectives are neuter, other Czech neuter plural nominals do not behave like their SC counterparts
- Czech N.PL take regular numerals that combine with count nouns, i.e., numerals counting individuals, instead of being restricted to special numerals used for kinds, collectives and mass nouns

(33) *Collectives*

- *tři listoví
three foliage.COLL/MASS
'three foliages (individuals)'
- troje listoví
three foliage.COLL/MASS
'three kinds of foliage'

(34) *Mass nouns*

- tři vody
three waters.F.PL
'three containers of water'
- troje vody
three waters.F.PL
'three kinds of water (e.g., mineral water brands)'

(35) *Neuter plural*

- tři štěňata
three puppies.N.PL
'three puppies (individuals)'

- b. troje štěňata.N.PL
three puppies
'three kinds of puppies'

(36) *Feminine plural*

- a. tři modelky
three models.F.PL
'three female models'
- b. troje modelky
three models..F.PL
'three kinds of female models (e.g., white, Black and Indigenous)'

- they combine with distributive predicates and trigger plural agreement in quantifiers like 'many,' 'all'
- the pattern is especially visible in Colloquial Czech that displays syncretism across feminine, inanimate masculine and neuter plural gender forms
- neuter plural patterns with other plurals, not with singulars or collectives

(37) *Collectives*

- a. všechno listoví
all.N.SG foliage.COLL
'all foliage'
- b. každé listoví
every.N.SG foliage.COLL
only as 'every/each kind of foliage'
- c. každé z listoví
every from foliage.COLL
'each/every of the foliage kind'

(38) *Neuter plural*

- a. všechna/ všechny děvčata
all.N.PL/ all.SYNC_PL girls
'all girls'
- b. *každá děvčata
every.N.PL girls.N.PL
'*every/each girls'
- c. každé z děvčat
every from girls
'each of the girls/every one from the girls'

(39) *Feminine plural*

- a. všechny dívky
all.F.PL girl.F.PL
- b. *každé dívky
every.F.PL girls.F.PL
'every/each girls'

- c. každé z děvčat
every from girls
'each of the girls/every one from the girls'

- yet, Czech neuter plurals differ from their South Slavic counterparts in their overt morphological structure
- the South Slavic ones have a nominal inflectional ending immediately attached to the root
- in contrast, their Czech counterparts have an additional morpheme *-at-* between the root and the nominal inflection

- (40) a. dec-o 'child-N.SG' – dec-a 'child-N.PL' SC
b. koť-e 'kitten-N.SG – koť-at-a 'kitten-AT-N.PL' CZ

- there are a few (one?) neuter lexical roots that lack the morpheme *-at-* in plural but then their plural looks like the syncretic MI/F

- (41) dítě-e 'child-N.SG – dět-i 'child-MI/F.PL'

- I argue that the *-at-* morpheme is a realization of an individuation-like structure that combines with *ns* lacking a classifier feature¹³
- since this feature is not part of the Div head, but of a lower structure, it is not in the complementary distribution with Div plural marking, hence we see a separate plural morphology
- moreover, since the structure does not contain a classifier feature that feeds into the individuation structures for regular plurals, in coordination semantic plurality treats N.PL as separate objects, again yielding a special plural realization
- when the additional structure is not merged, the Div head gets realized as the syncretic plurality¹⁴

3.5 Further predictions

Classifier gender only language

- in Borer's system, English plural marking, and I suggest that also German plural marking, instantiates countability (DIV, +count); i.e., the plural interpretation is only an implicature
- consequently, other Div based elements (e.g., English indefinite article) are in the complementary distribution with plural marking
- if German gender is located on Div, i.e., it is a classifier, we expect it to be in the complementary distribution with plural marking

¹³Czech N.PL is closer in its semantics and distribution to Acquaviva's lexical plurals than collectives.

¹⁴I leave out how these neuters become countable. But note in the above examples with mass and kind nouns that they also lack a special morphology, and morphologically look regular plurals.

- German indeed doesn't have gender in plural
- in other words, under the current proposal, the lack of gender distinction in plural in German and other languages is not a morphological fact but a syntactic fact¹⁵

Other structural consequences

- since the person feature is located in the #P (cardinality) (see, den Dikken 2019), gender feature that undergoes feature movement to # is in a local relation with number and person
- thus, we expect that grammaticalization of gender affects other syntactic features in #P

Some examples:

- emergence of animacy in the gender system of Czech is tied to changes in case system (15th to 16th century; see e.g., Lamprecht 1986, 133–137); in Polish, we also see changes in the case system displayed in numerals, e.g., (Miechowicz-Mathiasen and Dziubała-Szrejbrowska, 2012)
- in Arabic, feminine gender (in many respects the structural counterpart of Slavic neuter) when associated with a higher functional projection obtains distinct functional meanings (diminution, individuation, group formation; e.g., Fassi Fehri 2017, 2018)
- in gender systems that didn't incorporate animacy, e.g., German, gender does not interact with other features within the nominal domain

Feature movement as adjunction:

- the proposal here is that gender has developed from a lexical or a semi-lexical object to a proper syntactic feature
- consequently, we expect to see a familiar syntax behaviour
- if feature movement as part of grammaticalization yields an adjunction-like structure, we expect such complex feature structures to behave like adjuncts
- for example, Steriopolo and Wiltschko (2010) argues that in some languages gender is a modifier feature, while in others it is a projecting feature
- in fact, within the same language, what appears the same gender feature displays either of the syntactic behaviours, depending on its functional status
- for example, in some Arabic dialects (here, Levantine Arabic), the feminine gender can derive a female denoting nominal (akin to Pesetsky 2013's zh morpheme), or it can denote a higher degree of diminution
- although the morphological form is the same, only the zh-like feminine triggers feminine agreement

¹⁵Russian might be this type of language as well.

- the diminutive feminine is an adjunct feature, and agreement is based on the gender of the base (data from Aya Zarka, p.c.)
- (42) a. arnab ‘rabbit.M.SG’ → arnub ‘rabbit.DIM.M.SG’
b. (i) → arnub-i ‘rabbit.DIM.M.SG-F:SG; a cute small rabbit’
(ii) → arnub-i ‘rabbit.DIM.M.SG-F:SG; a female bunny’
- (43) al-arnub-i nam-et b-Hodn-ii
the-rabbit.DIM.M.SG-F:SG sleep.3PST-F.SG in-lap-my
‘The she-bunny REFL well photographed in my lap.’
- (44) al-arnub-i nam b-Hodn-ii
the-rabbit.DIM.M.SG-F:SG sleep.3M.SG.PST in-lap-my
‘The cute bunny REFL well photographed in my lap.’

Locality restrictions

- syntactic features and feature movement are subject to locality restrictions, and restrictions on spell-out domains
- consequently, a gender feature might project from one configuration but not another
- however, if there is an agree relation with a higher syntactic structure, such a locality restriction should be lifted
- we might see such a behaviour in certain number formations in Arabic dialects
- for example, in Lebanese and Levantine Arabic, a high location of feminine gender can form an individuating or a group forming structure but these singular structures can be pluralized only if they enter an agree relation with a higher functional head (Ouwayda, 2014; Borer and Ouwayda, 2010)

4 To conclude

- syntactic properties of gender in a language like Czech might be a result of multiple stages of grammaticalization that turned an originally lexical feature into a syntactic feature proper by a series of feature movements to higher functional projections
- the contemporary gender system reflects the gradual increase of structural complexity
- consequently, some gender features (such as Czech neuter) only display gender feature properties while genders that reflect a more complex structure building effectively form feature bundles
- the sketch of a system presented here attempts to create a predictive model of gender feature within one language but allows for modification to account for a variety of other gender systems as well

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A Basic facts about Czech agreement

- NUMBER: singular (SG), plural (PL)
- GENDER: masculine (M), feminine (F), neuter (N)
- ANIMACY: overtly marked only for masculine agreement; in plural throughout the paradigm, in singular only if there is an independent case difference: masculine inanimate (MI), masculine animate (MA)
- gender/number agreement:
 - D elements: demonstratives, pronouns
 - Adj elements: adjectives, numerals
 - verbal participles: past participle (PP), passive participle (PASSP)
- number/person agreement:
 - finite auxiliaries
 - finite main verbs
 - note: in past tense the finite auxiliary is overt only for 1 and 2 person
- case agreement:
 - D and Adj elements
 - ... but only if modifying a noun inflected for case

- (45) Viděla \emptyset jsem Petra opilá/ opilého.
 seen.PP.F.SG *pro* AUX.1.SG Peter.MA.SG.ACC drunk.F.SG.NOM/ drunk.MA.SG.ACC
 ‘I saw Peter drunk.’
 NOM: I was drunk; ACC: Peter was drunk

(46) *Singular paradigm (Standard Czech)*

- a. t-en nov-ý chlapec se dobře
 that.M.SG.NOM new.NOM.MA.SG boy.NOM.3.M.SG REFL well
 fotil
 photographed.PP.M.SG
 ‘that new boy REFL well photographed’
- b. t-a nov-á kočka se dobře fotil-a
 that.F.SG.NOM new.F.SG.NOM cat.NOM.3.F.SG REFL well photographed.PP.F.SG
 ‘that new cat REFL well photographed’
- c. t-o nov-é kotě se dobře
 that.N.SG.NOM new.N.SG.NOM kitten.NOM.3.N.SG REFL well
 fotil-o
 photographed.PP.N.SG
 ‘that new kitten REFL well photographed’
- d. t-en star-ý dům shořel
 that.M.SG.NOM old.NOM.MI.SG house.NOM.3.M.SG burned_down.PP.M.SG
 ‘that old house burned down’

(47) *Plural paradigm (Standard Czech)*

- a. t-i nov-í chlapi se dobře
 those.NOM.MA.PL new.NOM.MA.PL boys.NOM.3.MA.PL REFL well
 fotil-i
 photographed.PP.MA.PL
 ‘those new boys REFL well photographed’
- b. t-y nov-é kočky se dobře fotil-y
 those.NOM.F.PL new.NOM.F.PL cats.NOM.3.F.PL REFL well photographed.PP.F.PL
 ‘those new cats REFL well photographed’
- c. t-a nov-á Dívčata se dobře
 those.NOM.N.PL new.NOM.N.PL girls.NOM.3.N.PL REFL well
 fotil-a
 photographed.PP.N.PL
 ‘those new girls’
- d. t-y star-é domy shořel-y
 those.NOM.MI.PL old.NOM.MI.PL houses.NOM.3.MI.PL burned_down.PP.MI.PL
 ‘those old houses burned down’

- (48) Syncretism in nominative forms (not present in other case forms)

SG	D	Adj	PP	PL	D	Adj	PP
MA	-en	-ý	-∅		-i	-í	-i
F	-a	-á	-a		(-y)	(-é)	(-y)
N	-o	-é	-o		-a	-á	-a
MI	-en	-ý	-∅		(-y)	(-é)	(-y)