The grammar of gender: insights from Bantu

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1 Overview of proposals

- Bantu noun classes are built on *n*s with core *i*genders for [human], [animal], [inanimate].
- Abundant *n*P-stacking in Bantu yields [$_{nP1}$ *n*1 [$_{nP2}$ *n*2+ROOT]] where *n*2s = *i*gender cores.
- There are some wholly *u*ninterpretable genders in Bantu languages; "default" agreement with gender-matching [$_{\&P}$ sg & sg] provides a formal diagnostic for these.
- So-called default agr is formal, grammatical agr with the *i*gender cores.
- Where a gender has both arbitrary and conceptually related members, morpho-syntax treats them all alike, arguing against *i*- vs. *u*- 'flavors' within any single gender.
- Agreement with [$_{\&P}$ pl & pl] avoids the wholly *u*-genders, supporting the analysis.

2 Xhosa basics

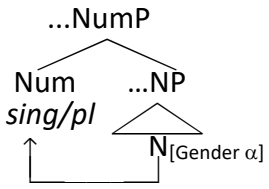
- 5 regular singular/plural pairs of noun classes (plus singletons not of concern today).

(1) a. um-ntu/aba-ntu 1-/2-person 'person/s' b. um-pu/imi-pu 3-/4-gun 'gun/s' c. ili-so/ame-hlo 5-/6-eye 'eye/s' d. isi-tya/izi-tya 7-/8-dish 'dish/es' e. in-ja/izin-ja 9-/10-dog 'dog/s'

- Paired classes as singulars/plurals of 5+ nominal genders: Carstens (1991), Corbett (1991), Corbett & Mtenje (1987), Watkins (1937).

(2) a. Bantu Genders (Carstens 1991)
Gender A: stems of Classes 1/2
Gender B: stems of Classes 3/4
Gender C: stems of Classes 5/6
Gender D: stems of Classes 7/8
Gender E: stems of Classes 9/10

b.



(3) Nouns get class prefixes via gender-specific number-feature spell-out rules

[Singular] ⟷ um- /__N[Gender A] [Plural] ⟷ aba - /__N[Gender A]

[Singular] ⟷ isi- /__N[Gender D] [Plural] ⟷ izi - /__N[Gender D] etc.

Strands of meaning posited in historical reconstructions:

Table 1 (from Vossen & Dimmendaal 2020:151)

Singular (number)	Singular (form)	Plural (number)	Plural (form)	Semantics
1	*mù-	2	*βà-	humans
3	*mù-	4	*mì-	trees, plants
5	*lì-	6	*mà-	mixed/cl. 6 liquids
7	*kì-	8	*βi̯-	mixed
9	*nì-	10	*li̯-nì-	animals, mixed
11	*lù-			mixed
12	*kà-	13	*tù-	augmentative, diminutive, etc.
14	*βù-			abstract
15	*kù-			infinitive

In synchronic grammars of many Bantu languages including Xhosa, semantic associations to classes are weaker. There are human-denoting nouns scattered across the classes, non-human-denoting nouns in classes 1/2, trees and plants scattered, etc.

Xhosa semantic generalizations: $1/2_{main}$: only humans *umfazi/abafazi* 'woman/women')
a few consistent mappings; all kinship terms → 1a/2a (*u-mama/oo-mama*)
some arbitrary all alphabet letters → 1a/2a (*u-L/oo-L; u-M/oo-M*)

The heterogenous contents of Xhosa classes: humans, animals, plants, liquids, misc. all scattered; no major semantic category predictive of class, or vice-versa.

(4) Humans: classes 1/2

a. um-ntwana/aba-ntwana
1-child/2-child
'child/ren'

b. um-fazi/aba-fazi
1-woman/2-woman
'woman/women'

c. um-hleli/aba-hleli
1-editor/2-editor
'editor/s'

Humans: classes 3/4 (stigmatized)

d. um-gulukudu/imi-gulukudu
3-gangster/4-gangster
'thug/s, gangster/s'

e. um-gewu/imi-gewu
3-criminal/4-criminal
'criminal/s'

f. um-lwelwe/imi-lwelwe
3-/4-disabled or poor
'disabled or poor person/s'

Humans: classes 5/6 (no special connotations)

g. i-qhawe/ama-qhawe
5-hero/6-hero
'hero/es'

h. i-gqwetha/ama-gqwetha
5-lawyer/6-lawyer
'lawyer/s'

i. i-sela/ame-sela
5-thief/6-thief
'thief/thieves'

Humans: classes 7/8 (no special connotations)

j. isi-bonda/izi-bonda
7-headman/8-headman
'headman/men'

k. isi-hlobo/izi-hlobo
7-friend/8-friend
'friend/s'

l. isi-anuse/izi-anuse
7-diviner/8-diviner
'diviner/s'

Humans: classes 9/10 (no special connotations)

m. in-tombi/iin-tombi
9-young.lady/10-young.lady
'young lady/ladies'

n. in-gcali/iin-gcali
9-expert/10-expert
'expert/s'

o. im-bongi/iim-bongi
9-poet/10-poet
'poet or praise singer/s'

(5) Animals: classes 1a/2a

a. u-nokala/oo-nokala
1a-crab/2a-crab
'crab/s'

b. u -krebe/oo -krebe
1a-shark/2a-shark
'shark/s'

c. u-dyakalashe/oo-dyakalashe
1a-jackal/2a-jackal
'jackal/s'

Animals: classes 3/4

d. um-khombe/imi-khombe
3-rhino/4-rhino
'rhino/s'

e. um-qhagi/imi-qhagi
3-rooster/4-roosters
'rooster/s'

f. um-thwane/imi-thwane
3-donkey/4-donkey
'donkey/s'

Animals: classes 5/6

g. i-cikilishe/ama-cikilishe
5-lizard/6-lizard
'lizard/s'

h. i-hashe/ama-hashe
5-horse/6-horse
'horse/s'

i. i-hobe/ama-hobe
5-dove/6-dove
'dove/s'

Animals: classes 7/8

j. isi-gcawu/izi-gcawu
7-spider/8-spider
'spider/s'

k. isi-khova/izi-khova
7-owl/8-owl
'owl/s'

l. isi-lwanyana/izi-lwanyana
7-animal/8-animal
'animal/s'

Animals: classes 9/10 (plurality of animals; a fairly predictable mapping)

m. in-ja/iin-ja
9-dog/10-dog
'dog/s'

n. in-dlovu/iin-dlovu
9-elephant/10-elephant
'elephant/s'

o. i-hagu/ii-hagu
9-pig/10-pig
'pig/s'

(6) Inanimates: 1a/2a

a. u-lolilwe/oo-lolilwe
1a-train/2a-train
'train/s'

b. u-matshini/oo-matshini
1a-machine/2a-machine
'machine/s'

c. u-L/oo-L
1a-L/2a-L
'letter L/s'

Inanimates: 3/4

d. um-bhobho/imi-bhobho
3-pipe/4-pipe
'pipe/s'

e. um-pu/imi-pu
3-gun/4-gun
'gun/s'

f. um-thi/imi-thi
3-tree/4-tree
'tree/s'

Inanimates: 5/6

g. i-qhosha/ama-qhosha
5-button/6-6-button
'button/s'

h. i-cepe/ama-cepe
5-spoon/6-spoon
'spoon/s'

i. i-gama/ama-gama
5-word/6-word
'word/s or name/s'

Inanimates: 7/8

j. isi-bane/izi-bane
7-lamp/8-lamp
'lamp/s'

k. isi-tya/izi-tya
7-dish/8-dish
'dish/es'

l. isi-tyalo/izi-tyalo
7-plant/8-plant
'plant/s'

Inanimates: 9/10

m. in-to/izin-to
9-thing/10-thing
'thing/s'

n. in-cwadi/iin-cwadi
9-book/10-books
'book/s'

o. in-daba/iin-daba
9-news/10-news
'news item/s'

(7) Liquids and masses: scattered

a. ama-nzi
6-water
'water'

b. i-gazi
5-blood
'blood'

c. i-oili
9-oil
'oil'

g. u-bisi
11-milk
'milk'

e. isi-dudu
7-porridge
'porridge'

f. um-chamo
3-urine
'urine'

d. i-tyuwa
9-salt
'salt'

(8) Clauses class 15
a. Ndi-ya-**ku**-cinga ukuba u-hambile uSabelo.
1SSM-DISJ-**15OM**-think that 1SM-left 1a-Sabelo
'I think that Sabelo left.'

b. Uku-cula **ku**-mnandi.
15-sing **15SM**-nice
'Singing is nice.'

Agreement is strictly based on noun class, not semantic features:

(9) a. um-fazi **w**-a-fika.
1-woman 1SM-PST-arrive
'The woman arrived.'

b. in-tombi **y**-a-fika.
9-girl 9SM-PST-arrive
'The girl arrived.'

c. i-gwetha **l**-a-hleka.
5-lawyer 5SM-PST-laugh
'The lawyer laughed.'

(10) a. u-lolilwe **w**-a-fika.
1a-train 1SM-PST-arrive
'The train arrived.'

b. i-posi **y**-a-fika.
9-mail 9SM-PST-arrive
'The mail arrived.'

c. ili-tya **l**-a-wa phantsi.
5-stone 5SM-PST-fell down
'The stone fell.'

(11) a. aba-fazi/oo-lolilwe **ba**-a-fika.
2-women/2a-trains 2SM-PST-arrive
'The women/trains arrived.'

b. iin-tombi/iin-cwadi **z**-a-fika
10-girls/10-letters 10SM-PST-arrive
'The girls/letters arrived.'

c. ama-gwetha/ama-tye **a**-a-wa.
6-lawyers/6-stones 6SM-PST-fell
'The lawyers/stones fell.'

d. imi-thi/imi-gewu **y**-a-wa.
4-trees/4criminals 4SM-PST-fell
'The trees/criminals fell down.'

3 Agreement with conjoined singulars

3.1 "Default"/semantic agr with mismatching [sg+sg]: *ba-* and *zi-*

(12) a. Um-gewu ne-polisa **ba**-sebenza ndawonye. [Xhosa]
3-criminal and.5-policeman 2SM-pres-work together
'The criminal and the policeman are working together.'

b. Um-nqathe ne-qanda **zi**-se tafile-ni. [Xhosa; Mitchely 2015:115]
3-carrot and.5-egg 8SM-be table-LOC
'The carrot and the egg are on the table.'

♦Recall class 2 is reconstructed as the plural class of humans, class 8 mixed contents♦

Interim conclusion: Xhosa noun class membership is predominantly arbitrary, but agreement w/mismatched [sg+sg] reveals a human/non-human conceptual division in the system.

3.2 Cases where a default strategy is puzzling

3.2.1 Singular inanimates [3+3], [5+5] pair with class 8 *zi-* (Taraldsen et al 2018).

(13) a. Um-nqwazi nom-pu ✓**zi**- /✗**i-** se tafile-ni. [3+3=8; ≠4]
3-hat and.3-gun 8SM/ 4SM-are table-LOC
'A hat and a gun are on the table.'

b. Imi-nqwazi ✗zi /✓**i**-se tafile-ni. [plural of $N_{cl.3}$ is cl 4: *i-*agr]
4-hats 8SM/ 4SM-be table-LOC
'The hats are on the table.'

(14) a. Ili-tye ne-qanda ✓**zi**-/✗**a**-nyamalele. [5+5=8, ≠ 6]
5-stone and.5-egg 8SM/6SM-disappeared
'The stone and the egg disappeared.'

b. Ama-tye ✗zi /✓**a**-nyamalele. [plural of $N_{cl.5}$ is cl 6: *a-*agr]
6-stones 8SM/ 6SM-disappeared
'The stones disappeared.'

3.2.2 Conjoined humans of [3+3], [5+5] pair with class 2 *ba-*

(15) a. Um-gewu nom-gulukudu ✓**ba** /✗**i**-sebenza ndawonye. [3+3=2, ≠4]
3-criminal and.3-gangster 2SM/ 4SM-work together
'A criminal and a gangster are working together.'

b. I-mi-gewu ✗**ba**/✓**i**-sebenza ndawonye.
4-criminals 2SM/ 4SM -work together
'The criminals work together.'

(16) a. I-gqirha ne-gosa ✓**ba** /✗a-sebenza ndawonye. [5+5=2, ≠ 6]
5-healer and.5-officer 2SM / 6SM -work together
'The healer and the officer are working together.'

b. A-ma-gqirha ✗**ba**/✓**a**-sebenza ndawonye.
6-healers 2SM/6SM-work together
'The healers are working together.'

The conclusion of Taraldsen et al (2018): Bantu singular/plural pairings do not share gender features. Each singular and each plural class is a distinct gender.

But this pattern **doesn't** threaten the gender analysis of pairs of classes.

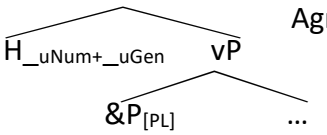
3.2.3 Parallels in languages with canonical 3-gender systems

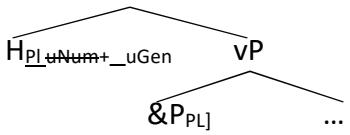
Well-known parallels in languages with canonical genders – BCS (17) and Slovenian (18), [$_{\&P}$ neut+neut] takes default masc.

(17) *Jedno tele i jedno pašče su juče prodana.
One calf.NEUT and one dog.NEUT are yesterday sold. PL.NEUT
Intended: a calf and a dog were sold yesterday.

(18) to drevo in gnezdo na njem mi bosta ostala v spominu.
that tree.NEUT and nest.NEUT on it to-me will remain.*PL.NEUT/✓MASC.DUAL in memory
'That tree and the nest on it will remain in my memory.' [$_{\&P}$ neut+neut ≠ neut.pl]

•Marušič et al (2007), Bošković (2009): Conjunct Phrase (&P) has number only; it's a closer goal than its contents. A uPhi probe on a head H obtains from it a plural/dual value alone.

(19) a. 

Agree (T, &P) →
b. 

Default/semantic resolution rules follow, whether the genders of conjuncts mismatch or match.

Summary so far: (a) Xhosa noun class patterns with grammatical gender in that some conjunctions of matching singulars trigger default agreement; (b) syntax could explain this.

•Problem: cross-linguistically, agreement in the expected plural is the more general pattern.

3.3 Where regular plural agreement obtains

3.3.1 Conjoined singulars [1+1], [7+7], [9+9] pair with expected plural agreement

Conjoined singular nouns intrinsically of cl. 1 take *ba*-AGR, whether human-denoting or not.

(20) Um-mi nom-ongameli **ba**-ya-ncokola. [1+1=2]
1-citizen and.1-president 2SM-DISJ-chat
'The citizen and the president are chatting.'

(21) a. U-L no-M **ba**- /*zi-se tafile-ni. [1+1=2]
1a-L and.1a-M 2SM-/*8SM-LOC table-LOC
'The L and the M are on the table.'

b. U-loliwe kunye no-matshini **ba**-/*zi-ya-hamba. [1+1=2]
1a-train and and.1a-machine 2SM-/*8SM-DISJ-move
'The train and the machine are moving.'

Conjoined singulars of class 7 take *zi*-AGR, even if human-denoting:

(22) Isi-bane nesi-tya **zi**-nyamalele. [7+7=8]
7-lamp and.7-dish 8SM-disappeared
'The lamp and the dish have disappeared.'

(23) Is-anuse nes-azi **zi**-ya-sebenza.
7-diviner and.7-scientist 8SM-DISJ-work
'The diviner and the scientist are working.'

Conjoined singulars of class 9 take *zi*-AGR, even if human-denoting:

(24) In-dlovu (kunye) nen-gwe **zi**-ya-lwa. [9+9=10]
9-elephant and and.9-leopard 10SM-DISJ-fight.
'The elephant and the leopard are fighting.

(25) In-dadi nen-tlebi **zi-**ya-cula.
9-swimmer and.9-gossip 10SM-DISJ-sing
'The swimmer and the gossip are singing.'

Though Xhosa agr for both 8 & 10 = *zi* I propose that [9+9=10] based partly on related Shona, where the two differ. The pattern for [sg+sg] is like that of Xhosa: [3+3], [5+5] take default 8agr.

(26) Im-bwa ne in-gwe **dzi**-ri panze. [Shona: 9+9=10]
9-dog and 9-leopard 10SM-be outside
'The dog and the leopard are outside.'

(27) Chi-ngwa ne chi-bage **zvi**-ri pa-tafura. [Shona: 7+7=8]
7-bread and 7-maize 8SM-be LOC-table
'The bread and the maize are on the table.'

(28) Mu-rume ne mu-kadzi **va**-ri panze. [Shona: 1+1=2]
1-man and 1-woman 2SM-be outside
'The man and the woman are outside.'

(29) Benzi ne dinga ✗a- /✓**va**-ri ku-shayikwa. [Shona: 5+5=2]
5fool and 5dimwit 6SM/ 2SM-be 15-missing
'The fool and the dimwit are missing.'

(30) Dombo ne zai ✗a /✓**zvi**-ri panze. [Shona: 5+5=8]
5stone and 5egg 6SM/ 8SM-be outside
'The stone and the egg are outside.'

(31) Mu-goti ne mu-ti ✗i /✓**zvi**-ri panze. [Shona: 3+3=8]
3-cooking.stick and 3-tree 4SM/ 8SM-be outside
'The cooking stick and the tree are outside.'

3.3.2 More parallels in Slovenian and BCS

Slovenian and BCS [&P fem+fem] and [&P masc+masc] can take matching agr, though [&P neut+neut] takes default masc.

(32) to drevo in gnezdo na njem mi bosta ostala v spominu.
that tree.NEUT and nest.NEUT on it to-me will remain.*PL.NEUT/✓MASC.DUAL in memory
'That tree and the nest on it will remain in my memory.' [&P neut+neut ≠ neut.pl]

(33) Jedna krava i jedna ovca su juce prodane. [Slovenian]
one cow.F.SG and one sheep.F.SG are yesterday sold.F.PL [&P fem+fem = fem.pl]
'A cow and a sheep were sold yesterday.'

(34) [&P Zavesa i biljka] su ukrašavale prozor. [BCS]
curtain.F.SG and plant.F.SG are decorate.PRT.F.PL window *As in Xhosa the particular*
'A curtain and a plant decorate the window.' *DPs'semantics don't matter*

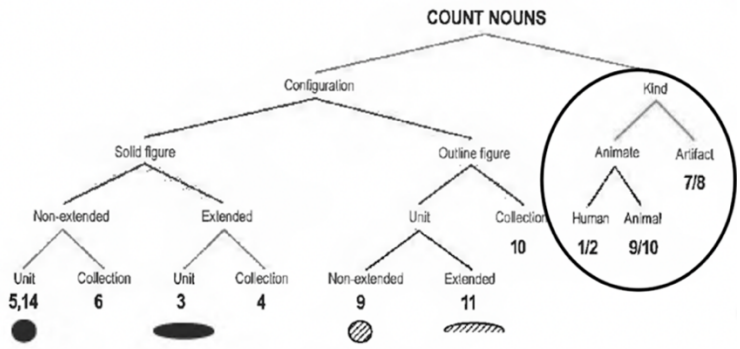
- These patterns are at odds with proposal (19) for [neuter+neuter], [3+3], [5+5].
- Bošković (2009): FEM but not NEUT is reflected in agr with conjoined singulars because FEM is semantically grounded; percolates to &P (though why in cases like (34) he leaves open).
- BCS NEUT as absence of gender or [-FEM, -MASC]: Despic 2016, Nevins 2018, Tsimpli & Hulk 2013, Adamson & Anagnostopoulou 2024 a.o. on why BCS [&P neut+neut] = default masc.pl.
- OK where there is 1 outlier gender, but does not generalize well to Xhosa where there are 2 (& we'll see in §6 that in Shona, diminutives are a 3rd).
- Parallels motivate a unified treatment of when agr w/[sg+sg] succeeds vs fails.

4 Analysis

4.1 Why 1/2, 7/8, 9/10 are different from 3/4, 5/6

- 2 of 3 genders exhibiting grammatical agr with [$X_{\alpha gen.sg}$+$Y_{\alpha gen.sg}$] are defaults: 1/2, 7/8.
- Defaults show Xhosa has semantic associations: 1/2 [human] and 7/8 [inanimate].
- Extending the logic, [9+9=10] suggests that 9/10 have a semantic assoc; I assume [animal] (reconstructed & synchronic contents). Thus 1/2, 7/8, 9/10 are a natural class.
- 3/4, 5/6 pattern differently. Relevant semantic content? What of 3/4 'trees/plants'?

Figure 1: Proto-Bantu noun class semantics in Denny & Creider (1986): only 1/2, 7/8, 9/10 have concrete semantic associations; the others, abstract shape tendencies.



Their evidence: statistically insufficient #s of reconstructed tree and plant terms in 3/4. Similarly, no significant correlation of Xhosa plants/trees to 3/4 in botany works: Bhatt (2013), Wehmeyer & Rose (1983).

Is an abstract shape association a sticking point for plural agr with [3+3] and [5+5], maybe absent individuation, countability (Arsenijevic 2017, Adamson & Anagnostopolou 2024 on BCS neuter as uncountable mass)? Yet most Ns in these Bantu genders name discrete pluralizable entities -- Xhosa 3/4: tree(s), gangster(s), rhino(s), pipe(s)... 5/6: policeman/men, spoon(s), name(s), berry/ies, stone(s)...this and countability specific to individual nouns, not noun classes:

(35) a. um-thi omu-nye b. imi-thi imi-thathu c. i-qanda eli-nye d. ama-qanda ama-thathu
3-tree 3-one 4-trees 4-three 5-egg 5-one 6-eggs 6-three
'one tree' 'three trees' 'one egg' 'three eggs'

(36) a. #um-gubo omu-nye b. e-nye i-komityi yo-m-gubo
3-flour 3-one 9-one 9-cup 9of.3-flour
Literally: one flour' 'one cup of flour'

(37) a. #i-gazi eli-nye
5-blood 5-one
Literally: one blood'

b. i-thonzi (eli-nye) le-gazi
5-drop 5-one 5-of.5-blood
'a drop of blood/one drop of blood' [unit counter is cl.5]

(38) a. in-cwadi e-nye
9-book 9-one
'one book'

b. in-tombazana e-nye #i-oili e-nye
9-girl 9-one 9-oil 9-one
Literally: one oil

No other indicators of exceptionality. Pronominal reference across discourses strict in any class:

(39) **l**-gwetha **l**-asondela kwi-jury. **L**-ashwankathela i-tyala. Ba-**li**-phulaphula ngenyameko.
5-lawyer **5SM**-approach LOC.9-jury **5SM**-summarized **5**-case 2SM-**5OM**-listen carefully
'The lawyer approached the jury. He summarized the case. They listened carefully to him.'

(40) Iin-tombi z-a-thenga ama-hashe. Z-a-zi-nga-kwazi uku-wa-khwela.
10-girls 10SM-buy 6-horses 10SM-PST-10SM-NEG-know 15-6OM-ride

Aba-hlobo ba-zo ba-be-zi-/#**ba**-hleka.
2-friends 2-10POSS 2SM-PST-2SM-10OM/#**2OM**-laugh
'The girls bought horses.They didn't know how to ride them.Their friends laughed at them.'

(41) Bound readings for pronouns rely on noun class matching, in every class:

a. **l**-nenekazi nga-**li**-nye$_i$ **l**-a-yi-funda in-cwadi ya-**lo**$_i$ /ya-khe$_j$ *i = j
5-lady each-**5**-one **5SM**-PST-9OM 9-book 9-**5POSS** /9-1POSS
'Each lady$_i$ read her$_i$ book.'

b. Y-onke in-kwenkwe$_i$ y-a-tya imi-funo ya-**yo**$_i$/ya-khe$_j$. *i = j
9-every 9-boy 9SM-PST-eat 4-vegetables 4-9POSS /4-1POSS
'Every boy$_i$ ate his$_i$ vegetables.'

Upshot: Semantic factors that might disfavor agr with [3+3], [5+5] are not detectable synchronically. If they existed, they've faded leaving genders without interpretable content.

4.2 Gender, *n*, and interpretability

- Kramer (2015): gender is a feature of the categorizer *n;* semantic associations to genders exist because genders may be *i*nterpretable or *u*ninterpretable.

(42) Amharic: two genders. Types of *n*:

a. *n i* [+FEM] Female natural gender
b. *n i* [-FEM] Male natural gender
c. *n u* [+FEM] Feminine arbitrary gender (e.g. the grammatically feminine word for 'sun')
d. *n* No natural gender = "plain" *n* (grammatically masculine, by default)

(43) *n*s for Xhosa (note absence of *u*- vs. *i*-flavors for 1/2, 7/8, 9/10; more on this in §5.2)

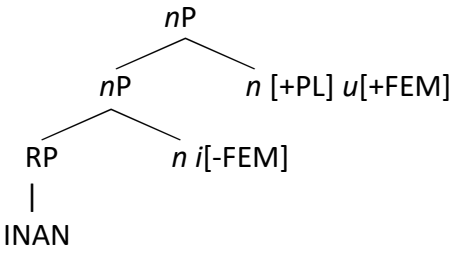
	Classes 1/2 = Gender A	n_A	[humans and others]
	Classes 7/8 = Gender D	n_D	[inanimates and others]
	Classes 9/10 = Gender E	n_E	[animals and others]
→	Classes 3/4 = Gender B	n_B	uninterpretable for all members
→	Classes 5/6 = Gender C	n_C	uninterpretable for all members

Working hypothesis: a gender associated with entities of type α is compatible with other kinds ; alongside of *i*-versions specified e.g. *i*[entity:human] are *i*[entity:__], the apparently *u*-versions.

•A second tool from Kramer (2015): *n*-stacking

(44) a. ínan 'son, boy (m.)' [Somali]
b. inammó 'sons, boys (f.)'

(45) [Somali]



•Large numbers of [human] nouns drifted from Proto-Bantu classes 1/2 to other classes, in Xhosa. Suppose their new genders such as 3/4, 5/6 stack above the older 1/2 *i*-core.

•Some [inanimate] nouns came to pair with classes 1/2 and other *n*s; assume these *n*s stack above an interpretable [artifact] core of classes 7/8.

•Same approach to dispersal of [animal] nouns.

(46) Sample structures of [human] nouns: a core of 1/2 = gender A

a. um-ntwana/aba-ntwana [n_A √MNTWANA] i*n* for [human+]
1-child/2-children
'child/ren'

b. um-gewu/imi-gewu [n_B [n_A √GEWU]] *u*n of 3/4 stacks above 1/2 *i*n
3-criminal/4-criminal
'criminal/s'

c. i-butho/ama-butho [n_C [n_A √BUTHO]] *u*n of 5/6 stacks above 1/2 *i*n
5-warrior/6-warrior
'warrior/s'

d. isi-hlobo/izi-hlobo [n_D [n_A √HLOBO]] *i*n of 7/8 stacks above 1/2 *i*n
7-friend/8-friend
'friend/s'

e. in-tombi/iin-tombi [n_E [n_A √TOMBI]] *i*n of 9/10 stacks above 1/2 *i*n
9-young.lady/10-young.lady
'young lady/ladies'

(47) Structures of [inanimate] nouns: a core of 7/8 = gender D

a. isi-bane/izi-bane [n_D √BANE] *i*n for [inanimate+]
7-lamp/8-lamp
'lamp/s'

b. u-matshini/oo-matshini [n_A [n_D √MATSHINI]] *i*n of 1/2 above *i*n of 7/8
1a-machine/2a-machine
'machine/s'

c. um-qwazi/imi-qwazi [n_B [n_D √QWAZI]] *u*n of 3/4 stacks above 7/8
3-hat/4-hat
'hat/s'

d. ili-tye/ama-tye [n_C [n_D √TYE]] *u*n of 5/6 stacks above 7/8
5-stone/6-stone
'stone/s'

(48) Animal nouns: a core of 9/10 = gender E

a. in-dlovu/iin-dlovu [n_E √DLOVU] *i*n for [animal+]
9-elephant/10-elephant
'elephant/s'

b. u-nokala/oo-nokala [n_A [n_E √NOKALA]] *i*n of 1/2 above *i*n of 9/10
1a-crab/2a-crab
'crab/s'

♦"Default" agreement = formal, syntactic agreement with *i*gender cores♦

5 Deriving the patterns

Deriving default agreement with gender-matching singulars

(49) a. Um-nqwazi nom-pu **zi**-se tafile-ni.
3-hat and.3-gun 8SM-are table-LOC
'A hat and a gun are on the table.'

b. I-gqirha ne-gosa **ba**-ya-sebenza.
5-healer and.5-officer 2SM-DISJ-work
'The healer and the officer are working.

Compare to a conjunction of plurals in one of the problem genders (more on this in §7).

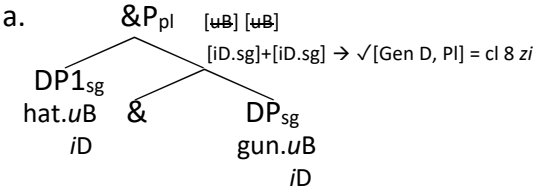
c. Imi-pu nemi-bhobho **i**-se rumi-ni.
4-guns and.4-pipes **4SM**-LOC room-LOC
'The guns and the pipes are in the room.'

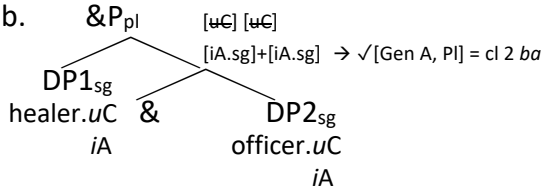
Default 2 and 8 agr pairing with [3+3], [5+5] and noun class mismatches:

(a) Clashes in number betw/&P_{pl} and conjuncts trigger resolution process, deleting uFs.
(b) Resolved agr: the intersection of *i*features on &P (Adamson & Anagnostopoulou 2024).

Deriving default agreement with matched conjunctions of u*genders*

(50) Clashing number features: &P is plural, conjuncts are singular → deletion of uFs

a.


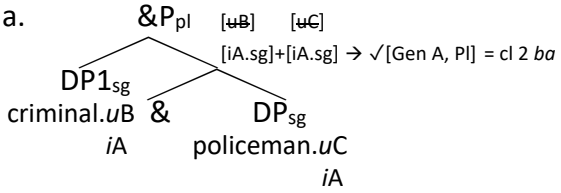
b.


class 8 agr with conjoined inanimates [3+3]; = (49)a *class 2 agr with conjoined humans* [5+5] = (49)b

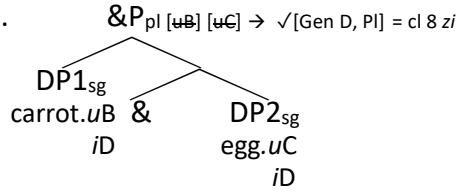
(51) a. Um-gewu ne-polisa **ba**-sebenza ndawonye. [Xhosa]
3-criminal and.5-policeman 2SM-pres-work together
'The criminal and the policeman are working together.'

b. Um-nqathe ne-qanda **zi**-se tafile-ni. [Xhosa; Mitchely 2015:115]
3-carrot and.5-egg 8SM-loc table-loc
'The carrot and the egg are on the table.'

(52) Clashing *u*genders (as well as numbers) → deletion of *u*Fs

a. 

class 2 agr with conjoined humans [3+5] = (51)a

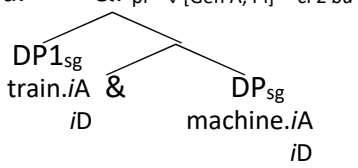
b. 

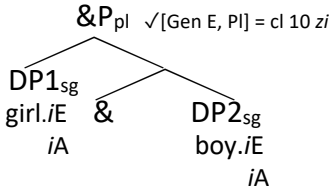
class 8 agr with conjoined inanimates [3+5] = (51)b

Agreement in appropriate i*gender: the highest gender wins (Kramer 2015).*

(53) U-loliwe kunye no-matshini **ba**-/*zi-ya-hamba. [1a+1a=2]
1a-train and and.1a-machine 2SM-/*8SM-DISJ-move
'The train and the machine are moving.'

(54) In-tombazana nen-kwenkwe **zi**- /*ba-ya-sebenza. [9+9=10]
9-girl and. 9-boy 10SM/*2SM DISJ-work
'The girl and the boy are working.'

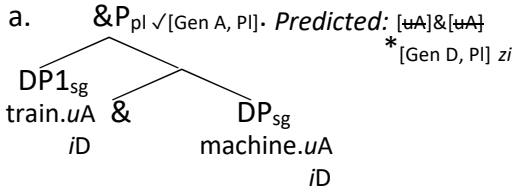
(55) a. 

b. 

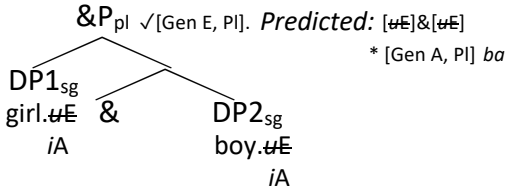
(56) Rejected alternative: *u*flavors for 1/2, 7/8, 9/10, adapting Kramer (2015)

Classes 1/2 = Gender A	in_{A1}	[+human]
	un$_{A2}$	(for arbitrary members)
Classes 7/8 = Gender D	in_{D1}	[+inanimate]
	un_{D2}	(for arbitrary members)
Classes 9/10 = Gender E	in_{E1}	[+animal]
	un_{E2}	(for arbitrary members)

Cannot capture (53), (54) etc.; makes false predictions:

(57) a. 

If inanimates in 1/2 bear *u*flavor of Gender A

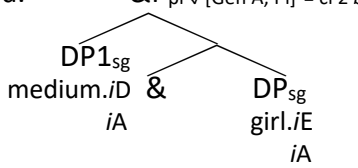
b. 

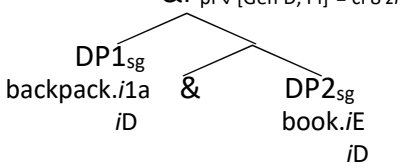
if humans in 9/10 bear a *u*flavor of Gender E

For mismatches of iFs, agr in the core gender -- the common denominator for DP1 & DP2.

(58) a. Is-anuse nen-tombi **ba**-ya-sebenza.
7-medium and.9-girl 2SM-DISJ-work
'The medium and the girl are working.'

b. U-bhaka nen-cwadi **zi**-ngaphandle.
1a-backpack and.9-book 8SM-be.outside
'The backpack and the book are outside.'

(59) a. 

b. 

6 Utility of the agreement diagnostic for (un-)interpretability

•Kramer (2015) provides tools crucial to my account, but (60) yields indeterminacy:

(60) Definition of interpretability
A feature is interpretable iff its presence/absence changes the interpretation of a linguistic structure, i.e. if it is legible at LF.

•Where genders are concerned, how to tell simple correlation from cause and effect?

Test case: Shona diminutive classes 12/13. When DIMINs conjoin, (62) a,b show agr is default.

(61) a. mu-sikana → ka-sikana
1girl 12-girl
'girl' 'tiny girl'

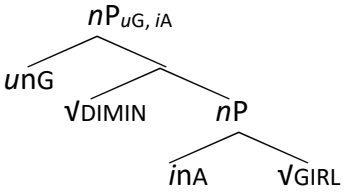
b. Twa-sikana twa-nyangadika.
13-girls 13SM-disappear
'The tiny girls disappeared.'

(62) a. Ka-sikana ne ka-kómáná ***va***-/ *twa-nyangadika.
12-girl & 12-boy 2SM/*13SM-disappear
'The tiny girl and the tiny boy disappeared.'

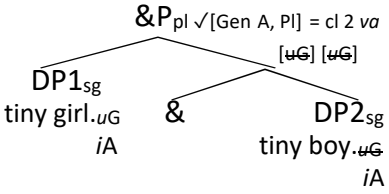
b. Ka-mba ne ka-motokari ***zva***-/*twa-nyangadika.
12-house & 12-car 8SM/ *13SM-disappear
'The tiny house and the tiny car disappeared.'

Kramer (2015) suggests an i$n_{12/13}$ [DIMIN]; Fuchs & van der Wal (2022) attribute the DIMIN meaning to $n_{12/13}$ combining with an *n*P. Neither approach predicts unagreeableness; my proposal: DIMIN a silent root, pairing with a wholly *u*gender G (12/13) like B, C (3/4, 5/6). (Creemers & Fenger 2018, Lowenstamm 2015, Simonović 2022, Wiltschko & Steriopolo 2007 on (some) deriv. affixes as roots.)

(63) a. diminutive structure:



b.



7 Agreement with conjoined plurals: patterns and implications

•With gender-matching [pl+pl], agr exceptionlessly matches, even for [4+4], [6+6], [13+13].

(64) a. Izi-tyebi nezi-bhanxa **zi**-ya-funda. [Mitchley 2015: 116]
8-rich.persons and.8-fools 8SM-DISJ -study
'The rich people and the fools are studying.'

b. Imi-pu nemi-bhobho **i**-se rumi-ni.
4-guns and.4-pipes 4SM-LOC room-LOC
'The guns and the pipes are in the room.'

c. Ama-sele nama-dada **a**-ya-qubha.
6-frogs and. 6-ducks 6SM-DISJ-swim
'The frogs and the ducks are swimming.'

d. Ama-polisa nama-gqwetha **a**-ya-sebenza.
6-policemen and. 6-lawyers 6SM-DISJ-work
'The policemen and the lawyers are working.'

(65) a. Imi-gewu nemi-gulukudu **i**-se rumi-ni.
4-criminals and.4-gangsters 4SM-LOC room-LOC
'The criminals and the gangsters are in the room.'

b. Twakomana ne twasikana **twa**-nyangadika. [Shona]
13-girls & 13-boys 13SM-disappear
'The tiny girls and the tiny boys disappeared.'

Recall the pattern for related singulars [3+3], [5+5] and [12+12]:

(15) a. Um-gewu nom-gulukudu ✓**ba** /*X***i**-sebenza ndawonye. [3+3=2, ≠4]
3-criminal and.3-gangster 2SM/ 4SM -work together
'A criminal and a gangster are working together.'

(62) a. Ka-sikana ne ka-kómáná **va**-/ *twa-nyangadika.
12-girl & 12-boy 2SM/*13SM-disappear
'The tiny girl and the tiny boy disappeared.'

The plural patterns show us that the unagreeable *u*genders **do** factor into agr with &P as long as the conjuncts and &P match in plurality.

• FCA: A preference clear in gender-mismatched [pl+pl] combos.

(66) Aba-ntwana n**een-tombi** ba-ya-cula. [2+10: FCA chosen by 8 out of 8 speakers]
2-children and.10-girls 2SM-DISJ-sing-FV
'The children and the girls are singing.'

(67) a. Iin-tombi n**aba-ntwana** zi/**ba**-ya-cul-a. [10+2: FCA>**LCA** 5:3]
10-girls and.2-children 10SM/2SM-DISJ-sing-FV
'The young ladies and the children are singing.'

b. Iza-nuse n**aba-ntwana** zi-ya-cul-a. [FCA >**LCA** 6:2]
8-mediums and.2-children 8SM-DISJ-sing-FV
'The young ladies and the children are singing.'

c. Izi-tya n**emi-nqathe** zi-se tafile-ni. [FCA >**LCA** 6:2]
8-plates and.4-carrots 8SM-be 9-table-LOC
'The plates and the carrots are on the table.'

•Default agr dispreferred. Table 2: results for 12 pairs of [+human] pls ≠ class 2. Across 8 speakers, *ba-* chosen only 10/96 times in which it is unambiguously default.

Table 2: Default agreement for combinations in which no conjunct = class 2 (eight speakers)

4+6	4+8	4+10	6+4	6+8	6+10	8+4	8+6	8+10	10+4	10+6	10+8
2	2	2	2	0	0	1	0	0	1	0	0

Upshot: *ba-* agreement when one plural conjunct is class 2 is likely agreement with that DP.

•FCA *is avoided* where DP1 is class 4 or 6 and DP2 mismatches it:

(68) Imi-gewu na**ba-ntwana** **ba**/i/*zi*-ya-cul-a. [**LCA**>FCA & *[-human] default* 5:2:1]
4-criminals and.2-children 2SM/4SM/8SM-DISJ-sing-FV
'The criminals and the children are singing.'

(69) Ama-polisa na-**ba-ntwana** **ba**/i-ya-cul-a. [**LCA** >FCA 6:2]
6-polisa and.2-children 2SM /6SM-DISJ-sing-FV
'The policemen and the children are singing.'

(70) a. Imi-nqathe n**ezi-tya** **zi**-/i-se tafile-ni. [**LCA**/default>FCA: 6:2]
4-carrots and.8-plates 8SM/4SM-be 9-table-LOC
'The carrots and the plate disappeared.'

b. Ama-qanda n**ezi-tya** a/**zi**-nyamalele. [**LCA** /default>FCA 7:1]
6-eggs and.8-plates 6SM/8SM-disappeared
'The eggs and the plate disappeared.'

c. Imi-funo n**eem-botyi** **zi**/i-phel-ile. [**LCA**>FCA: 6:2]
4-vegetables and.10-beans 10SM/4SM-be.finished-DISJ
'The vegetables and the beans are finished.'

•Upshot: failed agr with gender-matched [sg+sg] manifests a property of whole genders, sg and pl alike, contra Taraldsen et al (2018) claim that e.g. 3 & 4, 5& 6 are unrelated.

Most defaults and most variability: [4&6], [6&4]

(71) Imi-nqathe n**ama-qanda** i-/**a-**/*zi*-se tafile-ni. [*default zi*>FCA>**LCA** 4:2:1]
4-4-carrots and.6-eggs 4SM/6SM/8SM-be 9-table-LOC [i.e. *zi* x 4, *i* x 2, *a* x 1]
'The carrots and the eggs are on the table.'

(72) Ama-qanda n**emi-nqathe** i-/**a-**/*zi*-se tafile-ni. [*default zi*>FCA>**LCA** 4:2:1]
6-eggs and.4-carrots 4SM/6SM/8SM-be 9-table-LOC [i.e. *zi* x 4, *i* x 2, *a* x 1]
'The eggs and the carrots are on the table.'

Summary: •✓matching agr with all matching plurals [α.pl & α.pl].
•FCA preferred with [pl&pl] mismatches, but...
•Agr with 4 or 6 avoided when resolution is required, as for their sgs 3 and 5.

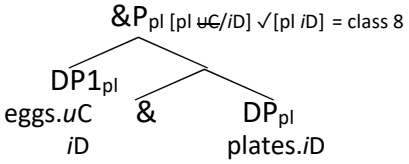
8 Default agreement: putting singulars and plurals together

•Necessary condition for default/semantic agr: - # mismatch between &P$_{pl}$ and DPs$_{sg}$, or
- gender mismatches between conjoined DPs
• *i*-features intersected to obtain resolved agr (adapting Adamson & Anagnostopolou 2024).

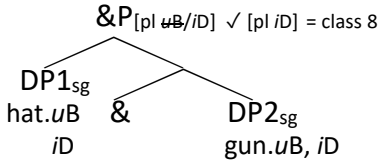
(73) a. Ama-qanda n**ezi-tya** **z**-awa.
6-eggs and.8-plates 8SM-fell
'The eggs and the plates fell.'

b. Um-nqwazi nom-pu **z**-awa.
3-hat and.3-gun 8SM-fell
'The hat and the gun fell.'

(74) a. gender mismatch



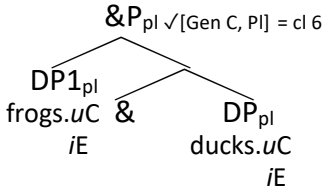
b. number mismatch



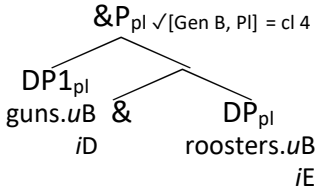
(75) a. Ama-sele nama-dada **a**-ya-qubha.
6-frogs and.6-ducks 6SM-DISJ-swim
'The frogs and the ducks are swimming.'

b. imi-pu nemi-qhagi **y**-a-wa.
4-guns and.4-roosters 4SM-fell
'The guns and the roosters fell.'

(76) a. *no mismatches*



b. *semantic but not formal mismatch*



Conjecture re FCA: feature-percolation reproduces on &P the hierarchical arrangement of the conjuncts; all else equal, highest wins.

9 Conclusions

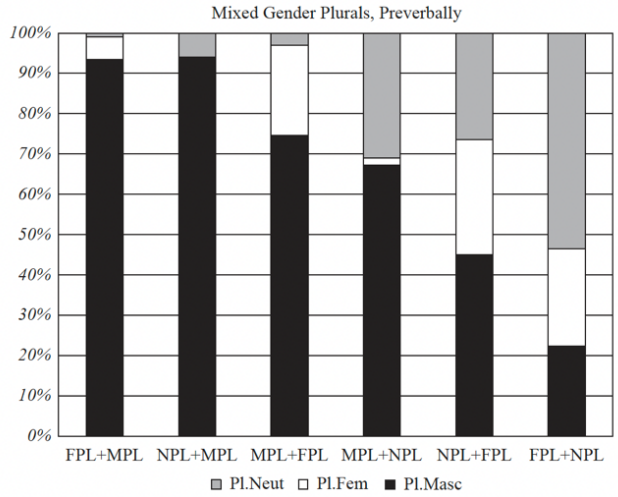
- Singular/plural pairs of noun classes are genders.
- Shared grammatical principles underlie agreement with conjuncts, across languages.
- A modest but grammatically significant semantic core underlies the Bantu noun class system.
- So-called default agreement with conjoined singulars in Bantu is syntactic agreement with an *i*gender core beneath wholly *u*genders 3/4, 5/6 12/13.
- Gender α has interpretable content → [$_{\&P}$ DP1.sing$_{gender.\alpha}$ & DP2.sing $_{gender.\alpha}$] = gender α.pl agr
- Gender α is wholly uninterpretable → [$_{\&P}$ DP1.sing$_{gender.\alpha}$ & DP2.sing $_{gender.\alpha}$] = default gen agr
- Genders are either *i* or *u*, not flavors of each for i.e. n_A, n_B, n_C, n_D, n_E; n_{FEM}, n_{MASC}, n_{NEUT}

For future research:

Why [human] nouns rare and stigmatized in classes 3/4 but not 5/6? A significant difference.

Patterns in agr with conjoined mismatched plurals in other languages, gender; FCA vs. LCA.

Table 3 Slovenian conjoined plurals (Marušić et al 2015).



Preferences: (a) LCA; (b) Masc > Fem>Neuter. Several approaches assume random variation.

Distributed Agree: Marušič et al (2015), Marušič & Nevins (2020): agreement applies in two stages, Agree Link and Agree Copy. Agree Copy before linearization → highest conjunct agreement; Agree Copy after linearization → closest conjunct agreement because the structure is flattened out.

To capture the Xhosa hierarchies of preference for preverbal conjuncts would require massive look-ahead (hmm, DP2 is class 2, I better wait and do Agree Copy after linearizing).

Marušič et al (2015), Marušič & Nevins (to appear) Murphy & Puškar (2018): The head & can in principle obtain multiple gender values from its conjuncts by Agreeing with them, but which values it acquires depends on the order of application among the operations Merge, Agree Up, and Agree Down.

Agree Up>Merge>Agree Down: Agree Up applies vacuously before the first conjunct is present. Agree Down will successfully give &P the gender feature of its second (lower) conjunct, so the result must be LCA.

Agree Down>Merge>Agree Up, Agree Down is vacuous, but Agree Up successful. Hence & has features of the first conjunct and agreement must be FCA.

Like Distributed Agree, this provides no handle on the way both conjuncts' gender features impact agreement with conjuncts...can this be derived from properties of the genders involved, as in my account of Xhosa and Shona?

Selected References

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