Comparative reconstruction of Proto-Niger-Congo class markers

John Merrill Comparative Niger-Congo Workshop, Villejuif May 22, 2025



I. Introduction

Noun class is often treated as the prototypical Niger-Congo (NC) feature (e.g. Schadeberg 2011)

"[Noun class] was and is the best non-lexical diagnostic for genealogical classification in the Niger-Congo domain since Westermann (1935)" (Güldemann 2011)

"The hallmark of typical Niger-Congo languages is a system of noun classification involving both marking on the noun and nominal agreement" (Güldemann 2018: 123)

Up to now, very few concrete proposals about the Proto-Niger-Congo (PNC) class system

- In particular the identity of the class markers themselves
- Güldemann & Fiedler (to appear), Merrill (2018b) explore features of the PNC class system
 But still no reconstructed markers

Furthermore, inclusion in a family based on the presence of a **typological feature** is <u>not generally</u> <u>accepted in historical linguistics</u>

- We must demonstrate **cognacy of the morphemes** to make a convincing argument of relation

I. Introduction

Goals of this presentation:

- Reconstruct <u>form</u> and <u>meaning</u> of PNC noun class markers
 - ➤ Using the <u>comparative method</u>
 - Based on regular sound correspondences established in roots
- Discuss the role of class markers in expressing **number**
- Discuss collocation of class markers and roots
- Preview the use of class marker inventories for **subgrouping** (future goal)
 - > In particular, the question of a Volta-Congo subgroup

Not addressed:

- Position of markers
- Affix vs. clitic vs. free
- Agreement
- "Adverbial" class markers (not found on nouns)

I. Introduction

Overview of conclusions:

Comparing the most diverse and conservative Niger-Congo class systems:

- ~30 PNC class markers are reconstructed
 - Suggestion that there were many more
- CV(C) shape of class markers
- **Coherent semantics** for each marker (some stricter than others)
- For the most part, **no neat pairing of singular-plural** classes
- High likelihood that markers and roots could be "mixed and matched" rather freely
- Distribution of markers within subgroups suggests that <u>Bantu and Gur</u> (Volta-Congo?) share many more innovations from the proto-system than any two subgroups within Atlantic

Overview chart on next page:

- green = fits form and meaning
- light green = fits form, meaning not as good (or meaning fits, but can descend from other marker)
- yellow = form doesn't follow regular correspondences (sometimes explanation available)

PNC	Ful-Ser	Cangin	Wolof	Bai-KK	Bia-Paj	Tenda	Bak	Bijogo	Limba	Gur	Bantu	Semantics	
[*] υ	*OX	(w-?)		*u	*u			Э	wu~wo	*U	*mu~u	normonal ag	
*ha						*aa/xa	*ha			*а	(*a)	personar sg.	
*61	*бе	*бі	y; i	i(N)-	*ɓə	*бә	*bu(g)		bi			normanal nl	
*б1-а					*ɓi-a	*ба	*ba(g)	ya?	(ba?)	*ba	*ba	personal pl.	
*gu			g; †gu	*gu	*gu			ŋɔ	ku~ko	*(ŋ)ʊ	*mu~gu	long and rigid	
*ko	*ho			*ki	*ko	†хо	*ka	kə	ku~ko	*ku	*ku	'leg, arm, ear, armpit,' deverbal	
*dı	*re	(*ti?)				*er		ne		*dı	*į∼di	small and round, fruits, 'name'	
*bu			b; †bu	*bu	*bu	K. u∼b	*pu	(u~b?)	hu~ho	*bu	*bu	round, esp. round body parts, 'bow'	
*би				KK uN-	*ɓu		*bu	u~b		*bu	*bu	trees, plants	
*kıC	F. ki-II	*ki?		*ki							*ki	trees	
*gı	*ge	(*i?)		*ji	*ji	*jə		(i-?)			*N~ji	animals, esp. dog~cow sized mammals	
*ja(N)		*ca(N)	j; †ja	*ja(N)	†ja-		Jo. *e	3				(dangerous) animals, misc.	
*pa		*pa		*fa	*fa	*fa				*fV ?	*pį?	animals	
*waN	*ban	*fa	w; †wa		*waN					*wa		animals, esp. large ruminants, 'elephant'	
*baC	*ban	(*pa?)	b; †ba ^x	*ba ^x	*ba ^x		*pa?					deverbal, abstract, misc.	
*gaN	*gan		g; †gaN	*gaN?	*gaN	*gaŋ	*ga(N)					flat (generally flexible); augmentative	
*kaC	*han	*kaN	g; †ka?	*kaN	*ka ^x ?	*xaC	*ka?	ka?	ka?			'hole, wound, mortar, ocean'	
*kuC		*kV?		*kuN	*ku ^x	*xoC						'fire', ('smoke')	
*gun			(g?)	*guN	*guN	*gəŋ						viscous liquids, powders	
*gun	*gun				*guN							animals, mainly insects	
*bo	Ser. fo-		(b?)	*bi	*bo	*0	*pa	u~b	hu~ho	*bu	*bu	mass, abstract, dim. pl. (esp. insects)	
[∗] dı~d∪	*ri(n)	*ti~tu	†di~du	*di	*di~du	†də				વા?	*du	grains, slimes/viscous liquids	
*tın		*ti~tu		*tiN						*tʊ~tı	*tu(<ti?)< td=""><td>abstract, mass, diminutive pl.</td></ti?)<>	abstract, mass, diminutive pl.	
*ña			ñ	*ñaN	*ña	*ña	Jo. ñV?	ñV?				mass (fibers, leaves, slime), personal pl.	
*ja		*ca	j; †ja	*ja			Jo. *e	3				mass/collective (vegetable), personal pl.	
*mon		*mi~mu	m?	*muN	*maN	*maŋ	*muN	mo	N?	*mu	*mu~gu	(thick) liquids, grains, dim./tree pl.	
*ma	F. ɗam	*ma	m; †m	*ma	*maa	*ma	*ma(N)	m~m	ma	*ma	*ma	liquids, abstract, pl. (often of [*] dı)	
*mak	(*ɗak?)				*ma ^x	*max		III, ~IİI	IIIa		IIIa	plural (long and rigid)	
*i	*dik?		y; i	*i			Ma. i	i		*i	*N~jį	plural (often of [*] bu)	
*ha∼ŋa	S. xa-II			ha/ŋa				ŋa	ŋa	*(ŋ)a	*ma <a< td=""><td>plural (often of [*]gu, [*]ko)</td></a<>	plural (often of [*] gu, [*] ko)	
*taC				ta ^x		†ŗaX						'foot'	
[*] cIC			s; †si ^x	ci ^x								diminutive	
[*] kU			k	ku								'thing'	

Existing proposed reconstructions of PNC class markers:

5

19

9

11

12

13

15



Proto-Atlantic: Pozdniakov (2015) \rightarrow

(bottom right) Proto-Atlantic: Doneux (1975) w/ proposed Benue-Congo cognate numbers





II. Background

1. Languages and language groups considered

The **PNC reconstructions** here are based on comparison of the **class systems of these NC subgroups**:

- Fula-Sereer
- Cangin
- Wolof
- Bainunk-Kobiana-Kasanga
- Biafada-Pajade
- Tenda
- Bak (Joola, Manjak cluster, Balanta)
- Bijogo
- Limba
- Bantu
- Gur

Gur is included for tentative/preliminary comparison

- No Proto-Gur lexical reconstructions, and so no regular sound correspondences are established
- Reconstruction of the markers is from Miehe et al. (2012), and preliminary hypotheses of cognacy with Bantu classes largely follow their own hypotheses

1. Languages and language groups considered

These Niger-Congo groups with class systems are **not yet** (systematically) **taken into account**:

- Mel (Temne, Baga, Landoma, Bullom-Kisi)
- Gola
- Sua (Mansoanka)
- Rio Nuñez (Nalu, Mbulungish, Baga Mboteni)
- Benue-Congo outside of Bantu (considered, but not systematically)
- Kwa (incl. Potou-Tano, Ghana-Togo Mountain)
- Kru
- "North Volta-Congo" (Glottolog) outside of Gur
 - ➢ incl. "Adamawa", Senufo, Mbaic

Those highlighted seem especially promising for aiding in reconstruction of PNC class markers

I do not consider Kordofanian groups to be related to Niger-Congo

- Perhaps future research will prove otherwise
- But this would require establishing convincing cognates and regular sound correspondences

Why so much Atlantic?

Atlantic is a geographic grouping, not a subgroup of NC

- No compelling evidence for subgrouping multiple Atlantic groups (Merrill 2021b)
- I.e. the Atlantic groups considered here are **8 or 9 primary branches of Niger-Congo**

Outside Atlantic, conventional wisdom (though crucially <u>unproven</u>!) supports a **Volta-Congo** (VC) subgroup (Bennett and Sterk 1977, Williamson 1989, Hepburn-Gray 2020)

- If true, most languages not considered here could only refine our understanding of one NC branch
- Unfortunately **little reconstruction done on most Volta-Congo** groups, so difficult to apply comparative method against other NC groups
- Many Volta-Congo groups have highly-eroded systems

Crucial question for any additional "Volta-Congo" group:

What can its noun class system tell us about the Proto-Niger-Congo system that can't be recovered from Bantu or Gur?

- Impressionistic answer is often "something" but also "not much"
- But only future research can say for sure

Some other "Volta-Congo" noun class systems:

Proto-Edoid (Elugbe 1989)

Proto-Ghana-Togo-Mountain (Heine 1968,
as cited in Güldemann and Fiedler 2019)



- Both authors assume cognacy with Bantu markers
- Assuming the reconstructions are accurate (G&F are doubtful for Proto-GTM), neither reconstruction would affect or add to any of the PNC markers reconstructed here

	# of classes	# of classes	# of pl. cl.	most common marker
	(noun+agr.)	(agr. only)	(agreement)	shapes on nouns
Proto-Fula-Sereer	~2	25	~5	CVC-, CV-
Fula (Gombe)	25	25	5	^(m) -(C)VC, ^(m) -(C)V
Sereer (Saalum)	19	14	6	$CV^{(m)}$ -, $V^{(m)}$ -, $^{(m)}$ -
Proto-Cangin	~2	20	3	CV-
Noon-Laalaa	14	12	3	Ø, C-, CV-
Saafi	10	10	2	Ø
Ndut-Paloor	7	7	2	Ø
Pre-Wolof	~1	8	2	CV ^(m) -
Wolof	10	10	2	Ø, C-
Proto-Bainunk-KK	~5	50	~10	CVN-, CV ^(m) -, V-
Gubëeher	36	31	8	CVN-, CV-, V-
Kobiana	52	42	14	$CV^{(m)}$ -, $V^{(m)}$ -
Proto-Biafada-Pajade	~3	80	8	CVN-, CV ^(m) -, CVV -
Biafada	25	25	9	CV ^(m) -, CVV-
Pajade	21	14	1	CVN-, CV ^(m) -, CVV-
Proto-Tenda	~3	80	4 + g→6	CVC-, CV-, V-
Konyagi	31	28	9	$CV^{(m)}$ -, $V^{(m)}$ -
Bassari	18	17	9	V ^(m) -, 6V ^(m) -
Bedik	18	17	9	CV ^(m) -
Proto-Joola	~2	24	7	CV-, V-
Fonyi	19	13	6	CV-, V-
Kuwaataay	18	13	6	CV-, CVV-, V-
Bayot Kugere	16	9?	6?	V-, C-, CV-
Manjak	15	13	5	CV-, V-
Balanta	7	7	3	C-, C1-, Ø
Bijogo	14	14	7	CV-, V-, m-
Limba	13	13	5	CV-, N-
Proto-Gur	- 18	8	5~7	-CV
Proto-Bantu	21	19	8	CV-, N-
Herero	17	15	7	V-CV-, V-(N)-

2. Regular sound correspondences

Cognacy of class markers is informed by **regular sound correspondences** established in roots

- Forms of markers are reconstructed using the **comparative method**, in the context of a reconstructed **Proto-NC phoneme inventory** (Merrill to appear)
- This approach is crucial— simply "eyeballing" markers for surface similarity is unsuccessful

Some examples:

- ^{*}^{*}
 ⁵
 ¹
 ⁻
 ⁻
 ^{*}
 ⁵
 ⁻
 ⁻
 ⁺
 ⁻
 ⁻
 ⁺
 ⁻
 ⁻
 ⁺
 ⁻
 ⁻
 ⁺
 ⁺
 ⁺
 ⁻
 ⁺
 ${}^{*}6 > \emptyset$ is regular in both groups
 - cf. ^{*}6Vn 'breast(milk) > Wo. w-een w-, m-een m-; > Bainunk-KK *bu-in, *mu-in

*bo > Sereer fo- (mass > liquid)

- cf. *but > o-fud 'belly', *but > feed 'to dawn'

*waN > Cangin *fa- (large mammals)

- cf. *wu > *caa-fú 'fly', *waan-ox > *faan-ox 'lie down'
- Cangin *fa- \neq fa- in other groups, from *pa

Regular consonant reflexes (root-initial position):

NC	Ful-Ser	Cangin	Wolof	Bai-KK	Bia-Paj	Tenda	Joola	Manjak	Balanta	Bijogo	Limba	Bantu
*p	*f	*p	f	*f	*f	*f	*f	f	f	р	f>h	*p
[*] t	*t	*t	t	*ŗ	*ŗ	*ŗ	*l, t	4∼s	t	t	t	*t
* c	*S	*S	S	*∫	*S	*∫	*s, c	С	S	С	S	*C
*t	*S	*S	S	*s	*S	*∫	*ł, t	t	S	t	th	*C
* k	*X	*k	h	*k	*h	*X	*Ø, k	k	h	k	k	*k
(pal)					*S	*∫						
* X	*X	*H	Х	*h	*h	*X	*Ø, k	h	h?	k	k	*k
*h	*h	*h	h	*h	*w/Ø	*X	*Ø, k	h	h	Ø		Ø
*b	*b	*w	b	*b	*b	*W	*f, p	р	f	β	f>h	*b
*d	*r	*1	d	*d	*r	*r	*t	t [tr̯]	θ	r	d?	*d
*g	*g	*¥	g	*g	*g	*¥	*k	k	g	g	#k, y	*g
(pal)					*j	*y						*j
* w	*W	*f	W	*w/Ø	*w/Ø	*W	*W	W		β		
*1	*1	*n	r	*n	*y	*n~l	*1	1	1	Ø	1	Ø?
*j~y	*y	*y/Ø	у	*y	*y	*y	*y	У		y/Ø		*j
*6	*6	*6	w/Ø	Ø	*6	*6	*b	Ъ	Ъ	b	(g)b	*b
\mathbf{b}^{*}	b*	*ɗ	1	*r	*ď	b*	*d[d~r]	d [d~r]	d	ļ	1	*d
** y	*Y	*Y	y?	*y	*Y	*Y	*j	j?	j	j		*j?
* m	*m	*m	m	*m	*m	*m~w̃	*m	m	m	m	m	*m
[*] n	*n	*n	n	*n	*n	*n~l	*n	n	1	n	n	*n
[‡] ñ	*ñ	*ñ	ñ	*ñ	*ñ	$*\tilde{n}\sim\tilde{y}$	*ñ	ñ	ñ			*ɲ?
[*] ŋ	*ŋ	(*ŋ)	ŋ	*ŋ	*ŋ	*ŋ~ỹ		ŋ				

3. Divergent phonological developments in markers

For the most part, the development of consonants in class markers <u>parallels their development in roots</u>

PNC		Sereer	Wolof	Bainunk	Biafada	Pajade	Tenda	Joola	Manjak	Balanta	Limba	Bantu
*bo	abstract, mass	fo-	b- ?	bi-	bwa-	po-	*0-	*fa-			hu~ho-	*bu-
*bυ	round (body parts)		Ъ-	bu-	bu-	pə-	*0-	*fu-	pə-	f-	hu~ho-	*bu-
*bVd	'rot/be ripe'	foor		bur	bwəl	pər	*wər		puutr			*bòd
*but	'belly/intestines'	o-fud	but-it	Ko. a-bbú	bu-bur	kum-pəte	*wətt		pə-pəs			
*bot	'toad'		mbott				*fa-wor	*e-fool		(mfûl)		*N-boto
*tab	'sting'							*taf	tap	saf	thahi	

However outcomes are sometimes <u>different in class markers</u>

- Sometimes due to **phonological erosion**, which often targets grammatical morphemes
- In other cases the outcomes are simply different in prefixes, likely due to **differences in stress or word position** (esp. in groups where roots were never word-initial, as prefixes naturally are)

Groups with different consonant outcomes in prefixes:

- Cangin voiced egressive stops > voiceless stops (rather than voiced continuants)
- Tenda voiced egressive stops are not lenited; *b is lost except when frozen before a vowel-initial root
- Bijogo *d, *g > n, ŋ; *b and *6 lenited to \emptyset (but not in the agreement marker)

*j in prefixes (an affricate) was seemingly an allophone of *y (a glide)

Development of consonants in markers (red = differs from root-initial, light green = PNC marker not reconstructed)

NC	Fu-Se	Cang.	Wolof	BKK	Bi-Pa	Tenda	Joola	Manj.	Bal.	Bij.	Limba	Gur	Bantu
*p		*p		*f	*f	*f						*f	*p
*t		*t		*t		*ŗ						*t	*t
*°C		*0	S	*C									
*t		5		*s							th		
*k	*h	*k	k	*k	*k	*X	k	k		k	k	*k	*k
*h				*h		*x/Ø	Ø	(n)	h			Ø	Ø
*b	*b	?	b	*b	*b	Ø (b)	f	р	f	<mark>Ø</mark> (b)	f > h	*b	*b
*d	*r	*t	d	*d	*d	#d, *r	t	t		n		*d	*d
*j~y		*C	j	*j	*j	*j	*y>Ø			*y>Ø			*j
*g	*g	*k/Ø?	g	*g	*g	*g	k	k	g	ŋ	k	*ŋ/Ø?	*g
*6	*6	*6	Ø	Ø	*6	*6	b	b	Ъ	<mark>Ø</mark> (b)	b	*b	*b
*d	*ɗ	*ɗ	1				d	d					
*y							j						
*m	*m	*m	m	*m	*m	*m	m	m		m	m	*m	*m
*n		*n					n						
*ñ			ñ	*ñ	*ñ	*ñ	ñ						
*ŋ				*ŋ	*ŋ					ŋ	ŋ	*ŋ	
*W	*b?	*f	W		*W		W					*W	

Vowels are more difficult for two reasons:

- Understanding of regular correspondences in roots still preliminary
- Many groups **reduce** the number of contrastive vowels in class markers

Assumed development of vowels in class markers (red = differs from roots; *e seemingly not used):

NC	FS	Can.	Wol.	BKK	BP	Tenda	Joola	Manj.	Bal.	Bijogo	Limba	Gur	Bantu
*1	*i		i	*i				i		i	i?	*i	*į
້ "ເ	*e	*i	i	*i	*ə~i	*ə, #*e	*i			ε~e~i	i~e	*1	*i
[*] u	*u			*u	*ə~u	¢*	*u?	u?	Ø/u?	(u)	u		
[*] υ	*o?	*u	u	*u	*ə~u	*0	*u	ə	Ø/ʊ	o~o~u	u~0	*U	*u
*0	*0			*i	*0	* 0	*а	а		o~o~u	u~0	* ۵	*u
*a	*a	*a	а	*a	*a	*а	*a	а	ι, (ha)	а	а	*a	*а

Despite these difficulties, relying on <u>regular correspondences across class markers</u> is very helpful in establishing cognates, as with these two class markers (with very consistent semantics):

	Ful-Ser	Bai-KK	Bia-Paj	Tenda	Bak	Bijogo	Limba	Gur	Bantu
ʻblood, night,' etc.	*bo	*bi	*bo	*0	*pa	u	hu~ho	*bu	*bu
'arm, leg,' etc.	*ho	*ki	*ko	ŤΧΟ	*ka	kə	ku~ho	*ku	*ku

4. Shape of PNC class markers

PNC class markers were maximally CVC

- (C)V markers were seemingly more common, though in some cases the final consonant might simply be unrecoverable
- Biafada-Pajade and Western Joola have contrastive long /aa/— perhaps archaic?

Evidence for marker-final consonants is found in many **modern** Atlantic languages in the form of **CVC markers** and **consonant mutation**:

	marker-final oral C	marker-final nasal C	fortis mutation (from oral C)	nasal mutation
Fula-Sereer	/l, x, k/	/n/ (/m, ñ/)	yes	yes
Cangin	<u> </u>	/n/?	<u> </u>	traces
Wolof	<u> </u>	<u> </u>	traces	yes
Bainunk		/N/	traces	
Kobiana-Kasanga	<u> </u>	<u> </u>	yes	yes
Biafada-Pajade		/N/ (P)	yes	yes (B)
Tenda	/k, d/	/ŋ/	yes	yes
Bak (Manj., Bal.)		/N/		

Examples of modern markers with final Cs:

- Fula <mark>-gol, -ɗam, -koñ</mark>
- Sereer fan-, ga~al-, ak-, ox-
- Bassari *ok, oŋ*, Bedik *ed* (determiners)
- Bainunk siN-, ñaN-, muN-

Attempts to explain these **CVC markers as innovative** (often as multimorphemic) are in my opinion **unsuccessful** (Doneux 1975, Pozdniakov 2022)

In all groups to the south of Bak, final consonants have seemingly been lost without a trace

Even in groups which retain final consonants in some form, there is massive neutralization

- Only one contrastive reconstructable nasal in each subgroup
- Contrastive *l, *k, *x in Fula-Sereer
- Contrastive *x, *r in Tenda

Unfortunately can't recover the final C of PNC markers beyond a nasal (N) vs. oral (C) distinction

- Except for *mak, if its reconstruction is warranted
- Perhaps Fula-Sereer *gal and *gol (<*gu?) can be connected with outside markers in the future

5. Semantics of markers

For class markers to be taken as cognate, must have compatible **form** and **meaning**

Semantics of most class markers is very much identifiable, though less focused than for lexical roots

- Some markers seem to have more than one semantic focus
- But generally this phenomenon arises in daughter languages due to the merger of classes
- In only one case (*gun) do I propose two homophonous markers due to having entirely different semantics, but perhaps should be done in a few other cases

In effect, markers having "compatible meaning" means one or more of:

- Used for **specific nouns** of same meaning ('fire', 'cow', 'moon', etc.)
- Used for same **semantic categories** of nouns (TREES, INSECTS, etc.)
- Used **productively** with compatible roots (DIMIN, AUGMEN, FRUITS, LANGUAGES)

It is <u>not</u> necessary to establish co-occurrence with cognate roots

- This is generally not possible
- Class **markers** are much **more stable than roots** in maintaining an association with particular noun meanings through time
- And the same root is often used with different class markers in different daughter languages

6. Subgroup reconstructions

Reconstruction of Proto-NC markers proceeds from the **reconstruction of class markers in subgroups**

- For the Atlantic groups treated here, these are my own reconstructions
- Cangin: Merrill (2023)
- Wolof noun class history: Merrill (2021a)
- Fula-Sereer, Bainunk-KK, Tenda: Merrill (2018a)
- Biafada-Pajade, Bak: unpublished

Reconstructions updated from Merrill (2018a), contact and I'm happy to discuss any of these in detail!

III. Reconstructed PNC class markers

Semantics: long and rigid, (> trees)

	Wolof	Bainunk-KK	BiafPaj.	Bijogo	Limba	Bantu
'arrow'	fett g-	KK *gu-saañ	P. ko-saaŋa	ŋɔ-kɛɛt		*mu-gų́í
'stick'		*gu-ŗigen~ŗihVn	B. gə-ja 'firewood'		kù-yèŋ (also 'tree')	*mu-tí (also 'tree')
'rib'	wet g- 'flank'	*gu-∫aal	*gu-saagan(ə)		kù-wá	
TREES	✓			ŋu-te 'tree'	✓	✓
long + rigid:	'bamboo, gun,	'branch, horn, bone,	B. 'branch, gun,		'pole, shin, hoe,	'spine, horn, trunk,
	millet stalk'	thorn, finger'	leg, wing'		broomstick, finger'	finger, bellows, shin'
other	'rope, chain, belt,	'speech'	pl. for animals	'thing, fire,		PLANTS
	drawstring'	LANGUAGES	in *waN	fish, animal'		'belt, vein, string,
				INF		root, tail'

- Connection with Fula-Sereer *gol (long, string-like objects) is doubtful, but would be very significant for reconstruction of the form of the marker
- Bak plural *ku- (pl. of *pu- < *bu, and in Joola some personal nouns) is formally congruent with *gu, but not semantically; however cf. BP *gu- used as a plural for animals in *waN
- Tenda *o matches semantically, but not phonologically (Konyagi u- would match, but not Bedik o-)

*120	Ful-Ser	Cangin	Wolof	Bai-KK	Bia-Paj	Tenda	Bak	Bijogo	Limba	Gur	Bantu
KU	*ho			*ki	*ko	†xo	*ka	kə	ku~ko	*ku	*ku

Semantics: paired body parts 'leg, arm, ear, armpit,' deverbal

	Fula-Ser.	Bainunk-KK	BiafPaj.	Tenda	Joola Fo.	Manjak	Bijogo	Limba	Bantu
'arm'	S. o-ɓay	B. *ki-lax	*ko-ɓəɗaa		ka-ñen	ka-ñan	kə-əkə	ku-gbeke	*ku-bókò
'leg'	S. o-jaf	B. *ki-dinx	P. koore	* xo nəng	ka-jaam	ka-hot	kə-dake	ku-yɛlɛ	*ku-gùdù
'ear'		*ki-nuf	*ko-nəfaa		ka-wos	ka-baat	kə-nnə	ku-ha	*ku-túį
'armpit'	*ho-naaf		P. ko-naawe		ka-supeet	ka-tɔktɔkan	kpa-ntinko	?	*ku-jápà
deverbal			(P. many)		INF				INF

- Only these four body part nouns robustly used with **ko
- Many other paired body parts in Bijogo: 'knee, buttock, lip, side, lung, wing, thigh, hip, cheek, horn'

*41	Ful-Ser	Cangin	Wolof	Bai-KK	Bia-Paj	Tenda	Bak	Bijogo	Limba	Gur	Bantu
ul	*re	(*ti?)				*er		ne		*dı	*į~di

Semantics: small and round, fruits, 'name'

	Fula-Sereer	Cangin	Tenda	Bijogo	Bantu
'stone/rock'	F. hay-re		Ko. i-táká	no-ogo	*į-bùè
	S. 6il l-		BB *er-xaañ		
'egg'	F. woofoo-nde		*er-niin	ne-keke	*į-gí
	S. gin l-				
'tooth'	*re-ñiiñ				*į-jínò, *į-gègò
'star'	F. hoor-re		*er-xor		
'name'	F. 'in-de, S. gon l-	*ti-ix			*į-jį́nà
FRUITS	🗸 (Fula)		✓	✓	✓
small and round	'coal, pebble, pimple'		'knee, coal, heel'	'heel, elbow'	'eye, spot, knee'
other	'liver, head, town'	*tV-uƴ 'hut'	deverbal, Ko. INF	DIMIN	

- *de may be justified instead, esp. based on Tenda *er, where ^{*}ι > *ə is regular— however the "metathesis" is unexplained, and there is no independent evidence for the development of word-initial ^{*}ι, nor for ^{*}e in any other class marker
- If *de, Kobiana-Kasanga * a^{x} (a perfect semantic fit) might be cognate; but cf. *o > BKK prefix *i

*bu Ful-Ser Cangin Wolof Bai-KK Bia-Paj Tenda Bijogo Limba Bak Gur Bantu *bu *bu K. u∼b *pu (u~b?) hu~ho *bu b; †bu *bu

Semantics: round, esp. round body parts, fruits, 'bow'

	Wolof	Bainunk-KK	BiafPaj.	Konyagi	Joola Fonyi	Limba	Bantu
'head'	b-opp b-	*bu-gof	*bu-gafa		fu-kọ	hù-yàhà	
'face'		*bu-giis				hù-yèthì	*bu-cú
'sun'	jant b-	*bu-nẹg	B. bu-naga	u-læv	fu-nak 'day'		
			P. pi-jaade				
'liver'		Bai. *bu-kiiñ	*bu-seeñ(ə)		fu-uñ		
		KK *bu-xidd					
'belly'	biid b-	Bai. *bu-yẹd	*bu-budda	bèỹá < *bo-yeñ 'gut'	f-ar	h-òyè	
'tooth'	b-ëñ b-	Ko. bu-gées	P. pi-ñɛ	bèñá < *bo-(C)eññ		hù-thíthì	
'bow'			*bu-ŋaɗV	u-ŋwàry < *bo-ŋaɗ	fu-naajen	hù-píyò	*bu-táà
round	'finger,	'breast, back',	'tongue, thigh,' P.		'thing, lip,	'mouth, forehead,	
body part	neck, eye'	Ko. 'waist'	'spleen', B. 'knee,		testicle, knee,	navel, eye, breast,	
			elbow'		navel, anus'	testicle, cheek'	
other	DEFAULT	Bai. FRUITS		'moon', FRUITS	FRUITS	FRUITS	

- In groups without ^{*}dı, the meaning of this class is usually merged into ^{*}bu
- Perhaps survives in Sereer *fo-baal* 'body', which does not fit with *bo; but 'body' is not typically in *bu either
- Bijogo bu 'head' and bene 'face' fit well with ^{*}bu, but could instead be in ^{*}bu, cf. Manjak *bə-hen, Balanta b-gó 'head'
- Outside of Bantu, De Wolf finds more Benue-Congo nouns in this class that do not fit with *bo, notably 'rock/stone'

*673	Ful-Ser	Cangin	Wolof	Bai-KK	Bia-Paj	Tenda	Bak	Bijogo	Limba	Gur	Bantu
DO				KK uN-	*ɓu		*bu	u~b		*bu	*bu

Semantics: trees, plants

	Kobiana	BiafPaj.	Joola Fo.	Manjak	Balanta	Bijogo	Bantu
'baobab tree'	ú-mbaaz		bu-bak	*bə-bak	b-lààθé	u-rate	
'kapok tree'	u-ndéeno	P. bə-riin	bu-saana		b-sàáy	u-βato	
'canoe'		B. bu-reegə	bu-saana	*bə-tiin	b-súwà		*bu-játò
TREES,	✓	✓	✓	✓	✓	✓	
PLANTS							

- 'Canoe' is sometimes the same as 'kapok tree', from which it is made
- No explanation for the final nasal in Kobiana-Kasanga, so perhaps unrelated
- Outside of Bantu, De Wolf commonly finds 'palm tree, mushroom, medicine' in Benue-Congo
- Gur: *bo has mainly trees, though in many languages most trees are in other classes



Semantics: trees

	Fula	Cangin	Bainunk	Bantu
'tree'	(lek-ki 'medicine')	*ki-rik	*ki-no	*mu/ki-tí
TREES	\checkmark		✓	(✔) (cl3 more
				common)
other		LANGUAGES		LANGUAGES
				'thing'

- Only Fula and Bainunk line up very well semantically
- The vowel does not line up between Fula (PNC *i) and Bantu (PNC *1)



Semantics: animals, esp. mammals between the size of a dog and a cow

	Fula	Cangin	Bainunk-KK	Biafada-Pajade	Tenda	Bijogo	Bantu
'cow'	nag-ge	*i-nay			Ko. ỹi-lì < *jə-naɣ	i-se	*N-gòmbè
					Ba. i-xèƴ		BC ~*i-nak
'dog'			Bai. *ji-hi	B. ji-saadə	Be. jə-ŋát		*N-búà
			KK. *ji-faar	P. ci-baa	Ko. i-vé		
'lion'			*ji-muk(k)oor	*ji-gaɗama	Ko. i-vəsél		*N-címbá
'antelope'			*ji-nẹel	P. cii-fonə, ci-sad,	Ba. i-yêd 'hartebeest'		*N-pádà
				cu-ao (species)	yìràng 'harn. bushbuck'		*N-kį́á, etc.
'panther'			*ji-gaaj		Ko. i-sàŵ		*N-gòį
'sheep'				P. ci-ppada	*jə-fe		*N-gų́, etc.
animals			'pig, horse, buffalo'	'monkey, baboon'	'baboon, wild dog'		(many)
other	'sun, hunger'		'hand'		Ko. 'hand'		(many)

- Palatalization of *g is regular in Biafada-Pajade, Tenda, and probably Bainunk-KK (inconsistent in roots in some languages).
 Bantu *j is often from *g (e.g. *jimb 'sing', *jico 'eye'), though unclear if regular
- If Fula -ge is not truly cognate, the original form could be *jı
- Cangin *i- is unique to 'cow'— development of *g in Cangin prefixes is unknown (in roots > $*\gamma > h/\emptyset$)
- Bijogo i-sε 'cow' takes ε- agreement like most animals, but i- is unexplained; possibly from ^{*}gι if initially palatalized > *yι

*ja(N) ^{Ful-Ser} Cangin Wolof Bai-KK Bia-Paj Tenda Bak Bijogo Limba Gur Bantu *ca(N) j; †ja *ja(N) †ja- Jo. *e ε

Semantics: (dangerous) animals, misc.

	Cangin	Wolof	Bainunk-KK	Joola Fo.	Bijogo
'crocodile'	(*seey)	jasig j-	*ja-seeg	y-on	e-teega
'snake'		jaan j-	Ko. jániileh	e-wela	e-beka
insects	*caa-fú 'fly'	jalaal j- 'millipede'	KK INSECTS	INSECTS	e-taw 'ant sp.'
	*ca-ngín 'worm'	jiit j- 'scorpion'	Bai. 'cicada'		e-rankuno 'tsetse fly'
		jankalaar j- 'scor. sp.'			(many)
other animals	*caoy 'elephant'	jaad j- 'palm rat'	'elephant, bird,	ANIMALS	e-oga 'elephant'
	*caal 'antelope'	janax j- 'mouse'	hippo', Bai.		e-booti 'dog', e-βe 'goat'
	*ca{b~ng}índo 'panther'	janaab j- 'cat'	'megabat, gecko',		e-ntanke 'tortoise'
	*caangínV, *cangayo,	jaxaay j- 'eagle'	Ko. 'guinea fowl,		ε-adik 'rat', ε-gɔmɔr 'hippo'
	*cabol (large birds)		partridge'		(many)
'moon'	*caɓin		KK *jaafaañ	e-leeŋ	ε-tako
			Bai. *juun		
other	'young girl, soul, armpit'	jaxew j- 'young girl'	'twin, spirit, ring,	DEFAULT	
			night, river'		

Notes:

- Final nasal only before ^{*}g in Cangin, inconsistent in Bainunk-KK (problematic); loss is regular in other groups

- Biafada jaasugu (†ja-sigi) 'crocodile'; very likely frozen ^{*}ja(N), but could be borrowed from another NC language

- Joola otherwise allows only /i, u, a/ in prefixes, so e- likely from *ya-; prevocalic allomorph y-

- Same explanation for Bijogo, cf. possible ${}^*g\iota > {}^*y\iota > i$ - in 'cow'



Semantics: animals

Cangin		Bainunk-KK		Pajade		Tenda	
*paanį	'monkey'	*fa-∫iin	'water chevrotain'	fa-yaar	'rat'	*fa-∫in	'donkey'
*pambi	'chicken'	Bai. *fa-bẹ KK *fa-ŋaas	'goat'	fa-ŋai	ʻguinea fowl'	*fa-∫o	'porcupine'
*paloom	'antelope sp.'	Bai. *fa-kid	'monkey'	fadada	'partridge'	*fa-∫ar	'cane rat'
P. pakale	'rat'	Bai. *fa-gụx	'spirit'	fanan	'warthog'	*fa-y⁄Vmar	'waterbuck'
P. pakaaf	'wild dog'	KK *fa-je	'rat/mouse'	faatama	'crocodile'	Ko. fæ-rún	'crocodile'
Nd. pajak	'Senegal roller'	Guñ. fa-tono	'bird'	fa-wud	'tortoise'	Ko. fæ-ràmp	'tortoise'
Nd. paaka	'Gambia rat'	Gub. fa-xaat	'fish'	faabae	'snake sp.'	Ko. fæ-yáxw	'castr. goat'
L. paŋaaŋaak	'snake sp.'	Gub. fa-roj	'mullet'	fantan	'fish sp.'	Ko. fæ-wàry	'scorpion'

- Eclectic group of animals in each subgroup, never a large class
- Bantu diminutive *pį- almost certainly unrelated; De Wolf connects it to e.g. Amo *f*ə-, Kom *f*i-(containing all animals) as Benue-Congo *pi-
- Gur *fV (animals, singulative) more promising, though not if it's cognate with Bantu *pį-
- Sambiéni (2005) has *fa for Eastern Oti-Volta; elsewhere in Gur the vowel differs

*WaNFul-SerCanginWolofBai-KKBia-PajTendaBakBijogoLimbaGurBantu*ban*faw; †wa*waN*waN*wa

Semantics: animals, esp. large ruminants, 'elephant'

	Fula-Sereer	Cangin	Wolof	Biafada-Pajade
'goat'	*ban-be	*pe' f-	béy w-	*wan-ɗaafV
'elephant'	*ban-ñig		ñay w-	*wan-yooga
'cow'		*fa-noy (~*i-noy)	nag w-	*wan-naga
'antelope (sp.)'	F. koob-a, njaw-a	*fa-naay	jib w-	P. wan-cafe
	S. fa-njaq, fa-mbat			
'buffalo'	F. mban-a, ed-a	?	?	B. wwal, Ρ. wa-yrε
fish sp.	F. ɓesu-wa		jén w- 'fish', walas w-	P. wan-tak
			waraañ w, waxandoor w-	P. wan-təmɛ
other animals	*ban-nooC 'crododile'		rab w- 'animal'	*wan-guwV 'hippo'
	F. 'camel, giraffe, sheep, donkey'		fas w- 'horse'	P. 'scorpion, honey fly'
other		(mass nouns)	(many)	P. 'young girl, initiate,
				dry season, communal work'

- Non-animal uses in Cangin and Wolof perhaps from originally distinct classes
- Wolof *wa* clearest on *waxambaane w* 'young man' (cf. Mandinka *kambaane*), *waxande w* 'trunk/suitcase' (cf. Wolof *xàndi* 'metal box,' Soninke *kàndé* 'basket'); however most nouns with *w* agreement likely represent a distinct class marker †u-
- Gur *-wa not widespread, but contains exclusively animals, e.g. Palen 'horse, sheep, fish, dog, goat'

*bac Ful-Ser Cangin Wolof Bai-KK Bia-Paj Tenda Bak *ban (*pa?) b; †ba^x *ba^x
Semantics: deverbal, abstract, misc.

	Sereer	Wolof	Bainunk-KK	BiafPaj.	Joola Fo.
deverbal	fa-nqon 'death'	bànneex b- 'pleasure'	INF	P. many	(indistinguishable
	fa-lay 'speech'	bekkoor b- 'famine'	'illness'	(productive?)	from *bo)
	fa-ndim 'birth'	PLACES, INSTRUMENTS			
animals			'chicken', Bai. 'partridge, pigeon' Ko. 'porcupine, palm rat, dolphin, weaverbird, monkey sp., cow'	'chicken, rooster'	
other		bakkan b- 'nose' béjjén b- 'horn' bëccëg b- 'sunlight' bejjaaw b- 'white hair'	DISEASES 'wind, girl, voice'	'knife, drum, axe, stone, pot'	fa-tama 'navel' fa-cúl 'in front'

- Outside of being deverbal, incoherent semantics across groups
- Sereer final nasal (rather than oral) C is an issue; perhaps *waN and *baC fell together, explaining the irregular consonant in each?
- Joola *fa* is in the main from ^{*}bo, but the above nouns do not fit semantically

*gaNFul-Ser
*ganCangin
WolofWolof
Bai-KKBia-Paj
Bai-Paj
TendaTenda
BakBijogo
LimbaLimba
GurBantu*gan*gaN*gaN*gan*gan*gan*gan*gan*gan

Semantics: large and flat (generally flexible); augmentative

	FS	Wolof	BainunkKK	Biafada-Paj.	Tenda	Bak (Balanta)
flat + flexible		géndél~géndén		ʻleaf, broom,	'skin, peel, wing, mat, fly	gì-njààndć 'skin'
		'palm branch lattice'		cushion, paper,	swatter, shield, bellows'	gì-mbân 'group'
		gannax 'wave'		bellows'		
		gangóor g- 'crowd'		B. 'skin'		
AUGMEN	✓				✓	Joola, Manjak ka-
other		gàncax 'vegetation'	Gujaher	'dream,	TREES, PLANTS	DEVERBAL
		gànjar 'finery'	gan-jeb 'health'	shoulder, door'	'tree, bat, vein/root, shore, ear,	gì-ndàmbá 'place'
		gànnaar 'Mauritania'			spoon, work, termite mound,	gì-ntàán 'buttock'
		gànceñ 'animal spine'			village' (largest class)	gì-njáágám 'jaw'

- Large class in all of Bak, merged phonologically with other markers (*ko, *kaC)
- Balanta preserves distinctive nasalization, but semantics are extremely eclectic
- Sagna (2008) for Joola ka-: centered around "width, flatness, thinness"

*kaC Ful-Ser Cangin Wolof Bai-KK Bia-Paj Tenda Bijogo Bak Limba Gur Bantu g; †ka? *kaN *ka^x? *ka? *kaN *xaC ka? *han ka?

Semantics: 'hole, wound, mortar, ocean'

	Fula-Ser.	Cangin	Wolof	Bainunk-KK	Biafada-Paj.	Tenda	Bak	Bijogo
'hole'	*han-gas		kàmb g-	KK *kan-tig		*xa-ttəx	M. ka-wiəț	ka-putu,
			<*ka-hamb?	Guñ. ka-gil			Kw. kaa-yen	ka-wɔ
'wound'				*kan-jųm	P. ka-cine	*xa-yyən	M. ka-jin	
'mortar'		*ka-ndíɗ		Bai. *kV-hụnd				ka-tɔ
				KK *kan-ro				
'ocean'				Ko. *ka-kkan	B. ha-bbə			

- Final nasal (Cangin, BKK) vs. oral (BP, Tenda) consonant unexplained
- Distinct (unmerged) class in FS, BKK, Biafada, Tenda; Cangin ka- with nasalization also unique
- Bak, Limba, Bijogo ka- have other origins, but would merge with *kaC if it survived
- 'Ocean' doesn't fit with the semantics of the other nouns— if excluded the BP connection is extremely weak

*1zz	Ful-Ser	Cangin	Wolof	Bai-KK	Bia-Paj	Tenda	Bak	Bijogo	Limba	Gur	Bantu
NUC		*kV?		*kuN	*ku ^x	*xoC					

Semantics: 'fire', ('smoke')

	Cangin	Bainunk-KK	Biafada-Paj.	Tenda
'fire'	*ki-bís	*ku-ur	*ku-ur̯(ə)	*xo-ddox
'smoke'			*ku-ccuy	*xo-ccən
other				Ko. 'dream, cold'

- Biafada-Pajade and Tenda point to a final oral consonant
- The Bainunk-KK nasal appears in agreement, and is likely an innovation (common in Kobiana for agreement markers to innovate nasalization); Kasanga has *hu* agreement without a nasal
- Unique (unmerged) classes in all groups but Cangin, where *kV* could be any number of other etymologically distinct classes

*gunFul-SerCanginWolofBai-KKBia-PajTendaBakBijogoLimbaGurBantu*gun*gun*guN*gəŋ

*gun 1 Semantics: viscous liquids, powders *gun 2 Semantics: animals, mainly insects (sg.)

	Fula-Sereer	Wolof	Bainunk-KK	Biafada-Paj.	Tenda
'honey'		lem g-	Bai. *gum-pan, KK *gun-jaab		
viscous			Bai. *gun-no, KK *gun-debb	*gun-ƴokkəra 'sweat'	BEERS
liquids			'palm wine', Ko. 'feces'	'clay', P. 'vomit, diarrhea, dew'	*gə̃ŋ-xoƴ 'beer'
powders				*gun-piwa 'flour', *gun-rihV 'soil', *gun-	*gəุŋ-fiix
				yeen(ə) 'sand', 'ash', P. 'yeast, crumbs,	'powder/flour'
				millet flour, debris, laundry detergent,	
				sesame, fonio w/ sauce, bran, couscous'	
other			'hunger', Bai. 'wealth, fatigue'	'flower, truth, twin'	*gəุŋ-mədd 'night'
insects	INSECTS, e.g.			INSECTS, e.g.	
	*gun-bog			*gun-ñuñə 'ant'	
	'mosquito'			*gun-cugə 'bee'	
other	'fish, horse,			*gun-cid(ə) 'bird'	
animals	foal, sheep'				

Notes:

- Likely two original class markers, given the distinct semantics (both represented in Biafada-Pajade)

Semantics: abstract, mass (small particles, thick liquids), diminutive pl./coll. (esp. insects)

	Sereer	Bainunk-KK	BiafPaj.	Tenda	Joola Fo.	Bijogo	Limba	Bantu
'blood'	fo-'oy	KK *bi-	*bo-ganɗa	Ba. o-∫ật	fa-sím			*mu/į/bu-dòpà
'night'		—	*bo-yVna	Ko. u-mə́ɗ	fuk	u-naβan	hə-ŋkəye	*bu-tíkù
'war'		Bai. bi-ñaam	P. pa-se	Ko. u-ŵát	(fu-tiik)			—
'smoke'	fo-suun	Bai. bi-hoor			fa-koor		h-ithi	*mu/į/bu-jíkì
DIM PL.	(fo-III)	Bai. insects	insects,	some animals	insect coll.	insects		✓
		Ko. 'children'	'children'					
mass:	LIQUIDS		GRAINS		'filtered	'hulled rice,	'honey'	ʻmillet, beads,
			e.g. 'rice,		honey, fine	gums'		soil, mush, flour,
			fonio'		sand'			ashes, pus,
								brain, honey'
abstract:		'death, day,	'thirst,	'weaving, day,	'courage,	'hunger, thirst'		'anger, fear,
		week'	rainy	thirst, cooking,	misery,			humanity,
		DAY NAMES	season'	speech'	youth, anger,			poverty,
				Bedik INF	slavery'			madness'
other:			'road'	ʻfield, name,		'road'		
				sky/god'				

Notes:

- Ser. dim. pl. fo-III likely due to contamination from dim. sg. o-III

*dı~du ^{Fu-Ser} Cangin Wolof Bai-KK Bia-Paj Tenda Bak Bijogo Limba Gur Bantu *ri(n) *ti~tu †di~du *di *di~du †də ^{Bak} Bijogo Limba Gur dı? ^{*}du

Semantics: mass/collective— grains, slimes/viscous liquids

	Fula-Ser.	Cangin	Wolof	Bainunk-KK	BiafPajade	Bassari	Bantu
'millet'	*ri-gaab	*to-yo	dugub j-	Bai. *di-ti়it	P. tə-ppa	də́fàx~də́xàf	*du-bèdé
				KK *di-xind	P. tə-pombo (sp.)		
'honey'	*rin-yuum				B. li-yä, P. tii-ye		
'pus'	*rin-bor		dëtt j-	Bai. *di-ŋaam	B. lu-bu, P. tu-pus		*du-pí́nyà
'brain'	*rin-gaand			Guj. di-bobo	B. lu-ngum	o-dángà∫	
					P. tu-kum	'marrow'	
grains	F. 'dirt, powder,	P. 'maize, sand,	ditiñ j-	GRAIN COLL.	P. 'grilled millet,	dậlí 'sorghum'	'sand, dust'
	steamed millet,	souna millet', S.	'millet	'earth/soil'	grain, néré fruit,	dáɓàc	
	dried grain, ash'	'grilled millet'	sp.'	Bai. 'sand'	ground tobacco'	'sprouted mil.'	
slimes	F. 'gums'		deret j-	Bai. 'clay/mud, snot,			'dew', Herero
			'blood'	saliva, fish intestines,			'porridge,
				feces, boiled rice'			sweat'
other					P. toose/taase 'face'	dàxás 'face'	LONG

Notes:

- The vowel discrepancy is a possible problem, but shows up in multiple modern languages (usually sensitive to the root vowel)

- FS *rin is a larger class containing many dangerous animals in addition to mass nouns; the form *ri-gaab 'millet' without a final nasal suggests an early merger of *ri and *rin, an originally unrelated class marker (without apparent outside cognates)
- For Gur, cf. Ditammari *dī-yòò* 'millet'; tentatively mentioned as a possible connection (if merged with ^{*}dı)

*tıN Ful-Ser Cangin Wolof Bai-KK Bia-Paj Tenda Bak Bijogo Limba Gur Bantu ti~tu ti~tu tiN

Semantics: abstract, mass nouns > diminutive plural

	Cangin	Bainunk-KK	Bantu
DIM PL.	✓	Guñ. insects	✓
ABSTRACT	DEVERBAL		*tu-dó 'sleep'
MASS		Bai. 'sap', SAPS, wax, Ko. 'clay'	*tu-bíٖì 'feces'

- Cangin does inconsistently preserve marker-final nasals in ^{*}jaN and ^{*}kaC, but since *ti~tu- is a plural prefix in Cangin, the nasal-initial root variants could be levelled with the singular
- It is impossible to distinguish *dı~du and *tıN in Cangin based on form
- De Wolf reconstructs Benue-Congo *ti-, as this vowel is more widespread outside of Bantu; perhaps related to the discrepancy in *dı~du, though there De Wolf has BC *du-
- Elsewhere in Benue-Congo, cf. Central Kambari 'brains, charcoal, guts, mush, mud, locust bean fruit'
- Gur: mainly abstract and/or collective, sometimes developing to plural

*naFul-Ser CanginWolofBai-KKBia-PajTendaBakBijogoLimbaGurBantun*na*na*na*naJo. nV?nV?

Semantics: mass/collective/pl (fibers, leaves, slimes), personal plural

	Wo.	Bainunk-KK	Biafada-Paj.	Tenda	Joola (ñi-)	Bijogo
slimes			*ña-ree 'meat'	*ña-rॣ 'meat', *ña-nən	Fo. 'placenta, gums,'	ña-nana
			P. 'okra, okra sp., swamp'	<pre>'snot', *ña-wuud 'sauce', *ña-niir 'algae'</pre>	Kuw. 'snot, drool, saliva'	'urine'
fibers			(P. 'powdered tobacco')	*ña-ɗər 'bamboo fiber', 'jute', Ba. various fibers, Ko. LEAF COLL.		
'nose'		*ñan-kin(d)	*ña-siin			
other			P. 'sleepiness, ritual sps.' B. 'body'		abstract deverbal (ñi-, ña-)	
personal PL	(✔)	🗸 (Bai.)				
other PL		*saN (leaf-like) *ciN (rope-like)	B. mainly flat/flexible, e.g. 'mat, paper, skin, cloth'		usually DIMIN/AUGMEN	(=m- before V)

- Wolof \tilde{n} is the plural of *nit k* 'person', and used for headless expressions referring to people
- The final nasal in BKK is perhaps contamination from the most common paired singular classes *saN and *ciN
- Rare Joola *ña* fits phonologically but not semantically, while *ñi* fits semantically but not phonologically
- Not a distinct class in Bijogo; *ña is perhaps the origin of the allomorph \tilde{n} of the *m* liquid/plural class
- Gola personal plural *ña*

ja ^{}ja *

Semantics: mass, collective, personal plural

	Cangin	Wolof	Bainunk-KK	Joola	Bijogo
vegetable coll.		'beans, cabbage, peanuts,	*ja-ro 'grass', GRASSES	(many)	'rice, millet sp.,
		millet, spun cotton, hemp',	ʻrice bran, chaff, straw,		beans, pepper, rice
		various fruits/vegetables	cotton, kapok fibers'		bran, firewood'
other mass/coll.	ʻpalm wine,	'blood, pus' ([*] dι~dυ)	*ja-gẹn(d) 'hair', 'fat/grease'		'hair, meat, shells
	thatch, trash'	jarab j- 'bead'	Bai. *ja-boon 'powder'		sp., grease, dew'
			'cloth' pl., Bai. productive coll.		
			e.g. 'feathers, veins, bones, fish scales'		
personal pl.		'women, girls' coll.	✓	✓	
other	DEVERBAL	personal ja- (orig. coll.?)			'price'
	default PL	ja-boot j- 'parent'			
	'price', meals	jarag j- 'sick person'			
		jëkkër j- 'husband'			
		jatuur j- 'widow'			
		†jagaraaf j- 'minister sp.'			
		†jagodin j- 'minister sp.'			

- Wolof collectives originally in ^{*}dı~du take j- agreement
- For Joola plant collective, cf. Sagna (2008: 232) for Eegimaa: "e- is used as a collective for 36.9% of nouns denoting plants"

*mun	Ful-Ser	Cangin	Wolof	Bai-KK	Bia-Paj	Tenda	Bak	Bijogo	Limba	Gur	Bantu
*		*mi~mu	m?	*muN	*maN	*maŋ	*muN	mə	N?	*mu	*mu~gu
*ma	F. ɗam	*ma	m; †m	*ma	*maa	*ma	*ma(N)			*ma	4
*mak	(*ɗak?)				*ma ^x	*max		m∼ņ	ma		^ma

*mon Semantics: liquids (perhaps thicker), grains, plural (for diminutives or trees)
 *ma Semantics: liquids (prototypically 'water'), abstract, plural (often of sg. nouns in *dı)
 *mak Semantics: plural (long and rigid)

Notes:

- Significant overlap in meaning of these three m-initial classes
- Still, it is certain that at least *mon and *ma are distinct
- Existence of distinct *mak is less clear, but hard to see how it would be innovated
- *mak used in BP, Tenda used as plural of long + rigid objects, but also animals in *gi

Notes on form:

- Some evidence for a final nasal in ^{*}ma, but I think this is more likely innovative
- BP, Tenda liquid *maN a contamination of *mon with the vowel of *ma
- Nasal in Manjak abstract *maN not easy to explain
- Bijogo m- lines up perfectly with *ma- semantically, but lack of vowel is unexpected
- Fula appears to have metathesized ma > -am; the $/d \sim Ø/$ alternation is introduced by analogy
- FS *dak perhaps carries on *ha~ŋa with formal contamination from *dik~dak 'two'
- * dak descent from * mak not needed, but the /k/ is tantalizing, and it seems FS seeks to avoid m-initial markers

Common liquids in different languages:

	'water'	'milk'	'urine'	'salt'	other liquids mainly use:
Fula	ndiy-am	kos-am	coof-e	lam-ɗam	-ɗam
Cangin	*ma-r̥úɓ	*miis	*mi-sook	*mi-ɗa	*ma-, *mi~mu-
Wolof	†m-dox m-	†m-soow m-	†m-saw m-	xorom s-	m-
Bainunk	*baa-duux	*mu-iุnd	*mun-saal	*mum-meed	*muN-
	~mun-duux				
Kobiana	má-le(m)	ma-nóo(n)	má-sett	ma-fóos	ma-
Biafada-	*mam-ɓiyaa	B. man-na	*man-cahaa	B. kol	*maN-
Pajade		P. mam-bər		P. ma-koore	
Tenda	*maŋ-ɣV	*maŋ-ɓər	BB *xaC-ƴaan	*maŋ-yaɗ	*maŋ-
Joola	*ma-l	*m-įił	*mu-sud	*mu-sis	*mu-, *ma-
			*ma-sud		
Manjak	*mn-tup, Mñ. mel	*mn-taw	*ka-tuun	*pə-nam	*mn-
Bijogo	ñ-ño	n-təkə, ŋ-keŋ	ña-nana, ka-nana	n-to	m-
Limba	mà-ndì	mà-nónó	mà-yámpáyŋ	m-ètì (ma-)	ma-
Bantu	*ma-jį́jì	*ma-béèdè	*ma-cù	*mu-jùngúá	*ma-
				*mu-kédè	
				*mu-jí́nyù	

Use of m-initial classes as plurals:

family	pl. class	pl. of sg.
Bainunk	*muN-	*ki- (trees)
Biafada-Paj.	*maa-	*bu, *ba ^x -
	*ma ^x -	*ji-, *gu-
Tenda	*ma-	*er-, *gen-; stacked on many more
	*max-	*o-, *gen-; stacked on many more
Joola	*mu-	diminutives (*ji-, Kuwaataay a-)
Manjak	m(ə)-	*bə- (includes all trees), *pə-
Bijogo	m-	ne-
	mɔ-	ງ ວ-
Limba	ma-	hu- (minority of nouns)
Gur	*-mu	*-ka (mainly diminutive)
Bantu	*ma-	*į~di-, *ku-, *bu-
	*mi-	*mu~gu-

- All m-initial classes are used as plurals in some groups
- *mak is exclusively plural, and would automatically merge with *ma in many groups
- The sg./pl. pairing *d1/*ma is especially common (also probably Sua r-/m-)

*iFul-Ser
CanginCangin
WolofWolof
Bai-KK
y; iBia-Paj
Ful-Paj
TendaBak
Bak
Bijogo
Ma. iBijogo
Limba
iLimba
Gur
iBantu
Bantu

Semantics: plural, especially for *bu

	Fula-Sereer	Wolof	Bainunk	Manjak	Bijogo	Gur	Bantu
pl. of *bu		✔ (b-)	🗸 (*bu-)	🗸 (pə-)			
pl. of other	*ban, *gun, *rin,	all but k-	*ci ^x -	bə-, ka-, məN-	-3	*(ŋ)ʊ, *fV	*ji-
	*ru, *ho, *ge						

- Fula-Sereer *dik is formally identical to FS *dik 'two'; perhaps a contamination of earlier *i, since markers of a V shape are otherwise not found in Proto-PS?
- De Wolf derives both Bantu class 4 (mi-) and 10 (jį-) from a Benue-Congo *i-, but this doesn't work phonologically, as the vowels are different

*ha~ŋa Ful-Ser Cangin Wolof Bai-KK Bia-Paj Tenda Bak Bijogo Limba Gur Bantu S. xa-II ha/ŋa ha/ŋa *(ŋ)a *ma<a

Semantics: plural, especially of ^{*}ko, *gu

	Sereer	Bainunk-KK	Bijogo	Limba	Gur	Bantu
pl. of *ko	√ ? (*ho 'arm, leg')	🗸 (*ki-)	🗸 (kə-)	🗸 (ku~ko-)	🗸 (*-ku)	🗸 (*ku-)
pl. of *gu		🗸 (*gu-)		🗸 (ku~ko-)		
pl. of other	go~ol- <*gol		u-		*-dı < *dı	*į~di- < *dı
			ka-		sometimes	
					'arrow, needle'	

- Seems to be a plural for long objects (*gu, and note 'arm, leg' in *ko)
- $h \sim \eta$ discrepancy perhaps due to rhinoglottophilia?
- Sereer *h > h is regular in roots, and would probably be lost in a prefix; final consonant (fortis mutation, *ax* agr.) is also a problem; difficult to account for this form
- Bijogo *ŋa* could just as well be from an earlier *ga-, cf. Kobiana pl. *ga*-
- Bantu *ma- is principally from ^{*}ma (including as a plural), but the form *a* is often found elsewhere in Benue-Congo for this plural; both ^{*}ma and ^{*}ha~ŋa survived in BC, and often merged

Weak candidates (2 subgroups only):

*taC Ful-Ser Cangin Wolof Bai-KK Bia-Paj Tenda Bak Bijogo Limba Gur Bantu ta^x †raX

Kobiana-KasangaBassari-Bedik'foot'*ta-pper (ta-II agr.)*rappar

*cIC ^{Ful-Ser} Cangin Wolof Bai-KK Bia-Paj Tenda Bak Bijogo Limba Gur Bantu s; †si^x ci^x

- Wolof diminutive, and frozen in a few words (e.g. *sippax s-* 'shrimp', *siddéem s-* 'jujube')
- BKK exclusive to *ci-ggir 'eye', so semantic connection to Wolof is only tentative
- A diminutive prefix becoming conventionalized on 'eye' is found in Joola (*ji-kil) and Laalaa (ko-as)

*kUFul-Ser CanginWolofBai-KKBia-PajTendaBakBijogoLimbaGurBantukku

- Wolof *k* only used as agreement for *nit* 'person' and *k*-*ëf* 'thing' (pl. *y*-*ëf*)
- Bainunk-KK *ku- only reconstructable for *k-oñ(j) 'thing' (ku- agreement)

* *()	Ful-Ser	Cangin	Wolof	Bai-KK	Bia-Paj	Tenda	Bak	Bijogo	Limba	Gur	Bantu
* L ~	*OX	(w-?)		*u	*u			ວ	wu~wo	*U	*mu~u
*na						*aa/xa	*ha			*а	(*a)

	FS	BKK	BP	Tenda	Bak	Bijogo	Limba	Bantu
'person'	*ox-giin	*u-dį	*u-ani	*ha-an	*ha-an	o-joko, o-to	w-à	*mu-ntù
'man'	*ox-goor	*u-digeen	*u-saya	*aa-∫ann	J. *a-įine	o-gude		*mu-dúmè
					M. *n-iint			
					B. hà-láántɛ			
'woman'	*ox-rew	*u-dikaam	B. u-naal	*aa-roxaar	J. *a-are	ɔ-kantɔ		*mu-kádí
			P. u-caafɛ	-	M. *na-kaat			
					B. hà-nîn			
general personal	✓	✓	✓	✓	✓	✓	no; ethnonyms	✓

- Existence of two adnominal markers is odd, but both reconstructions are strongly supported
- No language uses both markers on nouns; in Gur and Benue-Congo, both are robustly attested
- Thus doubtful that both were used as adnominal markers in Proto-NC
- Original adnominal vs. agreement marker has been suggested; hard to say
- [a] used as agreement (often only subject and/or pronoun) may in some cases descend from *ha, but need not in all cases
- [w] appears before ^{*}u in some languages; presumed epenthetic
- A form *mu* occurs in Bainunk (e.g. relative marker) as well as Bantu; also note Wolof *mu* 's/he'
- Agreement form *gu* found in some of Benue-Congo is an innovation (extended from class 3?)
- If FS *ox is cognate, loss of the final C is a common innovation to all other groups (perhaps paralleled in $^{*}ha \sim \eta a$)
- Manjak na- unexplained vs. Balanta ha-, Joola a-

*бі	Ful-S	Ser Can	igin W	olof	Bai-KK	Bia-Paj	Ter	nda Ba	ik I	Bijogo	Lim	ıba	Gur	Bantu
*6.	*ɓe	*6i	у;	i	i(N)-	*ɓə	*6ə	• *b	u(g)		bi			
*Dl-a						*bi-a	*ба	1 *b	a(g) y	va?	(ba	?)	*ba	*ba
]	FS	Cangin	V	Wolof	BKK		BP	Tenda	Bak		Limba	a	Bantu
ʻpo	eople'	FS *ɓe-giin	Cangin *ɓi-o' (sg	v g/pl)	Wolof	BKK *i-dį		BP *ɓə-ani	Tenda *ɓ-an	Bak *bVga	n	Limba bì-(y)	a à	Bantu *ba-ntù
ʻpo	eople'	FS *ɓe-giin *ɓe-goor	Cangin *ɓi-o' (s	g/pl) (Wolof (i) góor y-	BKK *i-dị Bai. *in-dịg	een	BP *ɓə-ani *ɓə-saya	Tenda *ɓ-an *ɓə-∫anı	Bak *bVgan M., B.	n *ba-	Limba bì-(y)	a à	Bantu *ba-ntù *ba-dúmè

- Wolof y~i is the only productive plural class, mainly from *i, but also the regular outcome of *bi
- Kobiana-Kasanga i- is regular from ^{*}6ι, but Bainunk has iN-; early Bainunk †i-d-eŋ 'people' suggests that the lack of a nasal is archaic, but it is unclear how it was innovated
- BP * $babel{eq:babeline}$ BP * $babel{eq:babeline}$ BP *babeline Biaf. bu-)
- Joola also has evidence for *bi- (e.g. Kuwaataay), and Manjak has *bik~buk*-; more widespread *buperhaps due to assimilation to the labial consonant (Joola prefix /i~u/ is common)
- Bijogo ya- cannot easily come from an earlier *ja~ya-, cf. *ja > ε-; *6>y would be unprecedented, but other voiced stops have unique developments in Bijogo prefixes
- Limba *ba* is used for human singular nouns, but might have been levelled from earlier plurals (cf. the few Cangin nouns prefixed with *6i-, now sg/pl)

*61 Ful-Ser Cangin Wolof Bai-KK Bia-Paj Tenda Limba Bijogo Bak Bantu Gur *bu(g) *6i *6ə *6ə bi *be y; i i(N)-*61-a *bi-a *ba *ba(g)(ba?) *ba *ɓa ya?

*u vs *a:

- $*6\iota$ is the most basic form of the marker, but there is evidence for /a/ in many groups
- In Biafada, Pajade and Bedik the two forms co-occur as plural markers:
 - ➢ Bedik *ba* used for "2a" type nouns (family members, etc.)
 - > Biafada ba- stacked on nouns in the smaller classes (e.g. ba-sa-də 'houses')
 - > Pajade *be* stacked on almost all non-personal nouns (e.g. *be-pə-nuɛ* 'songs')
- BP vowel discrepancy can be explained if from earlier bimorphemic *bi-a-
- This "extended" prefix may be an associative construction, cognate with e.g. Wolof *waa* 'people from/associated with...' (^{*}6 > w / #_a is regular)
- This "associative" vowel /a/ is also found in Pajade (*w-a-* for personal singular *u-* class)

Use of (stacked) *61 with non-humans

- Cangin can stack *6i- as an "indefinite plural" marker
- Tenda forms plurals of *g-initial markers by substituting *b
- Assorted *6-initial collective classes? (Bak *ba-, *bu-, BP *6ee-, Bassari, Bedik 6a-, Limba bu-)
- Limba ba- (number insensitive) perhaps originally used for associatives > plural
- Origin of Bantu class 7 *bį-? (found more widely, but not in Atlantic, Gur)

*61	Ful-Ser	Cangin	Wolof	Bai-KK	Bia-Paj	Tenda	Bak	Bijogo	Limba	Gur	Bantu
*G	*бе	*bi	y; i	i(N)-	*ɓə	*ɓə	*bu(g)		bi		
*Dl-a					*6i-a	*ба	*ba(g)	ya?	(ba?)	*ba	*ba

Origin of Bak *bVg- (against e.g. De Wolf 1985)

- Prevocalic allomorph *bug~big- (Manjak, most Joola) or *bag- (Balanta, Western Joola)
- In effect only found in pronominal elements, but also crucially Joola *bug~bag-an 'people'
- This allomorph likely originated in Proto-Bak *ha-an, *bV-gan 'person, people'
- I.e. the root was *(g)an, with the *g idiosyncratically lost in the singular
- *bV-gan was then naturally reanalyzed as *bVg-an, and the new prefix form was extended

Evidence for a root ^{*}(g)ani 'person' elsewhere:

- Fula-Sereer *ox-giin, *6e-giin > Sereer *o-kiin ox-, w-iin w-*
 - *g idiosyncratically deleted in the plural here!
- Biafada-Pajade *u-ani, *bə-ani > B. *u-ña, bə-ña*, P. *wunə, banə*
- Tenda *ha-an, *6-an > Konyagi *a-àl*, *v-àl*, Bedik *hál*, *bál*
- Possibly BKK *u-di-geen 'man', but semantically both roots would be 'person'

Additional parallels for idiosyncratic loss of root-initial [g]:

- Biafada *boofä* (*bu* agr.), *maa-gafä* 'head(s)' from root *gafa
- Biafada (Koelle) ma-gira~maara 'eyes' from root *gəra

IV. Additional classes

"Remarquons ici qu'un très grand nombre de classes dans telle ou telle langue atlantique ne trouvent pas de parallèle, non seulement au-delà de la famille atlantique, mais aussi dans les autres langues atlantiques." (Pozdniakov 2015: 78)

Fula-Ser	Cangin	Wolof	Bainunk-KK	Biaf-Pajade	Tenda	Bak	Bijogo	Limba	Gur	Bantu
*rin	*y (agr)	l; †lVN	*a	*f(aa)	*ge	*(w)ʊ (s)	ka	ba	*ni (p)	*du ¹
*ru	*w (agr)	w; †u	*ka	*gu (p)	*geŋ	*tı	พว	N~ki	*sı (p)	*ki ²
*ho ³	*n	m^4	*ta ^x	*бее (с)	•¢*	*dı	ya (p)	wu		*bį (p)
*g0	*ka	s; †san	*saN	B. sa ^x	*∫aŋ	*gu (p)	kɔ (p)	mu		
*gal	*ki	s; †sa	*ciN	B. si	*∫eŋ	*ba (c)		tha (p)		
*gol	*ku	g; †ka	*jiN	B. ya	*goŋ	*wu (p/c)		bu (c)		
S. onq-	*pi		Bai. *ta	B. saa (p)	*xoŋ					
	*fi		Bai. *da	B. gaa (agr)		<u>Joola</u>				
perhaps:	*sa		KK *a ^x	P. ŋaN		*si 'fire'				
*OX	*su		KK *daN (p)	P. wuN		ti/taa				
*dik	*а		KK *ga (p)			WJ nV				
*ɗak			K. nuN			si/ti (p)				
S *xax-			K. sa							

Non-diminutive/augmentative classes in each group not taken as descended from PNC classes in §III:

(s)ingular, (p)lural, (c)ollective

¹ Likely cognate with du du for the mass nouns (grains), but not the "long" nouns that form the bulk of the class

² Possible Atlantic cognates where used with 'tree' (^{*}kıC) but not other nouns

³ Likely cognate with ^{*}ko for a few words, but not most nouns in the class (grasses, leaves, bark)

⁴ When not used for liquids; possibly cognate with plural ^{*}ma(k), if the pl. forms were extended to the sg.

Class innovation

New classes can arise in individual groups/languages, but generally only for:

- Adverbial classes (not treated here)
- **Plurals** (usually contamination from another marker, e.g. Bantu *mu- vs. innovative *mi-)
- Diminutives and augmentatives

Prefix-stacking is common, but only rarely leads to new agreement patterns

- In such cases, the history is easily recoverable, e.g. Tenda 6-initial plural classes

<u>No good evidence</u> for **resegmentation** of an (initial) syllable as a class marker

- A few cases in Kobiana and perhaps Bainunk, involving only a few borrowings
- I am not aware of any case of a new class created by resegmentation of an inherited noun root

Borrowing of class markers is attested, but very rare

- Mainly confined to a few markers in Bainunk-KK languages from Bak languages

Almost none of the classes listed on the previous slide are convincingly innovated

- Perhaps *6-initial plural/collective classes from stacking of *61

Class innovation

Diminutive and augmentative markers often do not have apparent outside cognates

Fula-Ser	Cangin	Bainunk-KK	Bia-Paj	Tenda	Bak	Bijogo	Gur	Bantu
*gin	*ku-	*ko-	*niN	BB *ñaŋ	Jo. *ji-	ba-	*-ka	*ka-
S. onq-	*njV-	ño-/ñi-/ni-	B. bu-	Ko. fæ-III	Jo. *ñV-		*-da	
F. II -hal		*da-		Ko. bə-	Jo. *ja-			
F. II -gum		Ko. fa-III			Kw. a-			
F II -hol		*diN-			M. ndə-			
F III -hoñ		KK *tu ^x /ti ^x -						

- Diminutive morphology is known to be rapidly innovated cross-linguistically, and often tends towards containing certain sounds (high vowels, palatal consonants)

Reasons for the existence of additional class markers

- 1. Grammaticalization from roots (no)
 - No cognacy between reconstructed markers and roots
 - The initial period of grammaticalization of markers was seemingly long over in PNC
 - Güldemann (2018: 127) notes cases of "classificatory compounding"— this is not an available explanation for any of the markers presented here (agreement, no grammaticalization source)
- 2. Borrowing (very rare)
- 3. <u>Descended from PNC classes</u> in §III, but not yet identified (likely for some)
- 4. <u>Retentions from PNC</u> (likely for many)
 - Between all groups treated here, there are over 80 (non-diminutive/augmentative) adnominal class
 markers which cannot be easily taken as descended from the ~30 PNC markers reconstructed in §III
 - If the/a primary explanation for their existence is descent from distinct PNC markers, <u>the inventory</u> of PNC markers must have been quite large
 - Same order of magnitude as the number of classes in some South American languages, but fewer than the largest inventories of numeral classifiers (hundreds)

V. Semantics, number overview



Use of different (non-plural) markers with different noun meanings

dark green = very strong association, with evidence from multiple subgroups.

light green = somewhat strong association, often with evidence from fewer subgroups

- Notable that the **same noun meanings** are often associated with **more than one class** marker
- But on the whole, the semantic associations of each class are quite robust
- Seems the farther back in time, the less arbitrary the usage of markers

It is in general <u>not possible</u> to reconstruct **fixed collocations of class markers and roots**

- *nag 'cow' used with *waN, *gi in different groups
- *tih 'tree/stick' used with *kiC, *gu, less often *gaN, *bu
- *git 'eye' used with *bu, *dı, less often *kaC, *baC, *gaN, *cIC

Each noun was not "assigned" to a class

- Speakers would have been able to **mix and match** roots and class markers to a significant degree, with the semantics of both working together to convey a particular meaning
- E.g. with *git 'eye', *bu emphasizes its status as a body part, and *du its small, round shape

Common "derivational" functions cannot generally be associated with a single class

	Fula	Sereer	Cangin	Wolof	Bai.	Kob.	Biaf.	Paj.	Tenda	Joola	Manj.	Bal.	Bijogo	Limba	Bantu
PEOPLE	*υ?	*u?	(*w-)	*bu	υ [*]	[*] υ	[*] υ	\mathbf{U}^{*}	*ha	*ha	*ha	*ha	\mathbf{U}^{*}	*б1-а?	U *
TREES	*kıC	(n-)	(*w-)	*gu	*kıC	*6u?	*6u	*6u	*gaN	*6u	*6u	*6u	various	*gu	*gu
FRUITS	*dı	(ol-)	(*w-)	*bu	*bu	(a-II)	*waN	*ma	*dī, *bu	*bu	*bu	*bu	[*] dı, (ka-)	*bu	*dı
LANGS.	*dı	(ak-)	*kıC	*bu	*gu	*gu	*gaN	*gaN	*mυN	*gu	(u-)	*bu	(ka-)	*bu	*kıC

Similarly there was <u>no single "infinitive" class</u>— different verb roots would have been used with different class markers when nominalized, like in modern Bainunk-KK, Joola infinitives

Number

Semantic notions of number (count singular, mass, collective, abstract, count plural) were part of the meaning of PNC class markers

But it is <u>doubtful</u> that markers encoded a **morphosyntactic category** of number

- As is the analysis in many modern languages, incl. most Bantu

There were only a <u>few markers</u> which primarily expressed a **count plural** meaning

- ^{*}6ι, ^{*}i, ^{*}ha~ŋa, *mak (if reconstructable), often *ma

It is <u>unlikely</u> that there was a strict, **Bantu-like pairing** of singular and plural classes

- Though naturally the semantics of some pairs of markers with sg. and count pl. semantics were suited for use with the same sets of nouns

Markers with mass/collective meaning often develop to count plural classes in descendent languages

Some groups use -VN suffixes to mark (some) plural nouns, though I do not currently assume that these all go back to the same morpheme in PNC

Plural markers paired with singular markers in daughter groups (projected back to PNC forms):

sg.	Ful-Ser	Cangin	Wolof	Bai-KK	Bia-Paj	Tenda	Joola	Manjak	Balanta	Bijogo	Limba	Gur	Bantu
υ, ha	*бі			*ña, *ja, *бі	*бі	*бі	*gυ, *ja, *bι(-a)	*б ı- а	*б1-а	(ya-)	*бı	*б1-а	*бі-а
gu			*i	[∗] ha∼ŋa	*mak					*mun	*ha~ŋa	*i	*i
dı	(*ɗak)					*ma				*ma		*ha~ŋa	*ma
kıX	(*ɗak)	[*] tıN		*mun									(*bį-)
gı/jı	(*dik)			(*-aŋ)	*mak	[*] ma(k)							*i
bυ			* i	*i	*ma	*mak	*gu	[*] i, [*] mon	*gu	*ha~ŋa	(tha-), [*] ma	*i	*ma
би					(saa-)		(*wu-)	*i, *mon	(U-)	*ha~ŋa		*i	[∗] ha~ŋa
ko	(*ɗik)			[∗] ha∼ŋa	?	+*ma(k)	(*wu-?)	*i?		*ha~ŋa	*ha~ŋa	[*] tıN, [*] i	*ha~ŋa
ра		*ja		(*-aŋ)	(+b1-a-)	+*ma(k)						*i	
wan	(*ɗik)?	*ja	* i		*gu							?	
baX	(*ɗik)?		*i	(*-aŋ)	*ma								
gan	?		* i		*ña	(*ɓaŋ-)	(*wu-)	[*] i	(ʊ-)				
gun	(*ɗik)				*bo								
kaX	?	*tıN	* i	*ña	(+b1-a-)	+*ma(k)	(*wu-?)	*i?		*ha~ŋa?			
ja(n)		*ja	* i	(*-aŋ)			(si/ti-)			*i, *ko, *bo			

Common pairs:

- *u/*ha ~ *bi
- $*d\iota \sim *ma$
- *bu ~ *i, *bu ~ *ma
- *ko ~ *ha/ŋa
- *gu ~ *i, *gu ~ *ha/ŋa

VI. Evidence for subgrouping (Volta-Congo)

One metric: **percentage of cognate markers** between two groups/languages:

- Count total number of etymologically distinct markers found in a pool of two languages
 - ➢ e.g. Joola Fonyi *fu* and Manjak *p*∂- are counted as one class, since they are cognate (*bu)
 - > But JF fa- has no cognate in Manjak, and Manjak i- has no cognate in JF
 - > Between these four modern markers, there are three etymologically distinct markers
- Of this number, what percent are found in both languages?
- If the exact same set of PNC markers has survived in each language, the percentage is 100%

subgroup	language 1	language 2	# markers	# cognate	
Fula-Sereer	Fula (Pulaar)	Sereer Siin	22	14	64%
Cangin	Laalaa	Ndut	19	18	95%
Bainunk-KK	Kobiana	Gubëeher	37	27	73%
Biafada-Paj.	Biafada	Pajade	26	19	73%
Tenda	Konyagi	Bedik	21	19	90%
Joola	Joola Fonyi	Bayot Kugere	21	19	90%
Joola-Manj.	Joola Fonyi	Manjak	23	11	48%
Bak	Joola Fonyi	Balanta	21	8	38%

Note: These counts of class markers exclude any purely diminutive, augmentative, or adverbial class, as well as any marker known to be innovated from PNC (e.g. Tenda * δ aŋ- < * δ ə-gaŋ-). Original markers which have merged phonologically or are frozen <u>are</u> <u>counted as distinct</u>. Same notes apply to counts on the next slides.

Example of applying this metric:

Fula (Pulaar)	Sereer (Siin)	traced back to:
II -ɗo	$o-II \sim ox-$	*u? > *ox
-бе	$\emptyset \sim w$ -	*бı > *бе
-re	$\emptyset \sim l$ -	*dı > *re
III -ri	Ø-III \sim n-	*d1~d0? > *rin
-ru		(Fula only)
-ge	$\emptyset \sim l$ - ('cow')	*g1 > *ge
-g0	o- ∼ ol- ?	*g0
III -gu	Ø-III \sim n-	[*] guN > *gun
II -gal	a-II \sim al-	*gal
II -gol	o - \sim o l-	*gol
III -wa	(fa-III) \sim fan-	*waN? > *ban
III -ha	a-III \sim al-	*kaC > *han
II -hi		*kıC?
-ho	$o-I \sim ol-$	*ko > *ho
-ho		(Fula leaves, etc.)
II -ɗum		(Fula only)
III -ɗam		*ma
II -ɗe	a-II \sim ak-	*ɗak
II -ɗi	Ø-II \sim k-	*ɗik
	o-III \sim onq-	(Ser. only)
	fo- \sim ol-	*Ъо
	xa-II \sim ax-	*ha~ŋa?

There is evidence for 19 etymologically distinct (non-diminutive/augmentative) markers surviving in Fula, and 17 in Sereer.

Of these, 14 represent the same marker surviving in both groups.

Another 8 are found in only Fula or only Sereer.

Of the 22 etymologically distinct markers which have survived in some form in either Fula or Sereer, 14 are found in both: 14/22 = 64%

	Ful-Ser	Cangin	Wolof	Bai-KK	Bia-Paj	Tenda	Bak	Bijogo	Limba	Gur
Cangin	22%									
Wolof	22%	16%								
BKK	16%	19%	32%							
BP	18%	17%	26%	33%						
Tenda	29%	20%	18%	31%	38%					
Bak	15%	14%	19%	25%	22%	26%				
Bijogo	13%	15%	17%	20%	18%	18%	21%			
Limba	16%	11%	13%	23%	25%	22%	21%	36%		
Gur	24%	17%	18%	31%	32%	29%	25%	30%	35%	
Bantu	28%	22%	15%	34%	28%	29%	25%	30%	35%	74%

Applying this metric to the reconstructed class systems of each subgroup treated here:

- Evidence for subgrouping Bantu and Gur (Volta-Congo) is stronger than for any two Atlantic groups
 Conclusion is tentative, since the Gur class markers are not yet true reconstructions
- Highest percentage between two Atlantic groups is for Biafada-Pajade and Tenda, for which there is some independent evidence for subgrouping

VII. Conclusion

Many Proto-Niger-Congo class markers can be reconstructed using the comparative method

- Maximally CVC shape
- Generally rather **specific semantics**
- ~30 <u>currently reconstructed</u> based on attestation in multiple groups
- But many more found in modern groups, many of which likely go back to Proto-NC

Class markers were associated with particular meanings, not particular roots

- Suggestion of great **freedom in collocation** of markers + roots
- Probably <u>no strict singular-plural pairings</u>

The distribution of cognate markers throughout modern subgroups can be used as one piece of evidence for or against larger **subgroups**

- Bantu + Gur (Volta-Congo?) looks promising
- Groups with two or more established Atlantic groups do not

This reconstruction is a first step; for the future:

- Incorporate more Niger-Congo subgroups
- Seriously explore the Volta-Congo hypothesis (requires careful reconstruction of lower-level groups)
- Account for the rather <u>divergent Fula-Sereer</u> class markers
 - > Perhaps explained by an extremely early split from the rest of NC?

References

- Bennett, Patrick R. and Jan P. Sterk. 1977. "South Central Niger-Congo: A reclassification." *Studies in African Linguistics* 8, pp. 241-73.
- De Wolf, Paul P. 1971. The Noun Class System of Proto-Benue-Congo. The Hague: Mouton.
- De Wolf, Paul P. 1985. Die Menschenklassen in den nordwestatlantischen Sprachen. Wien: Afro-Pub.
- Doneux, Jean Léonce 1975. "Hypothèses pour la comparative des langues atlantiques." *Africana Linguistica* VI, Tervuren. pp. 41-129.
- Elugbe, Ben Ohiomamhe. 1989. *Comparative Edoid: Phonology and Lexicon*. (Delta Series, 6.) Port-Harcourt: University of Port Harcourt Press.
- Güldemann, Tom & Ines Fiedler. To appear. "The synchronic and diachronic diversity of adnominal gender-number marking in Niger-Congo." In *Westermann Centenary Volume* (provisional title), Eds. Tom Güldemann and Jakob Lesage. Language Science Press.
- Güldemann, Tom. 2011. "Proto-Bantu and Proto-Niger-Congo: Macro-areal Typology and Linguistic Reconstruction." In: Hieda, Osamu, Christa König and Hiroshi Nakagawa (eds.), *Geographical Typology and Linguistic Areas: With special reference to Africa*, pp. 109–141. John Benjamins.
 Güldemann, Tom. 2018. "Historical linguistics and genealogical language classification in Africa." In

Tom Güldemann (ed.), *African Languages and Linguistics*, pp. 58-444. Berlin: DeGruyter Mouton. Heine, Bernd. 1968. *Die Verbreitung und Gliederung der Togorestsprachen*. Berlin: Dietrich Reimer.

Hepburn-Gray, Robert. 2020. Niger-Congo Noun Classes: Reconstruction, Historical Implications, and Morphosyntactic Theory. SUNY Buffalo (Doctoral dissertation).

- Merrill, John. 2018a. *The Historical Origin of Consonant Mutation in the Atlantic Languages*. University of California, Berkeley (Doctoral dissertation).
- Merrill, John. 2018b. "Evidence from Atlantic for a recently grammaticalized classifier system in early Niger-Congo." *Gender across Niger-Congo* workshop, Humboldt-Universität zu Berlin, November 30, 2018.
- Merrill, John. 2021b. "Atlantic groups as primary branches of Niger-Congo." Talk given at Westermann Workshop, HU Berlin, Nov. 6, 2021.
- Merrill, John. 2023. "The evolution of consonant mutation and noun class marking in Wolof." *Diachronica* 38:1, pp. 64-101.
- Merrill, John. 2023. *The Cangin Languages: Phonological and Morphological Reconstruction and Diachrony*. Leiden, Boston: Brill.
- Merrill, John. To appear. "Lexical evidence for Northern Atlantic groups as primary branches of Niger-Congo." In *Westermann Centenary Volume* (provisional title), Eds. Tom Güldemann and Jakob Lesage. Language Science Press.
- Miehe, Gudrun, Ulrich Kleinewillinghöfer, Manfred von Roncador & Kerstin Winkelmann. 2012.
 "Overview of noun classes in Gur (II) (revised and enlarged version)." In Miehe, Gudrun (ed.) Noun class systems in Gur languages. 2, North Central Gur languages. Köln: Köppe.
- Pozdniakov, Konstantin. 2015. "Diachronie des classes nominales atlantiques." In Denis Creissels & Konstantin Pozdniakov (eds.), *Les classes nominales dans les langues atlantiques*, pp. 57–102. Köln: Rüdiger Köppe Verlag.

- Pozdniakov, Konstantin. 2022. Proto-Fula-Sereer: Lexicon, morphophonology, and noun classes. Language Science Press.
- Sagna, Serge. 2008. Formal and semantic properties of the Gújjolaay Eegimaa (A.k.a. Banjal) nominal classification system. London: School of Oriental and African Studies.
- Schadeberg, Thilo C. 2011. "The unique nature of the Niger-Congo noun class system, and a comparison of event participant marking in Bantu and Ebang (Kordofanian)." Paper presented at the Fourth International Conference on Bantu Languages, Berlin.
- Tom Güldemann & Ines Fiedler. 2019. Niger-Congo "noun classes" conflate gender with deriflection. In Francesca Di Garbo, Bruno Olsson & Bernhard Wälchli (eds.), *Grammatical gender and linguistic complexity: Volume I: General issues and specific studies*, 95–145. Berlin: Language Science Press.
 Williamson, Kay. 1989. "Niger-Congo overview." In John Bendor-Samuel (ed.), *The Niger-Congo languages: a classification and description of Africa's largest language family*, 3–46. New York; London: SIL.