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The syntax of gender features[1]

- current theories of syntax often treat ϕ-features differently than other syntactic features, in terms of their geometry and the types of syntactic relations they enter
- syntactic features are structured through semantic relations (entailment, Boolean operations; Béjar 2000, 2003; Harbour 2011; Sichel and Toosarvandani 2023, among many others)
- 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 no special theories of agree for case, *wh*-features, Edge Features etc.

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[2]

The question: Is gender a syntactic feature? If it is, what syntactic properties it has?

If gender is a syntactic feature. . .

- then it should display properties of a syntactic feature, separable from its morphological realization

$\Rightarrow$ to uncover the underlying narrow syntax feature structures our diagnostics must carefully separate post-syntactic reflexes from their syntactic underpinning, by investigating structural configurations that can separate syntax from morphology signatures (locality restrictions, relativized minimality effects etc.)

[1]Some of the question presented in this talk have been on my mind since my undergraduate thesis (Kučerová, 2000), and there are many people to thank for their discussion of related ideas over the years. The work has benefited from two grants funded by the Social Sciences and Humanities Research Council of Canada (#435-2013-1756, PI: Susana Béjar; co-investigators: Ivona Kučerová and Arsalan Kahnemuyipour, Copular agreement systems; #435-2016-1034 ; PI: Ivona Kučerová, Grammatical vs semantic features: the semantics-morphology mapping, and its consequences for syntax). I am grateful to Petr Karlík, Jarmila Panevová, Saša Rosen, Vladimír Petkevič Oldřich Uličný, Jitka Bartošová, Susana Béjar, Adam Szczegielniak for literally years of discussions. Special thanks go to my students who have taught me about Afro-Asiatic languages: Aya Zarka, Ethan Stollar, Aniqa Faiz, Jamie Yu, Anne Houser, Audrey Ho, Torin Ong. Intellectually I am indebted mainly to the work of Paolo Acquaviava, Hagit Borer, Morris Halle, Roman Jakobson, Ora Matushansky, David Pesetsky, Mark Baker, Susana Béjar, Elizabeth Cowper, Abdelkader Fassi Fehri, Heidi Harley, Ruth Kramer, Ian Roberts, Daniel Harbour, Andres Holmberg, Jonathan Bobaljik, Alan Munn, Betsy Ritter, Martina Wiltschko and Susi Wurmbrand. Special thanks go to Betsy Ritter and Alan Munn. The responsibility for the remaining errors and unresolved puzzles falls entirely upon me.

[2]Some proposals indeed treat ϕ-features as purely morphological, with no syntactic counterpart, e.g., Arregi and Pietraszko 2021.

This talk

- a syntax-centred analysis of the gender system building on the insight that ϕ-features are not special but their bundling configurations may yield opaque morpho-syntactic realizations[3]
- the result is a system where the gender feature is a syntactic binary feature that can 'raise' and bundle with features of higher functional projections (supporting the insight of Ritter 1991, 1993)
- cross-linguistic variation in the domain of gender can be derived from language-specific properties of feature content of functional heads (Borer's conjecture; Borer 1984)

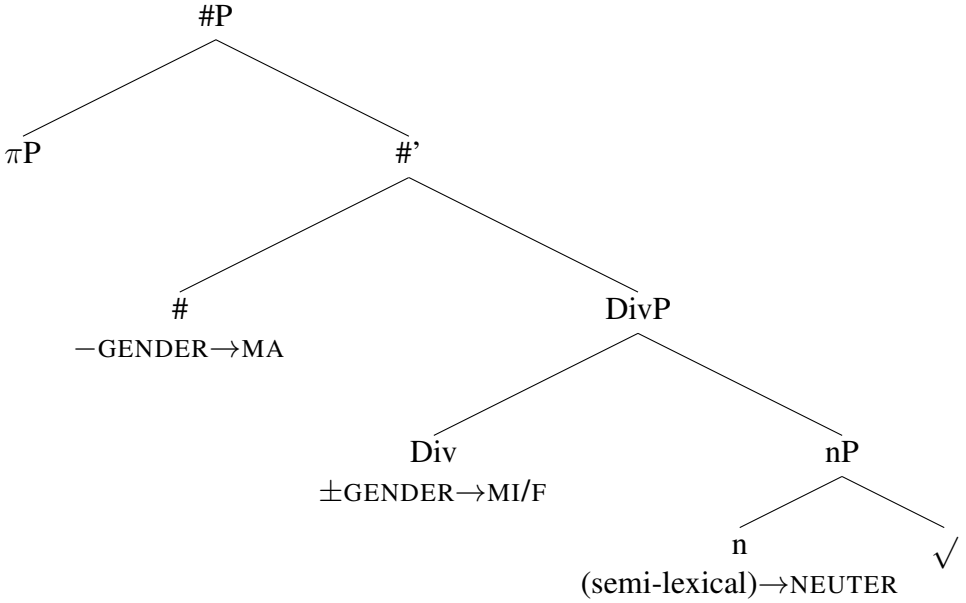
Case study: Gender in Czech

- Czech appears to be a (up to) 4-way gender system
- I will show, however, that the structural base is a single binary feature ($\pm$GENDER)
- the emergence of more gender values is a side-effect of feature bundling arising through 'feature raising'

Three structural layers:

- n-level only: semi-lexical gender (NEUTER)
- feature raising from n to Div: classifier-like gender (MASCULINE INANIMATE, FEMININE
- feature raising from Div to # (hosting Person feature): animate gender (MASCULINE ANIMATE)

(1) *Schematic structure of gender realization in Czech (building on structural assumptions from Borer 2005; den Dikken 2019)*



[3]The proposal put forward here thus differs from proposals such as that of van Alem (2023) who argues that ϕ-features have different geometries in syntax and morphology.

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

The challenge:

- 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)
- however, the inflection on the nominal itself often reflects its declension class, instead of the gender feature (Harris, 1991)
- also, 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, without violating the Y-model

2 The Czech gender system as a case study

- a West Slavic language
- traditional grammars recognize up to 27 declension classes, reduceable to 14 by basing the classes on underlying phonological representations
- what happens when we apply the syntactic filter?

Nominative singular agreement pattern:

- nominative a default case (e.g., Caha 2023)

- subject-predicate agreement only with nominatives
- attested distinctions:
  - masculine (M)
  - feminine (F)
  - neuter (N)

(2) *Singular nominative paradigm (Standard Czech)*

a. t-**en** nov-**ý** průvodce se dobře
that.M.SG.NOM new.M.SG.NOM guide.M.SG.NOM REFL well
fotil
photographed.PP.M.SG
'that new guide was easy to photograph' M

b. t-**en** nov-**ý** dům se dobře fotil
that.M.SG.NOM new.M.SG.NOM house.M.SG.NOM burned_down.PP.M.SG
'that new house was easy to photograph' M

c. t-**a** nov-**á** nájemnice se dobře
that.F.SG.NOM new.F.SG.NOM female_renter.F.SG.ACC REFL well
fotil-**a**
photographed.PP.F.SG
'that new female renter was easy to photograph' F

d. t-**a** nov-**á** radnice se dobře fotil-**a**
that.F.SG.NOM new.F.SG.NOM city_hall.F.SG.ACC REFL well photographed.PP.F.SG
'that new city hall was easy to photograph' F

e. t-**o** nov-**é** děvče se dobře fotil-**o**
that.N.SG.NOM new.N.SG.NOM girl.N.SG.NOM REFL well photographed.PP.N.SG
'that new girl was easy to photograph' N

f. t-**o** nov-**é** koště se dobře
that.N.SG.NOM new.N.SG.NOM broom.N.SG.NOM REFL well
fotil-**o**
photographed.PP.N.SG
'that new broom was easy to photograph' N

Non-nominative patterns:

- additional split based on animacy:
  - masculine animate (MA)
  - masculine inanimate (MI)
- although the distinction between inanimate and animate masculine largely correlates with the real world notion of animacy (and it probably historically developed from it), within the synchronic grammar, gender is a grammatical category:
  - not all grammatically masculine animate nouns denote animate objects (e.g., *hřib* 'porcini')

- not all masculine inanimate nouns denote inanimate objects (e.g., dobytek 'cattle')
- grammatically masculine animate nouns do not need to denote conceptually male individuals (e.g., pejorative attributive nominals are often grammatically masculine animate, irrespective of its conceptual gender; *pitomec* 'a stupid person')

(3) *Singular accusative paradigm (Standard Czech)*

a. t-**oho** nov-**ého** průvodce
that.MA.SG.ACC new.MA.SG.ACC guide.ACC.M.SG
'that new guide' MA

b. t-**en** nov-**ý** dům
that.MI.SG.ACC new.MI.SG.ACC house.MI.SG.ACC
'that new house' MI

c. t-**u** nov-**ou** nájemnici
that.F.SG.ACC new.F.SG.ACC female_renter.F.SG.ACC
'that new female renter' F

d. t-**u** nov-**ou** radnici
that.F.SG.ACC new.F.SG.ACC city_hall.F.SG.ACC
'that new city hall' F

e. t-**o** nov-**é** děvče
that.N.SG.ACC new.N.SG.ACC girl.N.SG.ACC
'that new girl' N

f. t-**o** nov-**é** koště
that.N.SG.ACC new.N.SG.ACC broom.N.SG.ACC
'that new broom' N

(4) *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 displays a 3-way distinction in plural but no neutralization of animacy
- instead, the feminine and the inanimate masculine share their morphological realization

(5) *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 N.SG nominals is the syncretic F/MI.PL, instead of the expected N.PL

(6) a. *N.SG+N.SG=N.PL
b. N.SG+N.SG=MI/F.PL

(7) a. Petr a Pavel byli namalován-**i** na obraze.
Petr.MA.SG.NOM and Pavel.MA.SG.NOM were.MA.PL painted-MA.PL.NOM on picture
'A saucer and a teacup were depicted in the painting.' MA+MA ⇒ MA.PL

b. Talířek a hrníček byly namalován-**y** na obraze.
saucer.MI.SG.NOM and teacup.MI.SG.NOM were.F/MI.PL painted-F/MI.PL.NOM on picture
'A saucer and a teacup were depicted in the painting.' MI+MI ⇒ MI/F.PL

c. Maruška a Františka byly namalován-**y** na obraze.
Maruška.F.SG.NOM and Františka.F.SG.NOM were.F/MI.PL painted-F/MI.PL.NOM on 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 obraze.
*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

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

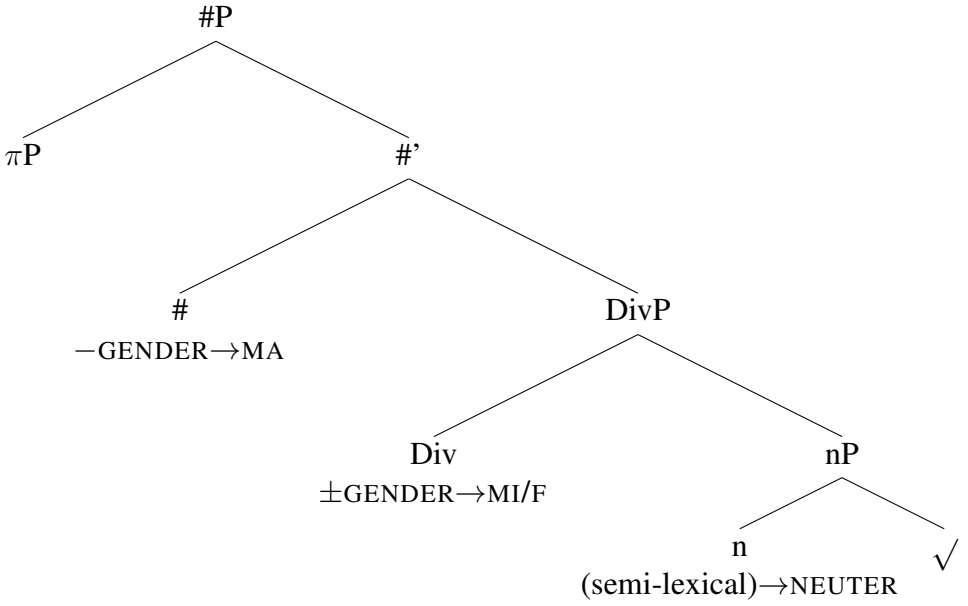
- N.PL agreement with a coordination is possible only when both conjuncts are N.PL

(8) Děvčata a štěňata byla namalován-**a** na obraze.
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, namely, case and number
- 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 how number is syntactically represented; number valued as plural in syntax yields syncretism of MI and F, plurality constructed from singular features yields syncretism of N, MI and F)
- the rest of the talk argues that this gender distribution results from a feature raising to higher functional projections

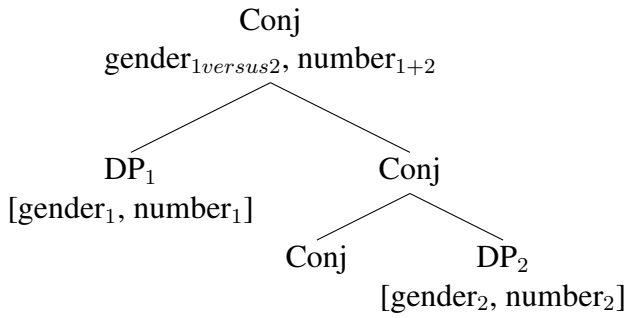
(9) *Schematic structure of gender realization in Czech (building on structural assumptions from Borer 2005; den Dikken 2019)*



2.2 Conjunction agreement feature resolution is about person, not gender

What do we know about feature resolution in coordinations?

(10)



- 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

(11) *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

⇒ features of a coordinated DP are computed as a combination of post-syntactic (semantic) and morpho-syntactic features (Farkaş and Zec, 1995; King and Dalrymple, 2004; Heycock and Zamparelli, 2005, among others)[4]

A toy model of feature resolution (to highlight the relevant properties):

(12) *The gender computation in the coordination label where the number is plural:*

a. marked valued gender (masculine animate; MA) detected in one of the conjuncts ⇒ MA.PL
b. only N.PL detected ⇒ N.PL
c. all other configurations ⇒ MI/F.PL

An empirical caveat:

- the resolution pattern is attested only when the agreeing predicate probes for person feature (e.g. Czech past participles) (Kučerová, 2017)

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

- when the probe only has unvalued gender and number features (e.g., adjectival predicates), the feature resolution profile plays out differently:

(i) a resolution only acceptable for MA and F that can be semantically construed as animate:

(13) *No person probe (adjectival predicate agreement):* MA+*animate* F

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

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

(ii) the combinations of inanimate genders speakers yield the syncretic MI/F but judged by speakers as downgraded

(14) *No person probe (adjectival predicate agreement): inanimates*

a. ??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

b. ??Dobytek 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

c. ??Dobytek 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

(iii) for combinations of masculine animate and neuter, speakers fail to identify plausible agreement (agreement gaps; labelled as ⊛)[5]

(15) *No person probe (adjectival predicate agreement):* MA+N

a. ⊛ 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 = ???

b. ⊛ 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 = ???

⇒ although the predicate agreement with coordinations appears to be with gender and number, the corresponding syntactic probe cannot target gender and number directly

Syncretism at play?

[5] Or a derivation crash. Thanks to Alan Munn for suggesting this symbol.

- 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

- a coordination feature resolution is based on semantic plurality Munn (1993); Bošković (2009); Bhatt and Walkow (2013)
- 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

What we've learned

- 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

⇒ 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)

⇒ the syncretic pattern is a realization of plurality with no reference to gender

Questions arising:

(i) why do we see a separate neuter marking with plural nominals? (instead of why we don't see a separate neuter marking in agreement with conjunctions)

(ii) why is MA 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 is a binary syntax feature (±GENDER)
  - the (MI/F) realization corresponds to the gender feature being in a classifier head (Div) and therefore 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 is the lack of a gender feature, and morphologically a realization of a *lower* structural position, and therefore
    (i) not in the complementary distribution with plural, and
    (ii) compatible with a classifier ⇒ a split number behaviour

3.1 Feature bundling as a result of grammaticalization of animacy?

- the animate gender (MA) arose as part of grammaticalization of an older gender system
- historically, noun classes in Proto-Indo-European were originally based on animacy (±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 Fintel (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

A terminological note:

- feature movement might not be a technically adequate implementation; we need something that's going to get a feature from a lower position to a higher position; it doesn't look like agree and head movement might overgenerate for other features on n
- I will use the term 'feature raising' to capture the intuitive part of the proposal, without committing to a concrete technical implementation

Grammaticalization of gender:

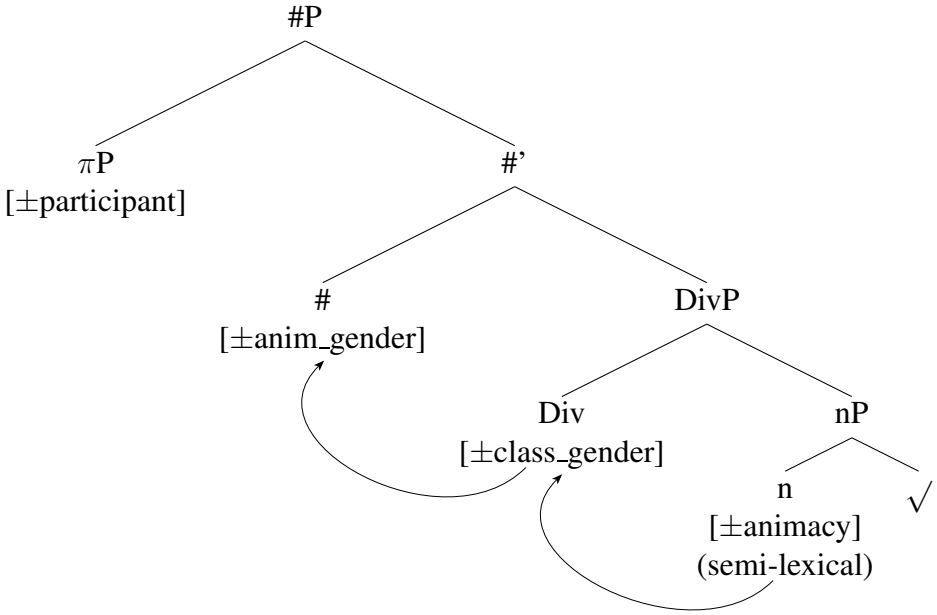
- (at least) three stages:

Stage I: animacy-based, semi-lexical representation (not a purely syntactic feature yet)

Stage 2: emergence of a grammatical 3-way system by feature raising to a higher functional head (gender as a binary syntactic feature; classifier-like properties)

Stage 3: (re-)emergence of animacy by raising to an additional functional head (a side-effect of bundling with person)

(16) *A simplified structure of emergence of a mixed animacy-classifier gender system:*



- what looks like different gender values corresponds to the realization of gender being associated with distinct functional projections[6]

3.2 The synchronic gender system

- I assume that a syntactic gender feature is located on n (Veselovská, 2018; Kramer, 2009, 2015; Acquaviva, 2014; Borer, 2014, among others)

[6]This idea shares properties with the distributed gender proposal of Fassi Fehri (2017, 2018).

- more precisely, gender is a nominal category defining feature (Veselovská, 2018)
- however, I adopt some language-specific assumptions, in order to capture the particular profile of the language, while in keeping in mind, that the proposed system must be able to account for other language specific setups as well

Step I: Gender on n:

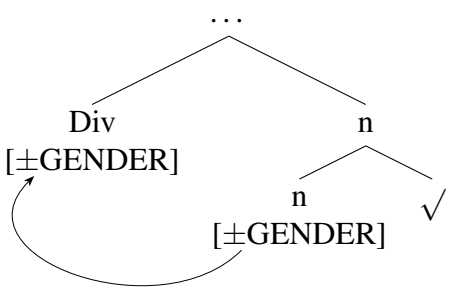
- to capture the idiosyncratic nature of grammatical gender I follow Acquaviva (2014) in that roots in Czech idiosyncratically associated with a gender index
- the gender index is only accessible as part of late root insertion; restricts which roots can be late inserted in the given syntactic structure
- n is merged with an unvalued gender feature, which gets valued from the root (if nP is a spellout domain, the root insertion takes place rather early in the derivation)

$\Rightarrow$ n valued as [$\pm$GENDER] feature

Step 2: Classifier-like gender

- I assume that an individuated DIV head contains a feature that needs to be locally checked
- this can be achieved either by merging a classifier, or by attracting the gender feature to DIV
- DIV probes for 'classifier' $\Rightarrow$ $\pm$GENDER moves to DIV[7]
- if no further feature attraction takes place, [$-$GENDER] realizes as MI and [$+$GENDER] as F

(17)



Structural consequences:

- in the plural pattern, the system outputs no gender marking for [$\pm$GENDER] on the DIV head because classifier gender is in the complementary distribution with plural marking (more precisely, with a structure that implies plurality, Borer 2005)
- however, the morphological realization of the nominal stem still reflects the valued gender on n, even if it is not accessible to syntactic probing (no ϕ-Agree across a phase boundary)

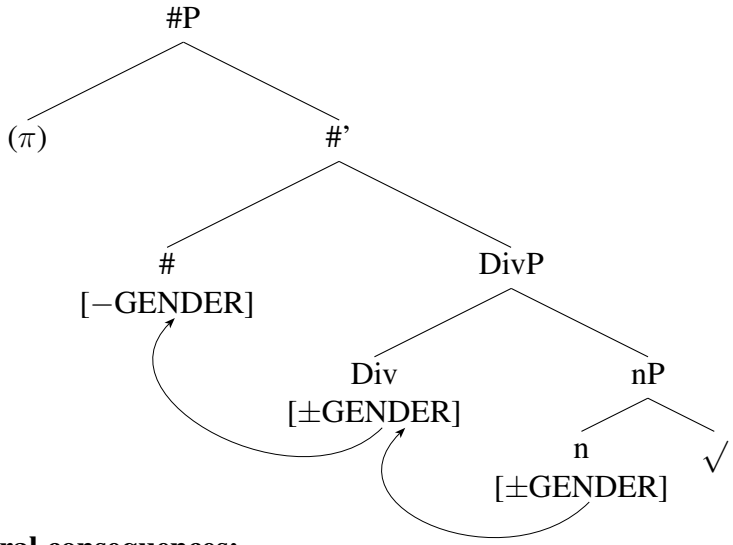
Step 3: 'animate' gender

[7]This is possibly head movement.

- attraction of [+GENDER] (F) to DIV yields Criterial Freezing (Rizzi, 2007)
- raising of [−GENDER] (M) to DIV does not yield Criterial Freezing ⇒ feature available for further attraction
- following den Dikken (2019), I assume that [+PARTICIPANT] feature merges as πP in the specifier of #P (a cardinality projection, using Borer 2005's terminology)
- since the cardinal head # can merge πP in its specifier, I argue it comes with an unvalued PERSON feature which requires local checking
- either by merging πP in the Spec of #P,[8] or by feature raising to the # head
- when no π phrase is merged, the # head probes for a GENDER feature in the structure

⇒ since [+GENDER] can no longer move (Criterial Freezing), only [−GENDER] moves to #

(18)



Structural consequences:

- no special animate gender: the animacy effect a side-product of the [−GENDER] feature being bundled with a PARTICIPANT feature
- in the plural pattern, the system outputs a special value: [−GENDER] on # is no longer in the complementary distribution and yields separate plural marking (realization of the gender feature bundled with the PARTICIPANT feature)
- there's independent evidence that person and case are structurally interconnected [still working out exactly how] making bundling of gender and person being sensitive to [+CASE]

What about NEUTER?

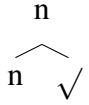
[8] This line predicts that the person composition of 1st and 2nd person pronouns is different than that of 3rd person pronouns. This prediction seems to be borne out, for example, in the domain of associative pronouns. E.g., Russian does not display structural differences of this sort for pronouns but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

- technically, neuter in Czech is the lack of the gender feature (as in Kramer 2009; Arsenijević 2016, and others)
- when a root with no indexical realization is merged, the gender feature on n remains unvalued, and at spellout of the lower domain it gets deleted

⇒ there is no feature to be triggered by higher functional head

- the morphological output of the unvalued gender feature is NEUTER

(19)



Structural consequences:

- since there is no gender feature to raise to Div, a classifier can be merged
- a suggestive evidence comes from neuter plural morphology
- unlike their South Slavic counterparts (see appendix B.2 for a comparison to Serbo-Croatian) that form neuter plural directly from the nominal base, Czech neutral plurals have an additional morpheme *-at-* between the root and the nominal inflection

(20)
a. dec-o 'child-N.SG' – dec-a 'child-N.PL' SC
b. kot-ě '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

(21) dít-ě 'child-N.SG – dět-i 'child-MI/F.PL'

- I argue that the *-at-* morpheme is indeed a classifier that creates an atomicized representation
- since there is a merged plural classifier, neuter plural is no longer in complementary distribution with the regular plural Div ⇒ special marking for N.PL

What about coordinations?

- when agreement targets a coordination of two singular neuters, there is no gender input

⇒ the system realizes the Div-based plural marking

⇒ the output is the same as for the classifier gender (MI/F) because it is a plural marking with no reference to gender

- when agreement targets two plural neuters, it accesses the classifier information (instead of the more regular Div plurality), and uses the classifier value for the morphological output ⇒ special marking for N.PL preserved

Summary:

- the basic system only uses one binary feature [±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] as MA[9]
  - moreover, when there is no presuppositional specification of a conceptual gender, the system outputs MA as the syntactic gender that associates with person (because of the unmarked value of the gender feature)
- when ϕ-Agree fails (see the appendix B.0.1), the output is neuter because there is no successful gender or person valuation

3.3 Further predictions

Classifier gender only language

- language systems, of the Indo-European sort, with only one grammaticalization cycle on the animacy base, are predicted to have the classifier-like gender, i.e., they mark grammatical gender in singular, but syncretic marking in plural ⇒ e.g., English, German, Russian
- note that under the current proposal, the lack of gender distinction in these languages is a syntactic fact, not a morphological fact

The third gender

- if the emergence of the syntactic gender feature results from a grammaticalization of a three-way semi-lexical split, and if syntax prioritizes binary features, we expect that the third gender might get grammaticalized in a less syntactic way
- German (as far as I know) looks like a fully regularized three way system, which either suggests two levels of binary branching (I'm not aware of any evidence for this position), or there's a valued/unvalued gender, with valuations coming from the root indexical representation only (more likely)
- other systems appear to have less syntactic representation

[9]Something 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.

- Icelandic looks more like Czech, while Romanian or Serbo-Croatian seem to have a more semi-lexical representation for neuter
- the semi-lexical representation might underlie irregular behaviour of former neuters in Romance (Italian a-plurals, Acquaviva 2008, preservation of three-way gender split in the stem or internal DP marking in some Italian and Iberian dialects, Andalò 1991; Maiden and Parry 1997; Kučerová and Moro 2012)

Other structural consequences

- since the person feature is located in the #P (cardinality) (see, den Dikken 2019), gender feature that undergoes feature raising 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 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 raising 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 raising as part of grammaticalization yields an adjuction-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
- the diminutive feminine is an adjunct feature, and agreement is based on the gender of the base (data from Aya Zarka, p.c.)

(22) 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'

(23) al-arnub-i nam-et b-Hod̲n-ii
the-rabbit.DIM.M.SG-F:SG sleep.3PST-F.SG in-lap-my
'The she-bunny slept in my lap.'

(24) al-arnub-i nam b-Hod̲n-ii
the-rabbit.DIM.M.SG-F:SG sleep.3M.SG.PST in-lap-my
'The cute bunny slept in my lap.'

Locality restrictions

- syntactic features and feature raising 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 raisings 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

(25) Viděla ∅ 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

(26) *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'

(27) *Plural paradigm (Standard Czech)*

a. t-**i** nov-**í** chlapc-**i** 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** kočk-**y** 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** Děvčata 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** dom-**y** 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'

(28) 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)

B More on neuter

- this appendix discusses three additional properties of neuter
  - that neuter singular is the morphological realization of failed agree in Czech
  - that Czech neuter plural is not syncretic to feminine singular (unlike in languages like Serbo-Croatian, a core fact underlying gender underspecification analyses, such as Wechsler and Zlatić (2003); Alsina and Arsenijević (2012); Arsenijević (2016); Despić (2017)). and
  - that Czech neuter plurals are not semantically collectives but denote individuals (neuter plurals as collective are crucial for Arsenijević's analysis for Serbo-Croatian)

B.0.1 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

(29) Udělalo se mu špatně.
made.PP.[N.SG] REFL him sick.ADV
'He became sick.' *quirky subject*

(30) Pršelo.
rained.PP.[N.SG]
'It rained.' *weather predicate*

(31) Tancovalo se.
danced.PP.[N.SG] REFL
'They danced.' *impersonal passive*

(32) 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*

B.1 Neuter plural is not syncretic with feminine singular

- 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 singular[10]
- in Czech, agreement with a neuter plural nominal is syncretic with feminine singular in nominative but not in non-nominative cases

(33) *Nominative: Syncretic-like*
a. 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.'
b. 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.'

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

(35) *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.'

[10]Most 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.

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.'

(36) *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 ⇒ MI/F.PL, instead of the attested N.PL+N.PL ⇒ N.PL

⇒ syncretism with F.SG not a likely explanation but some form of an underspecification might still be at play

B.2 Neuter as a collective noun?

- 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
- the analysis does not extend to Czech because Czech neuter facts are rather different than in Serbo-Croatian
- 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

(37) *Collectives*

a. *tři listoví
three foliage.COLL/MASS
'three foliages (individuals)'

b. troje listoví
three foliage.COLL/MASS
'three kinds of foliage'

(38) *Mass nouns*

a. tři vody
three waters.F.PL
'three containers of water'

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

(39) *Neuter plural*

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

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

(40) *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

(41) *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'

(42) *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'

(43) *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

(44) a. dec-o 'child-N.SG' – dec-a 'child-N.PL' SC
b. kot-ě 'kitten-N.SG – kot̆-at-a 'kitten-AT-N.PL CZ