

THE MORPHOSYNTAX OF GENDER AND NUMBER: CONVERGING AND CROSSING

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1 INTRODUCTION²

There has been a recent surge of morphosyntactic research on gender, joining a large literature on number:

- Gender: Ferrari 2005, Lowenstamm 2008, 2012, Acquaviva 2009, Kramer 2009, 2014, to appear, Carstens 2010, Armoskaite 2011, Faust 2013, *inter alia*
- Number: Ritter 1991, 1992, Bernstein, 1991, 1993, Carstens 1991, Picallo 1991, Li 1999, Zabbal 2002, Alexiadou, Haegeman and Stavrou 2007, Harbour 2011 and many, many more

However, the big-picture interaction of gender and number is less well-studied in theoretical linguistics.³

- Even though it is a well-known area of cross-linguistic variation (Corbett 1991, Aikhenvald 2004)
- Even though gender and number are more closely related to each other than to person (Baker 2011)
- Even though there has been psycholinguistic research on their interaction (see e.g., Fuchs, Polinsky and Scontras to appear, Antón-Méndez, Nicol and Garrett 2002, Barber and Carreiras 2005, *inter alia*)

Today:

- Investigate two gender-number relationships in the framework of Distributed Morphology (DM):
 - Convergent systems: one or more genders are syncretic in the plural
 - Crossed systems: certain nouns have a different gender in the plural
- Convergent systems are easy to capture in DM, and the analysis leads to interesting predictions about (im)possible gender syncretisms
- Crossed systems are not a uniform phenomenon, and they provide evidence that gender features are syntactically located on the nominalizing head *n*, and not on Num(ber)
- Broad implications:
 - Basic support for DM and better, more nuanced understanding of gender-number relationships
 - Progress towards a theory of possible syncretisms
 - Evidence about the syntactic location of gender features

Plan

- Background on gender and number: terms, typological perspective (Section 2)
- Convergent systems (Section 3) and then crossed systems (Section 4)
- Conclusion (Section 5)

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³ Notable exceptions: Ritter 1993, Harley and Ritter 2002, Nevins 2011.

2 BACKGROUND

Focus: gender and number agreement patterns.

The linguist determines the gender inventory of a language by looking at agreement.

(1) Gender Agreement in Amharic

- | | |
|--|---|
| <p>a. ya säw dägǵ näw
 that.M man good be.3MS
 ‘That man is good.’⁴</p> | <p>b. yatʃtʃ set dägǵ nat
 that.F woman good be.3FS
 ‘That woman is good.’ (Leslau 1995:66, 67)</p> |
|--|---|

- Conclusion: Amharic has two genders: masculine and feminine.
- Refer to elements that exhibit agreement (e.g., demonstrative, copula) as targets (Corbett 2006)

But these descriptions are usually done on the basis of singular nouns, like in (1).

- What gender distinctions are expressed via agreement with plural nouns?
- Not necessarily the same distinctions as are made for agreement with singular nouns!

Types of gender-number systems (Heine 1982, Corbett 1991):

- In a **parallel** gender system, plural nouns agree just like singular nouns wrt gender, i.e., the mapping from singular genders to plural genders is one-to-one.

(2) Parallel Gender System



Table 1: Parallel Example: Spanish Determiners

	Feminine	Masculine
Singular	<i>la</i>	<i>el</i>
Plural	<i>las</i>	<i>los</i>

- In a **convergent** gender system, plural nouns make fewer gender distinctions than singular nouns, i.e., the mapping from singular genders to plural genders is many-to-one for at least some nouns.
 - In other words, gender is syncretic in the plural.

(3) Convergent Gender System



⁴ Gloss abbreviations: 2 – second person, 3 – third person, AGR – agreement node, DAT – dative, DEF – definite marker or definiteness in general, DET – determiner, F – feminine, IMP – imperative, M – masculine, N – neuter, NEG – negation, NMLZ – nominalizer, PL – plural, S – singular.

Table 2: Convergent Example: French Determiners

	Feminine	Masculine
Singular	<i>la</i>	<i>le</i>
Plural	<i>les</i>	

- NB: grayed cells = convergence/syncretism

- In a **crossed** gender system, the mapping from singular target gender to plural target gender is one-to-many for at least some nouns.⁵

- (4) **Crossed:** at least one singular gender maps to two plural genders

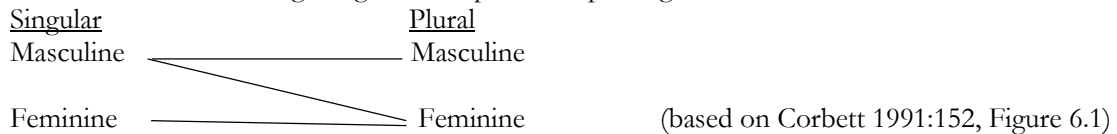


Table 3: Romanian Adjectival Agreement (Corbett 1991:152⁶)

	Feminine	Masculine
Singular	Noun1-ă	Noun2-Ø, Noun3-Ø
Plural	Noun1-e, Noun2-e	Noun3-i

Transition:

- Will not discuss parallel systems (2) in detail, because they are fairly straightforward
- Focus on convergent systems (3) and crossed systems (4)
- Limitation: 2- or 3-gender languages (keeps variation manageable, more than enough empirical richness)

3 CONVERGENCE: METASYNCRETISM AND IMPOVERISHMENT

Enriching the empirical picture and developing DM analyses:

- 3.1: convergence-to-plural (the most familiar kind), Impoverishment
- 3.2: convergence-to-gender (previously unanalyzed), Impoverishment with a twist
- 3.3: partial convergence (convergence of only a subset of genders) – successfully predicted to occur by DM given the nature of Impoverishment, although not all genders are predicted to be able to converge
- Overall: wide range of convergent systems (= gender syncretisms) successfully analyzed in DM
 - Makes interesting predictions → moving towards a theory of (im)possible syncretisms (Carstairs 1983, 1987, Noyer 1998)

3.1 Convergence-to-Plural: Coptic

Gender and Number Agreement in Coptic

Coptic is an Afroasiatic language in the Egyptian branch; spoken in Egypt from 4th to 14th cent. CE.

⁵ This is a friendly amendment to Corbett’s (1991:156) definition of a crossed system where “gender in neither number determines the gender in the other.” In some of these languages (e.g., Romanian), at least some of the genders in the singular determine gender in the plural (e.g., feminine).

⁶ Following Corbett 1991, other allomorphs for each gender have been omitted for ease of exposition. See Bateman and Polinsky 2010, Dobrovie-Sorin and Giurgea 2013, and Dindelegan 2013 for the full empirical picture.

- Has two genders: masculine and feminine (Layton 2011:39).
- Has two numbers: singular and plural (Layton 2011:86-87).

All categories that inflect for gender agreement in the singular do not show gender distinctions in the plural (Layton 2011:36, 64).⁷

Table 4: Coptic Determiners (Layton 2011:44)

	Feminine	Masculine
Singular	t-	p-
Plural	ŋ-	

Table 5: Coptic Proximal Demonstratives (Layton 2011:48)

	Feminine	Masculine
Singular	tey-	pey-
Plural	ney-	

Table 6: Coptic Personal Prefixes of the Durative Sentence (Layton 2011:65⁸)

	Singular	Plural
1st pers	ti-	tŋ-
2nd pers	k- (m.)	tetŋ-
	te- (f.)	
3rd pers	f- (m.)	se-
	s- (f.)	

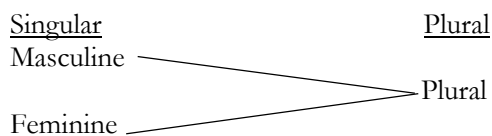
Table 7: Coptic Independent Personal Pronouns (Layton 2011:65)

	Singular	Plural
1st pers	anok	anon
2nd pers	ŋtok (m.)	ŋto:tŋ
	ŋto (f.)	
3rd pers	ŋtof (m.)	ŋtow
	ŋtos (f.)	

From a typological perspective, Coptic is convergent.

- The number of genders available in the plural is fewer than that in the singular (namely, zero). Gender is syncretic in the plural.

(5) Coptic Gender and Number Agreement



(based on Corbett 1991:155, Figure 6.7)

- More specifically, Coptic is **convergent-to-plural** (my term): plural forms use a morpheme that is specific to the plural and which does not express gender distinctions.

⁷ The transliteration of the Coptic data roughly follows the guidelines in Layton 2011:Chapter 1.

⁸ Variants omitted for ease of exposition.

- Crucially, gender syncretism in the plural holds across all the agreement paradigms in Coptic (definite determiners, subject agreement, etc.), regardless of the individual exponents in the paradigms.
 - This is known as a **metasyncretism** (Williams 1994, Bobaljik 2002, Harley 2008).

Table 8: Metaparadigm of Gender-Number in Coptic

	Singular	Plural
Masculine	A	C
Feminine	B	

Analysis

- Crucial assumption in DM: the syntax manipulates feature bundles that lack morphophonology; these feature bundles are exponed post-syntactically.
 - Exponence = matching the syntactic feature bundles to Vocabulary Items (VI's; bits of morphophonology)
 - The matching process is called Vocabulary Insertion

- (6) Syntax
- | | |
|--------|---|
| [D] | Potentially Insertable Vocabulary Items in Coptic |
| [DEF] | a. [D], [DEF], [-PL],[+FEM] ↔ t- |
| [-PL] | b. [D], [DEF], [-PL],[-FEM] ↔ p- |
| [+FEM] | |

- Vocabulary Item (6)a is inserted to expone the feature bundle since it matches the features of the bundle.

- Syncretism occurs when a Vocabulary Item expones fewer features than are in the feature bundle.

- (7) Syntax
- | | |
|--------|---|
| [D] | Potentially Insertable Vocabulary Items |
| [DEF] | a. [D], [DEF], [-PL],[+FEM] ↔ t- |
| [+PL] | b. [D], [DEF], [-PL],[-FEM] ↔ p- |
| [+FEM] | c. [D], [DEF], [+PL] ↔ ŋ- |

- Vocabulary Item (7)c is inserted: although it does not contain all the features in the feature bundle, it does not have any mismatches with the feature bundle.
- It will be inserted regardless of the gender feature on the plural definite determiner.

- However, all the Vocabulary Items for all the agreement targets in Coptic would have their Vocabulary Items be arranged/described in the same way as (7)a-c.
 - This would describe the facts correctly, but it would not explain them (Harley 2008:257).
 - In other words, it would be sheer coincidence that all of the agreement targets in Coptic do not show gender distinctions in the plural.
- Solution: Impoverishment (Bobaljik 2002, Harley 2008, Nevins 2011)⁹
 - In Distributed Morphology, certain operations can operate over syntactic feature bundles before they are exponed (Halle and Marantz 1993, Embick and Noyer 2001, 2007, etc.).

⁹ There are a couple additional solutions to this problem in the DM literature, namely, brute-force ordering of VI's (see e.g., Halle 1997:427-8) and appealing to a feature hierarchy to determine VI Insertion (see e.g., Noyer 1997).

- One such operation is **Impoverishment**, which removes a feature from a syntactic feature bundle (Bonet 1991, Noyer 1998, Bobaljik 2002, Harley 2008, Nevins 2011).
 - In Coptic, I propose that an Impoverishment operation removes any gender feature from a feature bundle containing a plural feature (cf. Bobaljik 2002, Harley 2008).
- (8) **Coptic Gender/Number Impoverishment (obligatory)**
- $$\begin{array}{ccc} [+PL] & \rightarrow & [+PL] \\ [+/-FEM] & & \end{array}$$
- After (8) applies, a plural syntactic bundle cannot be exponed using a Vocabulary Item that has gender features (because it wouldn't match).
 - Therefore, no syntactic elements that have both number and gender features in the syntax can expone their gender features morphologically.
- What motivates Impoverishment generally? Morphosyntactic markedness (Nevins 2011, Arregi and Nevins 2012).
 - Certain features are disallowed in a marked context like the plural (“markedness-triggered Impoverishment”)
- (9) **Gender-Number Ban for Coptic**
- *[+/-FEM] on the same agreement node as [+PL]
- A PF-level ban on the co-occurrence of gender with a marked number feature triggers Impoverishment as a repair operation.

Interim Conclusion

- Coptic has a convergent gender/number agreement system and gender is metasyncretic in the plural.
- The Impoverishment operation removes gender features from all plural feature bundles before exponence, ensuring that plural feature bundles are never exponed with gender.

3.2 Convergence-to-Gender

Convergence-to-plural (= Coptic) is a well-attested pattern typologically...

- Dieri (Pama-Nyungan; Austin 2001:65)
- Taiap (isolate, Papua New Guinea; Kulick and Stroud 1998:208)
- Russian (Indo-European (Slavic); Corbett 1991:132)
- Krongo (Nilo-Saharan; Reh 1983:45-7)
- Avar (Caucasian; Corbett 1991:190)
- Hausa (Afroasiatic (Chadic); Newman 2000:216)

...and it has been treated before in the DM literature.

- ...mostly wrt Russian (Bobaljik 2002, Harley 2008, Nevins 2011)
- ...always with Impoverishment rules like (8).

In this section, I introduce a typologically rarer pattern: convergence-to-gender.

- It has not previously been analyzed in DM or any other theory (to the best of my knowledge)

Gender and Number Agreement in Maay

Convergence-to-gender is found in Maay (East Cushitic; Paster 2006, 2010, to appear).

- Maay has two genders: masculine and feminine (Paster 2006:91).
- Maay has two numbers: singular and plural (Paster 2006).

At first, Maay seems like Coptic: agreement targets do not express gender distinctions in the plural.

Table 9: Maay Simple Past Subject Agreement (Paster 2006:101)

	Singular	Plural
1st pers	-i	-ni
2nd pers	-ti	-teena
3rd pers	-i (m.)	-eena
	-ti (f.)	

Table 10: Maay Future Potential Subject Agreement (Paster 2006:107)

	Singular	Plural
1st pers	-aw	-aano
2nd pers	-aso	-aasona
3rd pers	-aw (m.)	-aayona
	-aso (f.)	

- However, there is a different pattern for agreement targets within the noun phrase: definite determiners, demonstrative determiners, and possessive determiners (Paster 2006, to appear).¹⁰

Table 11: Maay Definite Determiners (Paster 2006:94)

	Feminine	Masculine
Singular	-ti	
Plural		-ki

Table 12: Maay Distal Demonstratives (Paster 2006:95-96)

	Feminine	Masculine
Singular	-tas	
Plural		-kas

Table 13: Maay 1st Person Singular Possessive Determiners (Paster 2006:97)

	Feminine	Masculine
Singular	-tey	
Plural		-key

- The “masculine singular” form is used for all plural nouns = gender and number are simultaneously syncretic (Cf. Dhaasanac, Elmolo; Mous 2008)

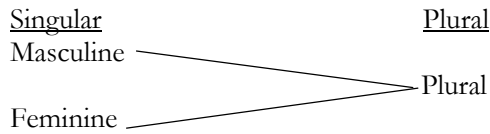
From the perspective of typology, Maay is convergent.

- The number of genders available in the plural is fewer than that in the singular = gender is syncretic.

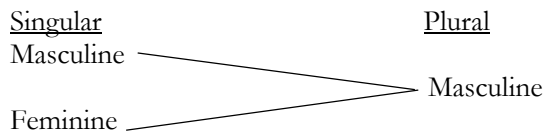
¹⁰ Abstracting away from allomorphic variations triggered by phonology.

- But it is convergent in two different ways:

(10) **Maay Gender and Number Agreement: Verbal Agreement**



(11) **Maay Gender and Number Agreement: Determiner Agreement**



Maay Analysis

- Happily, the Impoverishment operation proposed for Coptic in (8) also works for Maay.

(12) **Gender/Number Impoverishment (obligatory): holds in Coptic and Maay**

$$\begin{matrix} [+PL] & \rightarrow & [+PL] \\ [+/-FEM] & & \end{matrix}$$

- To see how this works for the determiners, consider that all the determiners can be decomposed into a gender agreement marker and a remainder (Paster 2006).

Table 14: Decomposition of Maay Determiners

	Masculine	Feminine	Remainder
Definite Determiner	k-	t-	-i
Distal Demonstrative Determiner	k-	t-	-as
1st sing Poss Determiner	k-	t-	-ey

- The gender agreement markers are all the same.
 - Thus the same two Vocabulary Items are inserted to expone the gender agreement of all of these determiners.
 - Agr for agreement (used for concord; see e.g., Norris 2014)
 - Det for determiner
- (13) a. [+FEM],[AGR] ↔ -t / __ Det
 b. [AGR] ↔ -k / __ Det
- Assuming that determiner agreement feature bundles are Impoverished via (12), the only Vocabulary Item that can be inserted for plural agreement is (13)b --- (13)a has gender features!
 - Thus the same VI for masculine singular determiners is used for all plural determiners.
 - It is just a fact about Maay's inventory of VI's that it lacks a VI that expresses plural features for determiner agreement.

Predictions

The VI in (13)b lacks gender features, so it will be used as the ‘default gender.’

- (14) Prediction 1: In a language where gender and number are simultaneously syncretic, the form used for plural agreement will be the same form used for the default gender.

Since this pattern depends on the configuration of individual Vocabulary Items...

- (15) Prediction 2: A language is predicted to exist where only one paradigm has gender and number simultaneously syncretic.

Prediction 1 and Prediction 2 are borne out in Amharic.

Amharic Gender and Number Agreement

Amharic is an Ethiosemitic language spoken in Ethiopia (and D.C.)

- Amharic has two genders: masculine and feminine. (Leslau 1995:161)
- Amharic has two numbers: singular and plural. (Leslau 1995:169)

In most paradigms, Amharic has the same pattern as Coptic: no gender distinctions in plural

Table 15: Amharic Perfective Subject Agreement (Leslau 1995:287)

	Singular	Plural
1st pers	-hu, -ku	-n
2nd pers	-h, -k (m.)	-atʃtʃihu
	-ʃ (f.)	
3rd pers	-ä (m.)	-u
	-ätʃtʃ (f.)	

Table 16: Amharic Copula Agreement (Leslau 1995:271)

	Singular	Plural
1st pers	nänñ	nän
2nd pers	näh (m.)	natʃtʃihu
	näʃ (f.)	
3rd pers	näw (m.)	natʃtʃäw
	nätʃtʃ, nat (f.)	

Table 17: Amharic Distal Demonstrative Agreement (Leslau 1995:66-67)

	Feminine	Masculine
Singular	yatʃtʃ(i)	ya
Plural	innäzziya ¹¹	

¹¹ Variants omitted for ease of exposition.

Table 18: Amharic Possessive Markers (Leslau 1995:50-51)

	Singular	Plural
1st pers	-e	-atʃtʃin
2nd pers	-ih (m.)	-atʃtʃihu
	-ij (f.)	
3rd pers	-u (m.)	-atʃtʃäw
	-wa (f.)	

But the definite marker in Amharic is like Maay determiners: “masculine singular” used for all plurals.¹²

Table 19: Amharic Definite Marker (Leslau 1995:156)

	Feminine	Masculine
Singular	-wa	
Plural		-u

Analysis

- Typologically like Maay: some targets convergent-to-plural, one target convergent-to-gender (masculine)
- Same Impoverishment operation as Coptic and Maay

(16) **Gender/Number Impoverishment (obligatory): holds in Coptic, Maay and Amharic**

[+PL] → [+PL]
 [+/-FEM]

- Most paradigms have three Vocabulary Items for agreement (masc., fem., plural), but the definite marker only has two (feminine, all others).

(17) **Vocabulary Items for Definite Marker in Amharic**

- [D],[DEF],[+FEM] ↔ -wa
- [D],[DEF] ↔ -u

- Thus, after Impoverishment, the only option is to insert (17)b -u since (17)a -wa will not match the features on the Impoverished feature bundle (it has a gender feature).
- This predicts that (17)b will also be inserted for **singular** nouns that lack gender features, e.g., a noun whose gender is unknown.
 - This is borne out! Masculine is the ‘default’ gender in Amharic.
 - NB: for animates, biological gender = grammatical gender in Amharic

(18) his’an-u wänd näw set?
 baby-DEF.M male be.3MS female?
 ‘Is the baby a he or a she?’ (Leslau 1995:164)

¹² Leslau (1995:171) reports that adjectives which are derived via the suffix -awi show gender distinctions in the plural, e.g., ityop’p’ñ-awi-yat ‘Ethiopia-awi-F.PL’ ‘Ethiopian women.’ However, four out of five consultants found these forms ungrammatical, and I set them aside here.

- Both predictions confirmed:
 - Only one paradigm uses masculine singular for the plural forms (gender and number both syncretic)
 - The form which Amharic uses when gender and number are syncretic is the form used for the default gender¹³

Summary of Section 3.2

- Maay exhibits convergence-to-gender (gender and number syncretic in the plural) = Impoverishment with fewer Vocabulary Items available
- The predictions of the analysis developed for Maay were confirmed in Amharic

Aside: Three Gender Languages

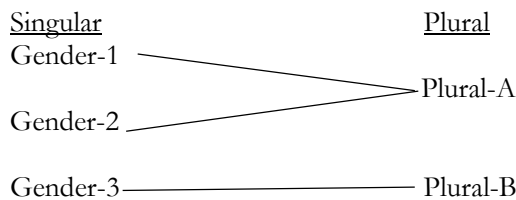
- What would convergence-to-gender look like for a three-gender language?
- If the default gender is neuter (Sauerland 2008, Kramer to appear), then there could exist languages that converge-to-neuter, but no three-gender languages that converge-to-masculine or converge-to-feminine.
- TBD whether this prediction is true – let me know if you know any languages with relevant phenomena!

3.3 Partial Convergence

There is one final empirical pattern of convergence (that we will look at today): partial convergence

- A subset of genders converge in the plural, i.e., a subset of genders are syncretic

(19) **Partial Convergence**



- NB: only found in languages with more than two genders

Given some basic assumptions about gender features in three-gender languages (Kramer to appear) as well as the DM analysis in Section 3.2, partial convergence is predicted to occur in natural language.

- Gender features are simple in three gender languages (Kramer to appear; *pace* e.g., Nevins 2011)

- (20)
- a. Feminine: [+FEM]
 - b. Masculine: [-FEM]
 - c. Neuter: No gender features

- Consider again the Impoverishment rule in Coptic, Amharic and Maay:

¹³ What about a language that has feminine as the default gender? It is predicted that such a language could have plural nouns trigger “feminine singular” agreement. Kala Lagaw Ya (Pama-Nyungan; Western Torres Strait Islands) has a feminine default gender (Bani 1987, Alpher 1987) and some plural nouns do trigger feminine singular agreement (Bani 1987, Alpher 1987). However, it remains to be confirmed whether this pattern is widespread in the language.

- (21) **Gender/Number Impoverishment (obligatory): holds in Coptic, Maay and Amharic**
 [+PL] → [+PL]
 [+/-FEM]

- The rule eliminates any gender feature from a feature bundle, regardless of value.
- But nothing prevents a rule like this from being specific to particular gender values: impoverishing just masculine gender or just feminine gender.

Both of these types of partial convergence are attested (Nevins 2011):

- Standard Slovenian: impoverishment of the feminine
- Ljubljana Slovenian: impoverishment of the masculine

Nevins 2011: Syncretism in Slovenian

Slovenian (aka Slovene) is a Slavic language spoken in Slovenia.

- Three genders: masculine, feminine, neuter (Derganc 2003:166-167)
- Three numbers: singular, dual, plural (Derganc 2003:165) -- focus on dual today

In Standard Slovenian, the feminine and neuter genders converge in the dual number for...

- 3rd person nominative pronouns (Table 20)
- nominative case suffixes (Table 21)
- adjectival agreement (Surrey Syncretisms Database: Slovene; henceforth SSD)
- the numeral 'two' (assuming that it is in the dual; Nevins 2011:436)

Table 20: Standard Slovenian 3rd Person Dual Nominative Pronouns (SSD)¹⁴

	Masculine	Feminine	Neuter
3 rd dual	onâdva	onêdve	

Table 21: Standard Slovenian Dual Nominative Suffixes (Nevins 2011:435)

	Masculine	Feminine	Neuter
Dual	stol-a	okn-i	knjig-i
	'table'	'window'	'book'

Since this is a metasyncretism, it is best treated via an Impoverishment rule...

- ...impoverishment of feminine gender in the context of the dual.

- (22) **Number Features (used in this section, otherwise, simple +PL/-PL)**
- Singular = [+SINGULAR, -AUGMENTED]
 - Dual = [-SINGULAR, -AUGMENTED]
 - Plural = [-SINGULAR, +AUGMENTED] (Nevins 2011:421)

- (23) **Impoverishment of the Feminine in the Dual (cf. Nevins 2011:56)**

[-SINGULAR] → [-SINGULAR]
 [-AUGMENTED] [-AUGMENTED]
 [+FEM]

Table 22: Standard Slovenian Dual Nominative Suffixes **after Impoverishment**

	Masculine	Feminine	Neuter
Dual	[-FEM], [-SING], [-AUG]	[-SING], [-AUG]	

¹⁴ It is possible that the dual pronouns have a dual suffix *-dva* or *-dve* which is the numeral 'two' (Derganc 2003:171).

(24) **Vocabulary Items for Standard Slovenian Dual Nominative Suffixes**¹⁵

- a. [-FEM], [-SING], [-AUG], [NOM] ↔ -a
- b. [-SING], [-AUG], [NOM] ↔ -i

Mini-Summary: Standard Slovenian has impoverishment of the feminine gender.

- See also Upper Sorbian (Corbett 1991:192-193, Nevins 2011), Seneca (Alpher 1987, Corbett 1991:192)

Ljubljana Slovenian is the colloquial dialect of Slovenian spoken in Ljubljana, Slovenia.

- It has the same three genders and three numbers as Standard Slovenian
- But **masculine** and neuter have converged in all paradigms on which information is available.

Table 23: Ljubljana Slovenian Dual Nominative Suffixes (Nevins 2011:436)

	Masculine	Neuter	Feminine
Dual	stol-a	okn-a	knjig-e

Table 24: Ljubljana Slovenian ‘two’ (Nevins 2011:437)

	Masculine	Neuter	Feminine
3rd dual	dva		dve

Since this seems to be a metasyncretism, it is best treated via an Impoverishment rule...

- ...impoverishment of **masculine** gender in the context of the dual.

(25) **Impoverishment of the Masculine in the Dual** (cf. Nevins 2011:56)

- [-SINGULAR] → [-SINGULAR]
- [-AUGMENTED] [-AUGMENTED]
- [-FEM]

Table 25: Ljubljana Slovenian Non-singular Nominative Suffixes **after Impoverishment**

	Masculine	Neuter	Feminine
Dual	[-SING], [-AUG]		[+FEM], [-SING], [-AUG]

(26) **Vocabulary Items for Ljubljana Slovenian Non-Singular Nominative Suffixes**¹⁶

- a. [+FEM], [-SING], [-AUG], [NOM] ↔ -e
- b. [-SING], [-AUG], [NOM] ↔ -a

Summary:

- An Impoverishment approach to gender syncretisms in non-singular numbers predicts masculine/neuter and feminine/neuter syncretisms in three-gender languages.
- Such syncretisms are attested – fem/neuter in Standard Slovenian, and masc/neuter in Ljubljana Slovenian.

A Negative Prediction

- So far an Impoverishment approach to partial convergence has made positive predictions, and these have been borne out...
- ...but does it make any negative predictions about what we should **not** see in language? Yes.

¹⁵ These VI's vary slightly from Nevins 2011 who also considers plural forms and has different gender features.

¹⁶ These VI's vary slightly from Nevins 2011 who also considers plural forms and has different gender features.

- (27) Prediction 3: There is no three-gender language such that masculine gender and feminine gender undergo partial convergence in some number as a metasyncretism.

Why is this so? Recall the features that I assume for three-gender languages.

- (28) a. Feminine: [+FEM]
b. Masculine: [-FEM]
c. Neuter: No gender features

If masculine and feminine undergo partial convergence, then both [+FEM] and [-FEM] features will have to be deleted in the context of e.g., dual number.

- (29) **Impoverishment of Masculine and Feminine in the Dual**

[-SINGULAR]	→	[-SINGULAR]
[-AUGMENTED]		[-AUGMENTED]
[+/-FEM]		

This will result in all dual feature bundles **lacking gender features altogether**, i.e., all three will be realized by the same Vocabulary Item.

- VI expresses dual features = convergence-to-dual
- VI has no gender/number features = convergence-to-neuter

Therefore, it would be impossible to detect that a three-gender language has converged masculine and feminine via an Impoverishment rule to the exclusion of the neuter.

Good news for DM: it seems likely that this prediction will be borne out:

- Survey of typological literature yielded no such cases (Corbett 1991, 2000, 2006, 2012, Aikhenvald 2004, Heine 1982)
- Putative counterexample: Tamil (Asher 1982), three genders, masc/fem syncretism in plural
 - The masc/fem syncretism is not a metasyncretism so Impoverishment is irrelevant; the same VI is used for masc/fem agreement in all paradigms (Asher 1982: 143-144, 186)
 - Additionally, the masc/fem have a semantic feature in common ([+HUMAN]) that could be in the relevant plural VI.
- TBD: test this prediction over a range of three-gender languages

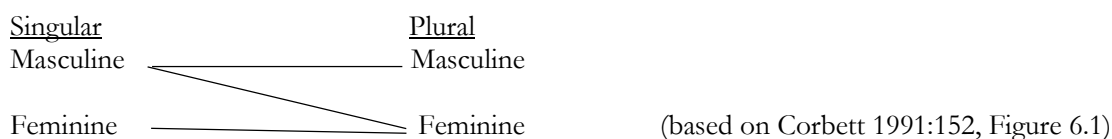
3.4 Summary and a Step Back

- Convergent-to-plural: Impoverishment
- Convergent-to-gender: Impoverishment plus fewer Vocabulary Items, correct predictions
- Partial convergence:
 - feminine/neuter and masculine/neuter syncretisms predicted and attested
 - masculine/feminine predicted not to occur
- Overall: wide range of facts covered, DM successful at accounting for convergence, predicting its patterns, and (hopefully) limiting its scope

4 CROSSED: GENDER IS NOT ON NUM

In a **crossed** gender system, the mapping from singular target gender to plural target gender is one-to-many for at least some nouns.

(30) **Crossed:** at least one singular gender maps to two plural genders

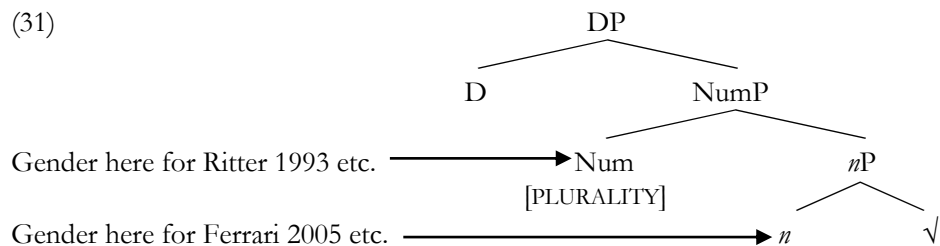


- Crossed systems are also sometime referred to as “gender polarity” or “gender switch”

Crossed gender systems are inherently puzzling: it is unexpected for gender to “change” in the plural.

- Since gender assignment in these systems seems to depend on number, crossed gender systems have been used as evidence that gender features are located on Num(ber) (the syntactic head for plurality)
 - Ritter 1993, Giurgea 2008, Croitor and Giurgea 2009 (in part)
- However, much recent work has converged on the idea that gender features are on *n*, the head that nominalizes a category-neutral root
 - Ferrari 2005, Kihm 2005, Lowenstamm 2008, Kramer 2009, 2014 to appear, Acquaviva 2009
 - NB: assume that lexical categories are decomposed into category-neutral root and categorizing head (Marantz 2001, Arad 2003, and much DM work since)

(31)



Two case studies of crossed systems:

- Somali: plural feature is on *n*, not Num (Lecarme 2002, Kramer to appear)
- Romanian: nouns that “switch” genders are underspecified for gender (Farkas 1990, Farkas and Zec 1995, Giurgea 2014, Kramer to appear), and a gender-on-Num analysis does not explain the facts

Moral

- Gender features are not on Num.
- A single phenomenon in typology does not always map onto a single analysis in theoretical linguistics.
- The complex phenomenon of crossed gender systems can be accounted for in DM = support for DM

4.1 Somali

Somali is a Cushitic language spoken in Somalia (main sources: Saeed 1999, Lecarme 2002, Green et al. 2014)

- Two genders: masculine and feminine (Saeed 1999:54)
- Two numbers: singular and plural (Green et al. 2014:71)
- Gender agreement is found on numerous targets including determiners, demonstratives and verbs (Saeed 1999:55).
 - Will use definite determiners to indicate gender throughout¹⁷

¹⁷ There is a fair amount of disagreement within the Somali literature about transcription. I have left transcriptions as found in the original sources, relying on more modern sources like Saeed 1999, Lecarme 2002 and Green et al. 2014.

- (32) **Masculine and Feminine Nouns with Definite Determiners in Somali**
- | | | | | |
|---------------|----------------|--------------|-------------------|--------------------|
| a. nín-ka | ‘man-the.M’ | b. náág-ta | ‘woman-the.F’ | |
| c. damêer-ka | ‘donkey-the.M’ | d. daméer-ta | ‘donkey-the.F’ | |
| e. baabûur-ka | ‘truck-the.M’ | f. mindí-da | ‘knife-the.F’ | |
| g. sánnad-ka | ‘year-the.M’ | h. galáb-ta | ‘afternoon-the.F’ | (Kramer to appear) |

Somali has a Crossed Gender System: When pluralized, it seems like some nouns change genders...

- ...the masculine allomorph of the definite marker is used if the noun is normally feminine and vice versa.
- This has long been observed for Somali and is often referred to as gender polarity (Saeed 1999, Lecarme 2002, Green et al. 2014, etc.)

- (33) **Somali Gender Polarity: Masculine to Feminine**
- | | | | |
|------------|---------------|------------------|------------------------|
| a. díbi-ga | bull-the.M | ‘the bull (m.)’ | |
| b. dibí-da | bull.PL-the.F | ‘the bulls (f.)’ | (Green et al. 2014:88) |

- (34) **Somali Gender Polarity: Feminine to Masculine**
- | | | | |
|----------------------------|----------------|------------------|------------------------|
| a. náág-ta | woman-the.F | ‘the woman (f.)’ | |
| b. naag-á-ha ¹⁸ | woman-PL-the.M | ‘the women (m.)’ | (Green et al. 2014:84) |

However, this does not occur for all nouns (as emphasized by Lecarme 2002, Green et al. 2014).

- A smaller set have the same gender in the plural that they have in the singular.

- (35) **Same Gender in Plural: Masculine**
- | | | | |
|--------------|-----------------|--------------------|------------------------|
| a. náas-ka | breast-the.M | ‘the breast (m.)’ | |
| b. naas-á-ha | breast-PL-the.M | ‘the breasts (m.)’ | (Green et al. 2014:86) |

- (36) **Same Gender in Plural: Feminine**
- | | | |
|------------|-------------|-----------------|
| a. úgax | ‘egg (f.)’ | |
| b. ugx-áan | ‘eggs (f.)’ | (Saeed 1999:63) |

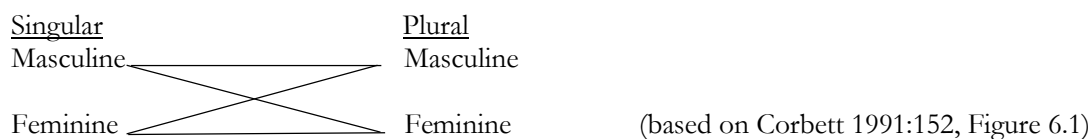
The pluralization strategy determines the gender of the plural noun (Lecarme 2002, Kramer to appear).

- (37)
- | | | |
|---------------|--------------------|--|
| a. túug | ‘thief (m.)’ | Singular: masculine |
| b. tuúg-ta | ‘the thieves (f.)’ | Tone/Accent Change: polarity (feminine) |
| c. tuug-ág-ga | ‘the thieves (m.)’ | Reduplication: no polarity (masculine) (Lecarme 2002) |

In terms of Corbett 1991, Somali has a crossed system.

- For at least some nouns, the mapping from singular target gender to plural target gender is one-to-many.

- (38) **Somali Determiners are Crossed**



Given these facts, one plausible analysis of Somali would be...

¹⁸ Note that the plural marker brings its own high tone, and there can only be one high tone per nominal (Hyman 1981, Saeed 1999:41). Affixes commonly ‘trump’ the tone on the stem in Somali (Saeed 1999:41).

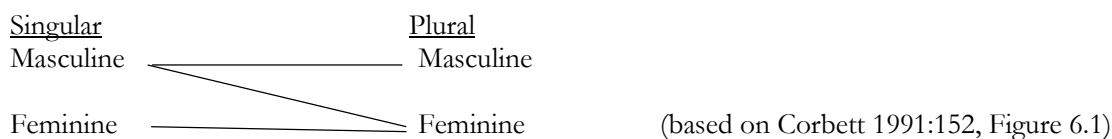
- ... but it is much more unusual for an inflectional head like Num.²⁰
 - Certain pluralization strategies in Somali are extremely choosy about which *n*Ps they combine with.
 - Ex.: *-yaal* only occurs with stems that end in the derivational suffix *-e*.
- (42)
- | | | |
|----------------------|----------------------|----------------|
| a. <i>bár</i> | ‘teach (imperative)’ | |
| b. <i>bar-é</i> | ‘teach-er (m.)’ | |
| c. <i>bar-a-yáal</i> | ‘teach-er-s (f.)’ | (Lecarme 2002) |
- Highly reminiscent of derivational morphology, which also can select for particular suffixes...
 - ...e.g., *-ary* in English which forms a noun from another noun ending in *-tion*: *revolutionary, missionary, functionary*, etc. (Fabb 1988)
 - Unlike plural formation via inflectional Num, which does not typically select for nouns ending in a particular suffix
- Plural marking is non-deterministic for some roots in Somali, that is, some roots have more than one plural strategy available to them (Lecarme 2002:120).
 - Ex. *túug* ‘thief’ can be pluralized with a tone change, reduplication or */-o/* suffix.
- (43)
- | | | | |
|----------------------|--------------------|----------------------|----------------|
| a. <i>túug</i> | ‘thief (m.)’ | Singular | |
| b. <i>tuúg-ta</i> | ‘the thieves (f.)’ | Tone Change | |
| c. <i>tuug-ág-ga</i> | ‘the thieves (m.)’ | Reduplication | |
| d. <i>tuug-á-da</i> | ‘the thieves (f.)’ | /-o/ Suffix | (Lecarme 2002) |
- This is highly unusual, again, for an inflectional morpheme like Num
 - e.g., in English, *child* ~ *children* but not **childs*, **cheeld*, **child* (pl.), etc.
 - But, it is not unusual for different derivational morphemes to combine with the same root or *xP*.
 - *cover, coverage, covering* = the root $\sqrt{\text{COVER}}$ combines with different *n*’s (Embick and Marantz 2008)
- Somali has double plurals (Lecarme 2002:121-122, Green et al. 2014).
- (44)
- | | | | |
|-----------------------|----------------------|----------------------|----------------|
| a. <i>nín</i> | ‘man (m.)’ | Singular | |
| b. <i>nim-án</i> | ‘men (m.)’ | Reduplication | |
| c. <i>nim-an-yáal</i> | ‘groups of men (f.)’ | Double Plural | (Lecarme 2002) |
- (45)
- | | | | |
|-----------------------|------------------------|----------------------|----------------|
| a. <i>náag</i> | ‘woman (f.)’ | Singular | |
| b. <i>naag-ó</i> | ‘women (m.)’ | /-o/ Suffix | |
| c. <i>naag-a-yáal</i> | ‘groups of women (f.)’ | Double Plural | (Lecarme 2002) |
- (NB: the interpretation of the double plural is different than the singleton plural; it is the sum-plural of a group/collective interpretation of the nominal, i.e., the plural of ‘group of men’).
 - It would be unusual for there to be multiple Num projections in the same DP.
 - But it is quite common for there to be multiple *n*’s, e.g., *revolu-tion-ary* where *-tion*, *-ary* are both *n*’s
- I conclude that plurality in Somali is located on *n*.

²⁰ While a few plurals are root-specific in a Num-based system like English (e.g., *child* ~ *children*), root-specificity is pervasive in Somali.

- (49) a. un bărbat b. doi bărbați **Masculine**
 a.MS man two.MPL man.MPL
 ‘a man’ ‘two men’
- (50) a. un glas b. două glas-uri **Neuter**
 a.MS voice two.FPL voice-PL
 ‘a voice’ ‘two voices’ (Maurice 2001:231)

- Neuter nouns agree like masculine nouns when singular, but like feminine nouns when plural

(51) **Romanian Gender is Crossed:** at least one singular target gender maps to two plural target genders



- But are there really two genders where a subset of nouns behave strangely (as implied in (51)), or are there three genders (= three agreement patterns)?
- Massive debate in the Romanian literature (see Corbett 1991, Bateman and Polinsky 2008, Croitor and Giurgea 2009, Dindelegan 2013:256-258, and Giurgea 2014 for lit reviews)
- Answer argued for here: three genders in the syntax, two in the morphology

Analysis: The most prevalent generative analysis treats the neuter nouns as lacking gender features (Farkas 1990, Chitoran 1992, Farkas and Zec 1995, Croitor and Giurgea 2009 (in part), DSG 2013, Giurgea 2014)

- The neuter nouns receive default gender.
- Default gender is masculine in the singular, and feminine in the plural.

These analyses are mostly lexicalist, but the insights are cashed out in the DM approach to gender in Kramer to appear.

- Treating Romanian neuter nouns as lacking gender features harmonizes with the approach to neuter nouns in typical three-gender languages in Kramer to appear (and see above).

- (52) a. Feminine: *n* [+FEM]
 b. Masculine: *n* [-FEM]
 c. Neuter: *n*

- However, Romanian is different from a typical three-gender language in that it systematically lacks Vocabulary Items for neuter-specific agreement.
 - In other words, neuter gender is syncretic with masculine gender in the singular, and with feminine gender in the plural.

Table 26: Agreement on Indefinite Article and Numeral ‘Two’ in Romanian

	Masculine	Neuter	Feminine
Indefinite Article (sing)	un		o
Numeral ‘two’ (plural)	doi	două	

- How to capture this in DM: Impoverishment (since this is a metasyncretism)
 - Nearly identical to the Impoverishment rules for Slovenian in Section 3 (evidence that Romanian is like a three-gender language)

(53) **Romanian: Impoverishment of the Masculine in the Singular**²²

[-PL] → [-PL]
[-FEM]

Table 27: Post-Impoverishment Gender Features for Indefinite Article Agreement

	Masculine	Neuter	Feminine
Indefinite Article (sing)	[D][-DEF][-PL]		[D][-DEF][-PL][+FEM]

(54) **Vocabulary Items for Indefinite Article**

- a. [D], [-DEF], [+FEM] ↔ -o
- b. [D], [-DEF] ↔ -un

(55) **Romanian: Impoverishment of the Feminine in the Plural**

[+PL] → [+PL]
[+FEM]

Table 28: Post-Impoverishment Gender Features for ‘Two’

	Masculine	Neuter	Feminine
Numeral ‘two’ (plural)	[-FEM][TWO][+PL]		[TWO][+PL]

(56) **Vocabulary Items for Indefinite Article**

- a. [TWO], [-FEM] ↔ doi
 - b. [TWO] ↔ două
- Thus, Romanian has the *n* inventory of a three-gender language, but the Vocabulary Item inventory of a two-gender language (cf. Farkas and Zec 1995).

This analysis predicts that masculine is the default gender generally in the singular, which is borne out (Dindelegan 2013:526).²³

(57) E noros afară **Weather Predicate**
is cloudy.MS outside
‘It is cloudy outside.’ (Farkas 1990:543)

(58) [A-ți iubi dușmanii] e imposibil **Clausal Subject**
to-you.DAT love.INF enemies.DEF is impossible.MS
‘To love one’s enemies is impossible.’ (Croitor and Giurgea 2009:(6))

(59) Vorbește cu cineva priceput **Animate of Undetermined Sex**
talk.IMP.2S to somebody skillful.MS
‘Talk to someone skillful.’ (DSG 2013:6)

The analysis predicts that feminine is the default gender in the plural, which is also largely borne out.

- Agreement with coordinated subjects is always plural in Romanian (Farkas and Zec 1990)

²² This is “markedness-targeted Impoverishment” (Nevins 2011): Impoverishment removes the marked masculine feature. Recall that I assume neuter is the unmarked/default gender in three-gender languages.

²³ With one exception: singular demonstrative pronouns are feminine when they refer to an entity of unclear gender or when they refer to a non-nominal entity like a clause. I tentatively follow Giurgea 2014 in assuming that demonstrative pronouns in these cases are numberless, and that numberless pronouns and feminine pronouns are accidentally homophonous. See Kramer to appear.

- When inanimate-denoting, singular DPs with clashing gender features are coordinated, the agreement is always feminine (Farkas and Zec 1995; see also Sadler 2006, Dindelegan 2013:533-54).

- (60) Podeaua și scaunul sînt albe. **Feminine + Neuter = Feminine**
 floor.F.DEF and chair.N.DEF are white.FPL
 ‘The floor and the chair are white.’ (Farkas and Zec 1995:96)
- (61) Peretele și scaunul sînt albe. **Masculine + Neuter = Feminine**
 wall.M.DEF and chair.N.DEF are white.FPL
 ‘The wall and the chair are white.’ (Farkas and Zec 1995:96)
- (62) Podeaua și plafonul sînt albe **Feminine + Masculine = Feminine**
 floor.F.DEF and ceiling.M.DEF are white.FPL
 ‘The floor and the ceiling are white.’ (Farkas and Zec 1995:96)

Overall, then, this analysis correctly predicts the syncretism patterns, captures the simultaneously two- and three-gender nature of the system, and makes correct predictions about defaults.

Alternative Analysis: Could Gender be on Num?

- Proposed to explain Romanian in Ritter 1993, Giurgea 2008, Croitor and Giurgea 2009
- Will focus on most developed proposals in Giurgea 2008, Croitor and Giurgea 2009

Giurgea 2008 and Croitor and Giurgea 2009 assume that...

- ...there are three agreement classes in Romanian: I: masculine, II: feminine, III: neuter
- ...each noun is lexically specified for its agreement class
- ...gender features are on Num.

Then, Num simply selects for particular agreement classes, as laid out in (63).

- (63) **Selectional Restrictions for Num**
- Num [-PL][-FEM] selects for Class I and Class III
 - Num [-PL][+FEM] selects for Class II
 - Num [+PL][-FEM] selects for Class I
 - Num [+PL][+FEM] selects for Class II and Class III
 (slightly modified for clarity from Croitor and Giurgea 2009:(13))

- This results in neuter nouns (= Class III) having masculine gender in the singular (selected for by (63)a) but feminine gender in the plural (selected for by (63)d).

However, there are a couple of reasons not to pursue this kind of analysis.

- No explanation for why there is not a feminine singular/masculine plural agreement class = Class IV.
 - Class IV would be selected for by (63)b and (63)c.
 - In the standard/DM approach, it is impossible for Class IV to exist in Romanian.
 - If the explanation for gender ‘switch’ is because the gender of a noun is unspecified, and the noun receives default gender...
 - ...it cannot be that the default gender, say, in the singular, is simultaneously masculine (for neuters) and feminine (for purported Class IV).

- The agreement with coordinated subjects is unexplained (as Croitor and Giurgea (2009) acknowledge)
 - If two coordinated DPs have the same gender, then that gender is used for agreement

- (64) Nucul și prunul sînt uscați. **Masculine + Masculine = Masculine**
 walnut.M.DEF and plum.M.DEF are dry.MPL
 ‘The walnut tree and the plum tree are dry.’ (Farkas and Zec 1995:96)

- (65) Podeaua și ușa sînt albe. **Feminine + Feminine = Feminine**
 floor.F.DEF and door.F.DEF are white.FPL
 ‘The floor and the door are white.’ (Farkas and Zec 1995:96)
 - The Num-based analysis predicts...
 - ...that masculine (Class I) and neuter nouns (Class III) will trigger masculine agreement when coordinated since both are selected by a Num that is [-FEM,-PL]
 - ...that two neuter nouns will trigger masculine agreement when coordinated since both selected by Num [-FEM], [-PL]
 - But neither prediction is borne out

- (66) Scaunul și dulapul sînt albe **Neuter + Neuter = Feminine**
 chair.N.DEF and cupboard.N.DEF are white.FPL
 ‘The chair and the cupboard are white.’ (Farkas and Zec 1995:96)

- (67) Peretele și scaunul sînt albe. **Masculine + Neuter = Feminine**
 wall.M.DEF and chair.N.DEF are white.FPL
 ‘The wall and the chair are white.’ (Farkas and Zec 1995:96)

Since the Num-based analysis cannot prevent the generation of feminine singular/masculine plural nouns, and it makes a false prediction about agreement with coordinated subjects...

- ...I conclude that it is a less viable analysis for Romanian than the *n*-based analysis developed above.
- Romanian does not provide evidence for gender features being on Num.²⁴

Crossed Conclusion:

- Crossed systems have heterogeneous analyses
 - Somali: plurality on *n*
 - Romanian: three *n*'s (= three genders syntactically), two VI's (= two genders morphologically)
 - NB: there is little indication that plurality in Romanian is on *n*, and no evidence in Somali that there are three genders underlyingly
- At first, crossed systems may seem very amenable to an analysis where gender features are on Num...
 - ...but this runs into problems empirically in both Somali and Romanian
- So they provide evidence that gender is not on Num and (in the case of Somali) that gender is on *n*.

²⁴ Another recent approach to Romanian is Bateman and Polinsky 2010. They propose that there are four formally-determined nominal agreement classes in Romanian (two singular and two plural) and two sets of agreement markers. Rules link up the right agreement markers with the right agreement classes. Under this analysis, there remain problems with the coordinated subject data (which B&P acknowledge), and there is no explanation of why the nouns sorted into certain sets are mostly the same across singular and plural (also acknowledged by B&P (2010:76)). Ultimately, the standard/DM analysis needs to be paired with the kind of detailed analysis of Romanian morphophonology that is in B&P, but their approach to gender/number system may not be as useful.

5 CONCLUSION

Recap: what kind of relationship can there be between gender and number?

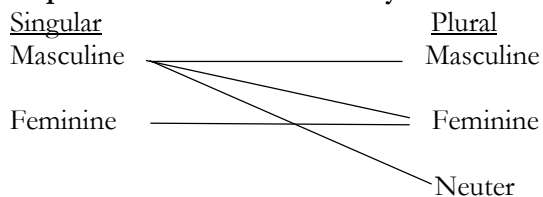
- Convergence: gender is syncretic in a particular number; progress towards a theory of syncretism
 - Convergence explained via Impoverishment: remove gender features in the context of a particular number
 - Convergent-to-gender: fewer VI's to express distinctions, gender form that is "re-used" is always the default gender
 - Partial convergence: Impoverishment can remove a single gender feature (Slovenian)
 - But it is predicted that masculine and feminine gender will never be metasyncretic
- Crossed: nouns "switch" gender in the plural; evidence that gender features are not on Num
 - Somali: plural *n* imposes its own gender on the nominal that it combines with
 - A Num-based account cannot explain the unusual properties of the plural
 - Romanian: three gender distinctions underlyingly (+FEM, -FEM, no gender features), but only two Vocabulary Items
 - Nouns with no gender features receive default gender
 - Default gender is masculine in the plural, feminine in the singular
 - There are empirical difficulties accounting for this in a Num-based approach
- Overall: rich empirical area that yields insights about morphological theory (possible syncretisms) and syntactic theory (location of gender in the syntax)

Future Work:

(68) **Greenberg's (1966:95) Universal 37**

A language never has more gender categories in nonsingular numbers than in the singular.

(69) **Impossible Gender-Number System**



- Does this universal truly hold (see e.g., Plank and Schellinger 1997)?
 - If so, how is it explained (feature geometry: Harley and Ritter 2002:514ff)?
- How do languages with more than three genders fit in?

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