

CORE AND PERIPHERAL NOUN MORPHOLOGY IN CENTRAL SUDANIC LANGUAGES



Submitted for proceedings of:

**13th Nilo-Saharan Conference
University of Addis Ababa, 6th May, 2017**

Roger Blench
McDonald Institute for Archaeological Research
University of Cambridge
Department of History, University of Jos
Kay Williamson Educational Foundation
8, Guest Road
Cambridge CB1 2AL
United Kingdom
Voice/ Ans (00-44)-(0)7847-495590
Mobile worldwide (00-44)-(0)7967-696804
E-mail rogerblench@yahoo.co.uk
<http://www.rogerblench.info/RBOP.htm>

TABLE OF CONTENTS

1. Introduction	1
2. Classification	2
3. Phonology	3
4. Morphology: core and periphery	4
4.1 General.....	4
4.2 The prevalence of CV roots	5
5. Morphological processes in individual branches	6
5.1 Lendu-Ngiti.....	6
5.2 Moru-Madi.....	8
5.3 Mangbutu-Efe (ME).....	8
5.4 Mangbetu-Asua (MA).....	9
5.5 Birri.....	10
5.6 Kresh-Aja (KA)	10
5.7 Formona-Sinyar.....	11
5.8 Sara-Bongo-Bagirmi	11
5.9 Summary and conclusions.....	11
References	12

TABLES

Table 1. Acronyms for Central Sudanic branches	3
Table 2. Proposed consonant inventory for PCS	3
Table 3. Proto-Central Sudanic vowels	3
Table 4. A Central Sudanic root for ‘tooth’.....	4
Table 5. A Central Sudanic root for ‘breast’.....	4
Table 6. A Central Sudanic root for ‘bird’.....	5
Table 7. A Central Sudanic root for ‘to fall (rain)’.....	5
Table 8. A Central Sudanic root for ‘eye’	5
Table 9. A Central Sudanic root for ‘ear’ (#m.bi.[le]).....	6
Table 10. Ngiti fossil nominal prefixes	7
Table 11. Affixes in Ngiti proper names	7
Table 12. Fossil nominal prefixes in Lendu	7
Table 13. Moru-Madi nominal suffixes -fi, -le, ‘eye’	8
Table 14. Moru-Madi nominal suffix -le, ‘belly’	8
Table 15. Moru-Madi nominal suffix -pi, ‘man’	8
Table 16. Moru-Madi nominal suffixes -na, -va, ‘bird’	8
Table 17. Mangbutu-Efe nominal prefix u/ʊ-, ‘mouth’	8
Table 18. Mangbutu-Efe nominal prefix u/ʊ-, ‘ear’	9
Table 19. Mangbutu-Efe nominal prefix u/ʊ-, ‘leaf’, #Sebi	9
Table 20. Mangbutu-Efe nominal prefix i-, ‘egg’	9
Table 21. Mangbutu-Efe nominal prefix i-, ‘woman’	9
Table 22. Mangbetu singulatives in nè-.....	10
Table 23. Asua singulatives in -(j)è	10
Table 24. Kresh-Aja number marking	10
Table 25. Identifiable nominal affixes in Central Sudanic	12

FIGURES

Figure 1. Classification of Central Sudanic languages 2
Figure 2. Internal structure of Sara-Bongo-Bagirmi languages 11

MAPS

Map 1. Central Sudanic languages..... 1

ABSTRACT

The Central Sudanic languages are a large, complex subgroup of Nilo-Saharan stretching between Nigeria, western Chad and Northeast DRC and Uganda, first identified by Joseph Greenberg (1963). Overviews of Nilo-Saharan have generally included Central Sudanic as a unity (e.g. Bender 1997, Ehret 2001). The independent branches from East to West are;

Lendu-Ngiti	Birri
Moru-Madi	Kresh-Aja
Mangbutu-Efe	Formona-Sinyar
Mangbetu-Asua	Sara-Bongo-Bagirmi

The paper argues that related lexemes between individual branches are typically confined to CV roots, with little evidence for cognate affixal morphology at higher levels. This peripheral morphology is extremely varied, but more characteristic of the western branches which may reflect contact with Bantu. The process of replacement or swapping the pre-syllable results in structures similar to ‘sesquisyllabic’ roots in SE Asian languages.

Keywords; Nilo-Saharan; Central Sudanic; morphology

Acronyms

ATR	Advanced Tongue Root
PCS	Proto-Central Sudanic

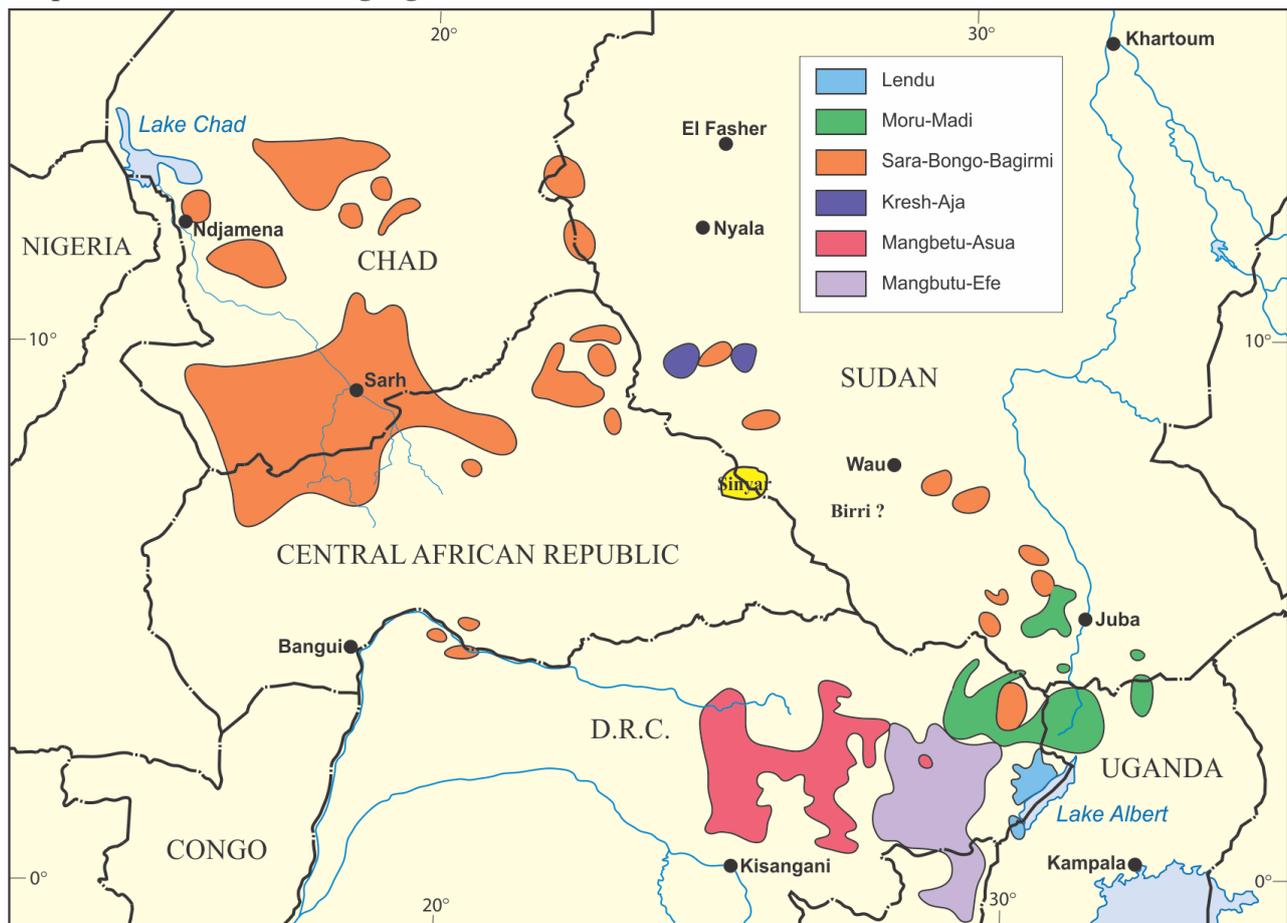
Lexical Sources: Abbreviated References

B&W96	Boone & Watson (1996)
B100	Blackings (2000)
Bo00	Boyeldieu (2000)
CKL	Constance Kutsch Lojenga, personal communication
DB83	Doornbos & Bender (1983)
DD	Didier Demolin, personal communication
De92	Demolin (1992)
Ha78	Haaland (1978)
Ke16	Keegan et al. (2016)
Ke16	Keegan (2016)
KO	Ken Olson, personal communication
No99	Nougayrol (1999)
Sa66	Santandrea (1966)

1. Introduction

The Central Sudanic languages are a large, complex subgroup of Nilo-Saharan stretching between western Chad¹ and Northeast DRC and Uganda, first identified by Joseph Greenberg (1963, 1971). Central Sudanic consists of some 40-50 languages, depending on how Sara and Moru-Madi languages are counted. The Central Sudanic-speaking area was in the heart of the slave-raiding zone in Central Africa in the pre-colonial era and as a consequence has been dispersed and fragmented. Today it is intertwined with languages from different families including regional Arabic, Fur, Ubangian and Eastern Sudanic. Map 1 presents a recent synthesis of the location of the Central Sudanic languages, with the caveat that some may no longer be in the same place as they were in previous eras of relative peace.

Map 1. Central Sudanic languages



Source: updated from Boyeldieu (2004)

Since Greenberg, publications which characterise Central Sudanic are Bender (1992) and Boyeldieu & Nougayrol (2004, 2008) as well as the online Boyeldieu, Nougayrol & Palayer (2006). Although the unity of Central Sudanic is usually accepted, the published evidence for this is thin (e.g. Bender 1997, 2000; Ehret 2001). The researchers who have worked most intensively on these languages, Boyeldieu & Nougayrol (2008) leave the question open, pointing out that a lexicostatistical evaluation falls to values as low as 10%, which is only just above chance. Despite these low percentages, there are a significant number of reconstructible roots in Central Sudanic which do argue for its coherence. The phonology of Central Sudanic is also strikingly varied, especially in the east, with the complex consonants of Lendu and the

¹ The recent report (Mark van der Velde personal communication) that the Lau Laka language of Nigeria is a Sara language extends Central Sudanic still further westward

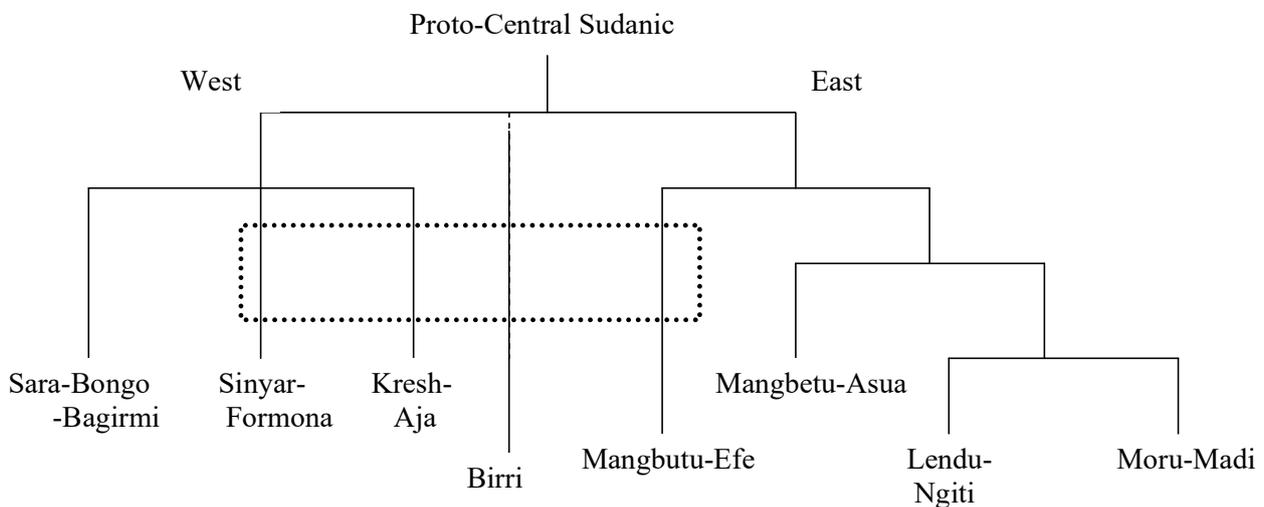
Mangbetu group posing particular challenges. However, it is likely these are secondary developments, with the core phonology resembling the rather simpler systems of SBB languages.

This paper² provides support for the unity of Central Sudanic but focuses on a key morphological process, the innovative nominal affixal systems. It reviews the system of number-marking in individual branches, as well as identifying potential fossil affixes. Central Sudanic lacks the complex, tripartite and often suppletive number marking which is prominent in many branches of Nilo-Saharan further east. Eastern Central Sudanic languages, such as Lendu-Ngiti, Moru-Madi, Mangbutu-Efe and Mangbetu-Asua typically have residual affix alternations and distinctive traces of fossil affixes. Further west, the SBB and related languages show little signs of either, and number marking is reduced to repurposed quantifiers of invariant suffixes. It appears that Central Sudanic went through a phase of extreme reduction of roots at the level of the proto-language, and has rebuilt its nominal morphology via different processes in individual branches. The evidence is mainly drawn from lexical sources; morphosyntactic descriptions of Central Sudanic languages are scattered and not every branch is covered by even a sketch, so identifying structures at more than a basic level remains a task for the future.

2. Classification

Central Sudanic was first identified as a branch of Nilo-Saharan (Greenberg 1963) who placed it within a larger subgroup, ‘Chari-Nile’, although this is no longer considered valid. There have been doubts about its coherence as a family in the light of low lexicostatistical cognacy percentages between branches (Boyeldieu 2010) but a series of strong lexical isoglosses provides good evidence for its valid status. Central Sudanic is usually divided into two major branches, East and West (Figure 1). However, some putative branches are so poorly documented, that any internal classification must remain provisional. Birri is too little-known to be sure of its position and it is provisionally assigned a branch of its own, pending further research. Information on Formona-Sinyar is similarly limited and its position as a part of the Western branch must remain a best guess.

Figure 1. Classification of Central Sudanic languages



Source: Adapted from Boyeldieu (2006)

A series of short forms has been adopted for Central Sudanic branches to make reference to them less unwieldy, and this is shown in Table 1;

² This is a section from the broader overview presented at the XIIIth Nilo-Saharan Conference in Addis Ababa, May 2017. Thanks to Don Killian, Pascale Boyeldieu, Harald Hammarstrom, Didier Demolin, Connie Kutsch Lojenga, John Keegan for access to unpublished data.

Table 1. Acronyms for Central Sudanic branches

Short form	Expansion	Short form	Expansion
LN	Lendu-Ngiti	Birri	
MM	Moru-Madi	KA	Kresh-Aja
MA	Mangbetu-Asua	FS	Formona-Sinyar
ME	Mangbutu-Efe	SBB	Sara-Bongo-Bagirmi

3. Phonology

Despite some of the highly unusual consonants in some branches, notably the bilabial trills in MA and ME languages (e.g. Demolin 1992), it seems unlikely these can be attributed to Proto-Central Sudanic (PCS). PCS probably had a quite small underlying inventory (Table 2);

Table 2. Proposed consonant inventory for PCS

	Labia		Alveola		Retro		Pala		Vela		Labio- velar	
	l		r		-	-	-	-	r			
					flex	tal						
Plosive	p	b	t	d	ʈ	ɖ			k	g	kp	gb
Implosive		ɓ		ɗ								
Fricative			s	z								
Affricate							tʃ	dʒ				
Nasal		m		n			ɲ	ŋ				
Trills				r								
Approximants							y					w
Laterals				l								

Many languages are transcribed with ‘dr’ and this almost certainly represents the retroflex /dʎ/. The inclusion of the implosives /ɓ/ and /ɗ/ is provisional only and they may be in free variation with their non-implosive counterparts. Palatalisation and labialisation cannot be reconstructed to PCS, but they were probably present in Proto-MM and Proto-MA. They are likely to be secondary developments from reduction of CVCV proto-forms.

Proto-Central Sudanic certainly had ATR vowel harmony, like many other branches of Nilo-Saharan. Many languages are reported with nine vowels and so probably either nine or ten should be reconstructed. Inadequate transcription of branches such as Formona-Sinyar and Kresh-Aja makes the number of vowels uncertain for their particular subgroups. Table 3 shows the probable vowel system of PCS.

Table 3. Proto-Central Sudanic vowels

	Front	Central	Back
Close	i		u
	ɪ		ʊ
Mid	e	(ə)	o
	ɛ		ɔ
Open		a	

There are no underlying long vowels which only arise from interconsonantal deletion. Nasalised vowels are also very uncommon and suggest they are derived rather than underlying. For those which have descriptions, Central Sudanic languages have predominantly three level tones and limited inventories of glide tones.

4. Morphology: core and periphery

4.1 General

The broader reconstruction of Central Sudanic depends strongly on the model developed to understand its morphology. Both in his publications and on the SBB website, Boyeldieu (2000) uses a consonantal template where the reconstructed form is notated as a sequence of templatic consonants with variable vowels, a format more common with Semiticists, though also adopted by Edgar (1991) for Maba. One reason for this is the remarkable variations in vowel quality in cognate roots, exhibiting front, central and back properties and different heights. Table 4 shows this type of variability in the Central Sudanic root for ‘tooth’.

Table 4. A Central Sudanic root for ‘tooth’

Subgroup	Language	Attestation	Gloss	Source
MM	PMM	*sí	tooth	BW96
ME	Lese	óśé	<i>dent</i>	DD
KA	Kresh	sèsè	<i>dent</i>	Bo00
FS	Sinyar	sɒli	tooth	Ha87
SBB	Yulu	óosə̀	<i>dent</i>	Bo00
SBB	Bongo	usu	<i>dent</i>	Bo00

In other language, phyla, for example Niger-Congo, reconstructions would typically account for this by assuming palatalisation and labialisation of the preceding consonant in the proto-form. Thus if there are two surface forms with front and back vowels, for example;

CiC and CuC

The proposed proto-forms would be either CyuC or CwiC. This is credible because palatalisation and labialisation are very common in some branches of Niger-Congo and this type of reduction can be demonstrated. A solution like this is theoretically possible, but not very likely in Central Sudanic, or indeed Nilo-Saharan as a whole, since palatalisation and labialisation occur only rarely and are demonstrably secondary.

In other cases, Central Sudanic vowels can sometimes be very conservative. In words such as ‘breast’ (Table 5) the low central vowel is retained across the entire family.

Table 5. A Central Sudanic root for 'breast'

Family	Subgroup	Language	Attestation	Gloss	Source
CS	LN	Lendu	ba	breast	RCS
CS	LN	Ngiti	iba, -bà	breast	CKL
CS	MM	PMM	*bà	breast	B&W96
CS	MA	Mangbetu	nébà pl. ébà	<i>sein</i>	De92
Cs	KA	Kresh	mbāmbā	<i>sein</i>	Bo00
CS	FS	Sinyar	mbàár	breast	Bo13
CS	MM	Mödö	mbà	breast	PP
CS	SBB	Gula	mvà	<i>sein</i>	Bo00
CS	SBB	Bagirmi	mbà	<i>sein</i>	Ke16
CS	SBB	proto-Sara	*mbà	<i>sein</i>	Ke16

Similarly, some languages have quite strong copying and harmonisation rules, so that the vowels in both root syllables are identical. In other languages, neither ATR harmony nor vowel copying are synchronically functional.

4.2 The prevalence of CV roots

The word for ‘breast’ (Table 5) illustrates a prevalent pattern in Central Sudanic, the cognacy of a single CV syllable across multiple branches. Peripheral affixal morphology may be introduced, but this does not affect the core lexeme. In particular the CV core may then replace or swap a pre-syllable, so that the structures resemble those called ‘sesquisyllabic’ in SE Asian languages (cf. Blench 2015). For example, the word ‘bird’ (Table 6) has a core root **-ri** and a variety of CV and V presyllables;

Table 6. A Central Sudanic root for ‘bird’

Family	Subgroup	Language	Attestation	Gloss	Source
CS	LN	Lendu	àrè	<i>oiseau</i>	CK
CS	PMM		*àrī	bird	B&W96
CS	MA	Makere	nári /árí	<i>oiseau</i>	DD
CS	ME	Mamvu	qèrì	<i>Vogel</i>	Vo71
CS	KA	Aja	wèri	bird	Sa76
CS	FS	Sinyar	wuelli	bird	Ha78
CS	SBB	Lutos	dʒilì	bird	O113
CS	SBB	Fongoro	el	<i>oiseau</i>	DB83
CS	SBB	Modo	yàlí	bird	Bo13
CS	SBB	Bongo	hòlí	bird	Bo13
CS	SBB	buḅu	sili	<i>oiseau</i>	Sa63
CS	SBB	Gula Zura	sēl	<i>oiseau</i>	Bo13

The swapping of presyllables is the consequence of morphological processes and sound correspondences between different branches should thus not be sought. It is likely the motivation is semantic, although this is so far little understood. There are clear parallels with the ‘moveable k’ which has long been identified as characterising Nilo-Saharan languages (Greenberg 1981). The core/periphery pattern is not only true of nouns, but also of verbs, as shown in the Central Sudanic root for ‘to fall (rain)’ (Table 7);

Table 7. A Central Sudanic root for ‘to fall (rain)’

#-dī	fall I				
Subgroup	Language	Attestation	Gloss	Source	
MM	Madi	dɛ	to fall	B100	
MM	Lulubo	òdɛ	to fall	B&W96	
MA	Asua	óóóɔ	<i>tomber</i>	De92	
MA	Mangbetu	(n)-o’de	<i>tomber</i>	De92	
	Birri	èdɛ	to fall	Sa66	
SBB	Gula Mere	nɔ	<i>tomber</i>	No99	
SBB	Gor	àdì	<i>tomber (pluie)</i>	Ke16	
SBB	Bagirmi	kèdɛ	<i>tomber (pluie)</i>	Ke16	

However, in words where there is a wide range of vowels in surface forms, it is likely a CVCV root must be reconstructed, including both front and back vowels. As the root becomes eroded, individual languages have retained different vowel qualities. Reduplication and vowel-copying then leads to distinct surface forms in words such as ‘eye’ (Table 8) where perhaps a form such as #mumi will need to be reconstructed.

Table 8. A Central Sudanic root for ‘eye’

Family	Subgroup	Language	Attestation	Gloss	Source
CS	MM	Madi	mī	eye	B100
CS	MA	Nabulu	némò pl. émó	eye	De92
CS		Birri	mś ~ mó	eye	Sa66
CS	KA	Kresh	mūmū	<i>oeuil</i>	Bo00

This suggests a way of understanding nouns in Central Sudanic, as CV core lexemes which are subject to affixing and re-analysis. In some words the vowel of the core syllable *is* stable, as in the example of ‘bird’ above (Table 6). Other examples include ‘ear’ (Table 9);

Table 9. A Central Sudanic root for ‘ear’ (#m.bi.[le])

Family	Subgroup	Language	Attestation	Gloss	Source
CS	LN	Lendu	bí	<i>oreille</i>	DD
CS	LN	Ngiti	bì	<i>ear</i>	CKL
CS	MM	*MM	*bì, *bí	<i>ear</i>	B&W96
CS	MM	Lugbara	bí.lé	<i>ear</i>	B&W96
CS	MA	Mangbetu	né. bí pl. è. bì	<i>oreille</i>	De92
CS	ME	Mamvu	ú. bí	<i>oreille</i>	DD
CS	KA	Kresh	mbím. bí	<i>oreille</i>	Bo00
CS	FS	Formona	am. bɔ	<i>to hear</i>	Ha78
CS	SBB	Lutos	m. vi	<i>ear</i>	KO
CS	SBB	Modo	m. bí.lí	<i>ear</i>	Bo00
CS	SBB	Fongoro	m. vi	<i>ear</i>	DB83
CS	SBB	Bagirmi	m. bī	<i>oreille</i>	Ke16
CS	SBB	Proto-Sar	*m. bī	<i>oreille</i>	Ke16

The process of reducing complex lexemes to monosyllables is exactly paralleled in Sino-Tibetan languages, which range from the non-tonal Kiranti languages of Nepal with relatively long words to strict monosyllabic languages like Chinese with complex tones. As in Sino-Tibetan, the addition of innovative morphology to improve communicative efficiency occurs separately both within and between branches. Nilo-Saharan languages have a range of pre-existing strategies for this, which include pre-syllable swapping, moveable consonants (t-, k-, n-), reduplication, which surface regularly. These strategies are applied not only to nouns, but are equally important in verbs. This suggests that, to speakers, the core lexemes are semantic units rather than confined to categories of noun or verb. Morphology and context transforms them into categories recognised by linguists.

5. Morphological processes in individual branches

5.1 Lendu-Ngiti

Despite its sometimes exotic phonology, Lendu-Ngiti is extremely conservative in terms of innovative morphology. In the case of Ngiti, we have an extended discussion of noun morphology (Kutsch-Lojenga 1994). The great majority of Ngiti nouns are V-CV(CV), and the prefix can be optionally deleted. In addition, Ngiti has a variety of fossil (C)V- prefixes which resemble Bantu, as shown in Table 10;

Table 10. Ngiti fossil nominal prefixes

Prefix(es)	Ngiti	Gloss	Comment
à-	à.gìrì	cold	
á-	á.kàlī	firewood	
ka-	kà.kerε	crab	
kV-	ké.ngezé	rust	
ma-	mà.gězì	intelligence	
mU-	mù.tìtì	earthquake	
na-	nà.hànà	banana sp.	
mù-/pba-	pbà-novhì	soldier(s)	
rU-	rù.sù	fish sp.	
rù-	rù.dzumbà	stout person	

These do not alternate in Bantu fashion, except for mù-/pbà, which must be a fairly direct borrowing. Nonetheless, as Kutsch-Lojenga (1994:122) these are plausibly borrowings from the neighbouring Hema, a Bantu language.

When proper names are formed from nouns, additional and perhaps borrowed morphology is introduced (Table 11). The prefixes mU- and ki- are added to basic noun and verb stems. However, Ngiti also has suffixes marking sex-gender, for personal names, including -yì, -zɔ and sì.

Table 11. Affixes in Ngiti proper names

Noun/verb	Proper name	Gloss
nǎkù	mù.nǎkù	poverty
dzùnà	mù.dzùnà	help
ìla	mù.làngì	war
màsà	kì.màsà	selfishness
ɔvε	avε.yì	death
anya	anyɔ.zɔ (m) anyε.sì (f.)	quarrel
Adyú	adyu.alε (m) adyu.sì (m)	village name

The closest relative of Ngiti, Lendu, also has fossil prefixes, shown in Table 12.

Table 12. Fossil nominal prefixes in Lendu

Prefix	Lendu	Gloss
ca	cǎ-vì	vegetable pot
cū	cū-bù	throat
kà	kà-lí	dead wood
kU	kú-ngbù	molar
mà-	mà-tésò	suffering
ɲɔ	ɲō-ká	snake

There are no direct lexical cognates with Ngiti and the segmental matches are far from exact. This suggests that both languages came under the influence of Bantu languages, but not at the level of proto-Lendu-Ngiti.

5.2 Moru-Madi

When compared to roots with other branches of Central Sudanic, the typical noun morphology of Moru-Madi languages is suffixing. The suffixes so far identified are -fi, -le, -pi, -ja, -va. The root for ‘eye’, which is attested elsewhere in Central Sudanic with a high back vowel, has a front vowel in MM (Table 13). Table 14, Table 15 and Table 16 provide examples where a CV or VCV root has one or more CV suffixes.

Table 13. Moru-Madi nominal suffixes -fi, -le, ‘eye’

Subgroup	Language	Attestation	Source
MM	Madi	mī	B100
MM	Avokaya (DRC)	mĩfi	BW96
MM	Lugbara	mīlé	BW96
MA	Nabulu	némò pl. é mó	De92
Birri	Birri	má ~ mó	Sa66
KA	Kresh	mūmū	Bo00

Table 14. Moru-Madi nominal suffix -le, ‘belly’

Subgroup	Language	Attestation	Source
MM	Moru Kādiro	ya	B&W96
MM	Logo Bhagira	ʔā	B&W96
MM	Okollo	ʔālē	B&W96

Unless the -re in Sinyar *ki.ɲare* ‘belly’ is cognate, this is an innovation in MM.

Table 15. Moru-Madi nominal suffix -pi, ‘man’

Subgroup	Language	Attestation	Source
MM	Okollo	àgú	B&W96
MM	Lugbara (DRC)	ágópí	B&W96

Table 16. Moru-Madi nominal suffixes -ja, -va, ‘bird’

Subgroup	Language	Attestation	Source
MM	Logo Bhagira	àrí	B&W96
MM	Logo (Bari-Mandra)	àríná	B&W96
MM	Kaliko (SW)	àrívá	B&W96

The origin of these highly diverse suffixes is unclear; they do not appear to be obviously of Bantu origin.

5.3 Mangbutu-Efe (ME)

Mangbutu-Efe remains one of the most poorly defined subgroups of Central Sudanic. To judge by Mamvu and Lese (Vorbichler 1965, 1971), number marking in this group is either by tonal change or the addition of a generalised suffix *-ni*. However, by comparison with other branches of Central Sudanic, it has also developed a prefix *u/ʊ-* which is no longer productive, as evidenced by the words for ‘mouth’ (Table 17) and ‘ear’ (Table 18).

Table 17. Mangbutu-Efe nominal prefix u/ʊ-, ‘mouth’

Subgroup	Language	Attestation	Gloss	Source
MM	Madi	ti	mouth	B100
ME	Mamvu	ũtĩ	<i>bouche</i>	DD
ME	Efe	útí	<i>bouche</i>	DD

Table 18. Mangbutu-Efe nominal prefix u/ɔ-, ‘ear’

Subgroup	Language	Attestation	Gloss	Source
LN	Lendu		bí <i>oreille</i>	DD
MM	*MM	*bí, *ɓí	ear	B&W96
ME	Mamvu	úbí	<i>oreille</i>	DD

Table 19 shows the ME root for ‘leaf’, which is usually polysemous with ‘ear’ in Nilo-Saharan. The -bi root is clearly identical, but it has acquired a different prefix in other branches of Central Sudanic. Indeed, since the other three attestations look cognate, ME has plausibly deleted the old prefix and innovated u/ɔ-.

Table 19. Mangbutu-Efe nominal prefix u/ɔ-, ‘leaf’, #Sebi

Subgroup	Language	Attestation	Gloss	Source
LN	Lendu	tsúbí	<i>feuille</i>	CKL
MM	Logo	kībí	leaf	B&W96
MA	Mangbetu	sébi	<i>feuille</i>	De92
ME	Mamvu	ūbí	<i>feuille</i>	DD

Similarly there is evidence for an innovated i- prefix in ME. Table 20 and Table 21 show the roots for ‘egg’ and ‘person, woman’ where prefixes in other branches have been deleted and i- inserted.

Table 20. Mangbutu-Efe nominal prefix i-, ‘egg’

Subgroup	Language	Attestation	Gloss	Source
MM	Avokaya	ǃú	egg	B&W96
KA	Dongo	ǃobu	egg	Sa76
ME	Lese	íbū	<i>oeuf</i>	DD

Table 21. Mangbutu-Efe nominal prefix i-, ‘woman’

Subgroup	Language	Attestation	Gloss	Source
MM	Logo Bari	māǃí	person	B&W96
ME	Mvuba	imá	<i>mère</i>	DD
	Birri	ama	female (?)	Sa66
SBB	Bongo	máa ¹	<i>enfant, neveu</i>	PN
SBB	Bagirmi	màlà	<i>soeur du mari</i>	Ke16

Influence from Bantu is a plausible origin for these prefixes, but there is no direct evidence for this.

5.4 Mangbetu-Asua (MA)

The Mangbetu-Asua group consists of three languages, Mangbetu and its dialects, Lombi and Asua. Demolin (1992) includes a comparative wordlist of all three in the appendix to his thesis. All dialects of Mangbetu and Lombi mark number on nouns with a singulative prefix, *nV-* (Table 22). Thus;

Table 22. Mangbetu singulatives in nè-

Lect	thigh		tooth	
	sg.	pl.	sg.	pl.
Mangbetu	nèdǝ	édǝ	nèkí	ékí
Meje	nèdǝ	édǝ	nèkí	
Makere	nèdǝ		nèkí	èkí
Malele	nèdǝ	édǝ	nèkí	ékí
Nabulu	nèdũ	édũ	nèkí	ékí
Lombi	nòpá	òpá	nékí	ékí

Whether the nV- prefix is cognate with the MA -nV suffix marking number is unclear.

Asua is more difficult to characterise. The principal strategy for marking number in nouns is a singulative suffix in -(j)è (Table 23);

Table 23. Asua singulatives in -(j)è

Gloss	sg.	pl.
Arm	téè	té
Gourd	kádǝè	kádǝ
Dog	ísijè	ísí
Heart	lúsúkpǝè	lúsúkpǝ

MA languages have no evidence for fossil prefixes, although there are clearly a significant number of Bantu borrowings in the lexicon. Other number marking strategies are tonal change in the noun-stem, although these do not follow any obvious pattern.

5.5 Birri

Birri is too poorly documented to be certain of any aspect of its morphology. Santandrea (1966: 197) claims it has no generalised number marker. However, he notes the occasional presence of a prefixed a- which he attributes to Zande influence. Inspection of the nouns in the wordlist do not indicate any clear fossil affix system, although there is a preponderance of VCV structures, which may point to an original pattern of CVCV roots, where C₁ is typically deleted. The absence of morphologically bound number marking is coincident with the first Central Sudanic subgroup which has not come under Bantu influence in the journey from East to West.

5.6 Kresh-Aja (KA)

The Kresh group consists of Kresh itself (also known as Gbaya, though not to be confused with the Ubangian group of the same name), Woro, Dongo and Aja. According to Santandrea (1976: 61) no languages of the Kresh group have underlying plural marking for nouns. Plurality is indicated by repurposed postposed markers (Table 24).

Table 24. Kresh-Aja number marking

Languages	Plural suffix	Comment
Kresh, Woro	kṗikṗī, (i)gi	Also common in eastern SBB languages
Dongo	ak	
Aja	Ø	

Inspection of Kresh lexical data reveals no obvious pattern of fossil affixes in nominals.

5.7 Formona-Sinyar

Our knowledge of Sinyar morphology is so far quite limited, but Boyeldieu (2013) gives examples of the following;

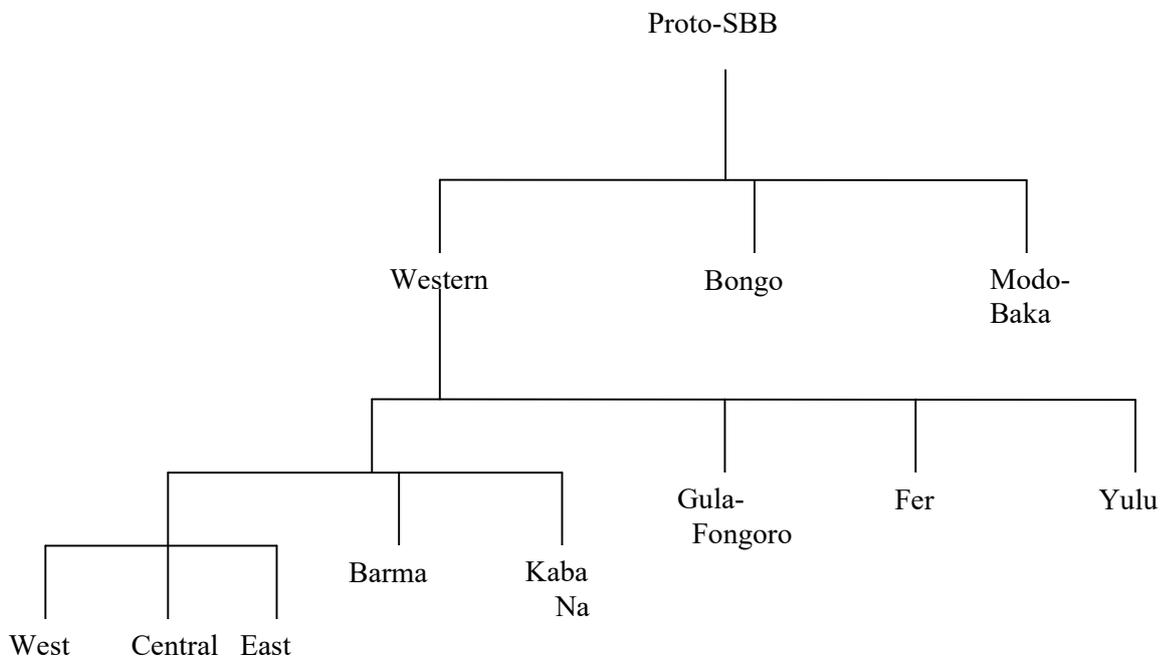
Common noun plurals in -ɲà
Some animates in -àar

However, Doornbos (n.d.), in an unpublished grammar sketch of Sinyar, gives the usual plural suffix as -si. The explanation for this inconsistency between sources is as yet unclear, but means we are far from any definitive statement on this subgroup.

5.8 Sara-Bongo-Bagirmi

The Sara-Bongo-Bagirmi (SBB) branch of Central Sudanic is by far the most complex and ramified. Whether Kresh-Aja and Formosa-Sinyar can be included within it has been debated in the literature (e.g. Appendix to Boyeldieu 2000 and Boyeldieu 2013). Figure 2 shows the putative internal structure of Sara-Bongo-Bagirmi languages.

Figure 2. Internal structure of Sara-Bongo-Bagirmi languages



No SBB languages have morphologically marked plurals for nouns. The most common indication of plurality is a -gV suffix (Keegan *et al.* 2016). Innovative nominal prefixes are also attested in other branches of Central Sudanic. For example, in the word for ‘ear’ (Table 9) SBB languages share a bilabial nasal prefix m- with Kresh-Aja and Formona-Sinyar. An almost identical pattern occurs with ‘breast’ (Table 5), which provides a piece of morphological evidence for the West-East division in the family tree. No other examples emerge from comparative data tables.

5.9 Summary and conclusions

The tables for individual branches indicate clearly that a system of nominal number marking cannot be reconstructed for Proto-Central Sudanic. Nouns seem to fall into two major categories, those which retain CVCV structures from Proto-Central Sudanic (and beyond) which may not acquire peripheral morphology and those which are reduced to CV(C) roots, which often develop affixes, some of which are productive, but many are now fossilised. These are by no means all number marking, but may also be the relics of case systems, determiners and perhaps even semantic markers. The eastern Central Sudanic languages have

clearly been influenced by Bantu affix alternation, although they have not taken over systems wholesale. Table 25 summarises the identifiable affixes in the branches of Central Sudanic.

Table 25. Identifiable nominal affixes in Central Sudanic

Subgroup	Comment
Lendu-Ngiti	Wide array of fossil prefixes, some apparently borrowings from Bantu.
Moru-Madi	Wide array of fossil suffixes
Mangbutu-Efe	Prefixes u/ʊ-, i-
Mangbetu-Asua	Singulative prefix nV-, Asua exceptional
Birri	None
Kresh-Aja	None
Formona-Sinyar	None, though data inconsistent
Sara-Bongo-Bagirmi	Number marking suffix -gV, no evidence for fossil affixes

Only richer and more detailed lexical and morphological data will uncover the logic behind the history of Central Sudanic, the process of stripping back roots to CV and their rebuilding with a highly diverse range of affixes from different sources.

References

- Bender, M.L. 1992. Central Sudanic Segmental and Lexical Reconstructions. *Afrikanische Arbeitspapiere*, 29:5-61.
- Bender, M.L. 1997. [2nd ed]. *The Nilo-Saharan languages: a comparative essay*. München: LINCOM Europa.
- Bender, M.L. 2000. Nilo-Saharan. In: Heine, B. and Derek Nurse (eds.), *African Languages*, 43-73. Cambridge: Cambridge University Press.
- Blackings, M.J. 2000. *Ma'di English – English Ma'di Dictionary*. München: Lincom Europa.
- Boone, Douglas W. and Richard L. Watson eds. 1996. *Moru - Ma'di survey report*. SIL Electronic Survey Reports. Nairobi: SIL Sudan.
- Boyeldieu Pascal & Pierre Nougayrol 2008. Les langues soudaniques centrales : essai d'évaluation. In: *Problems of Linguistic-Historical Reconstruction in Africa*. M. Bechhaus-Gerst, D. Ibriszimow & R. Vossen eds. (SUGIA, Beiheft 19) Köln: Rüdiger Köppe Verlag.
- Boyeldieu, Pascal 2000. *Identité tonale et filiation des langues sara-bongo-baguirmiennes (Afrique centrale)*, Köln: Rüdiger Köppe Verlag, (SUGIA-Beiheft 10).
- Boyeldieu, Pascal 2006. Reflexes of a Labiovelar Series in Central Sudanic. In *Insights into Nilo-Saharan Language, History and Culture. Proceedings of the 9th Nilo-Saharan Linguistics Colloquium, Institute of African and Asian Studies, University of Khartoum, 16-19 February 2004*. -129. Rüdiger Köppe.
- Boyeldieu, Pascal 2010. *Evaluating the genetic unity of Central Sudanic: lexical and morphological evidence*. ms.
- Boyeldieu, Pascale 2013. Sinyar and SBB (Central Sudanic): genetic relationship or contact? ms. Paper presented at *Linguistique diachronique et reconstruction : méthodes, acquis, avancées récentes* Labex EFL- 1-6 juillet 2013.
- Boyeldieu, Pascal et Pierre Nougayrol 2004. Les marques personnelles des langues SBB : traits systématiques et perspectives historiques. *Systèmes de marques personnelles en Afrique*. D. Ibriszimow et G. Segerer eds. 23-42. Louvain-Paris : Peeters (Afrique et Langage 8)
- Boyeldieu, Pascal, Pierre Nougayrol et P. Palayer 2006. *Lexique comparatif historique des langues sara bongo-baguirmiennes*, Paris, CNRS-LLACAN (document électronique) : [<http://sumale.vjf.cnrs.fr/SBB/>]
- Demolin, Didier 1992. *Le mangbetu, Etude phonétique et phonologique*. 2 vols. Thèse de doctorat, Université Libre de Bruxelles (Faculté de Philosophie et Lettres).
- Doornbos, Paul n.d. *The language of the Senyar*. ms.
- Doornbos, P. & M.L. Bender 1983. Languages of Wadai-Darfur. In: *Nilo-Saharan Language Studies*. M.L.Bender (ed.) 43-79. East Lansing: Michigan State University Press.

- Edgar, John T. 1991. *Maba-group lexicon*. Berlin: Reimer.
- Ehret, Christopher 2001. *A historical-comparative reconstruction of Nilo-Saharan*. Köln: Rudiger Köppe.
- Greenberg, Joseph H. 1963. *Languages of Africa* (Indiana University Research Centre in Anthropology, Folklore, and Linguistics, Publication 25). The Hague: Mouton & Co.
- Greenberg, Joseph H. 1971. Nilo-Saharan and Meroitic. In: Berry, J. & Greenberg, J.H. (eds.) *Current Trends in Linguistics Vol. 7, Sub-Saharan Africa*. The Hague: Mouton.
- Greenberg, Joseph H. 1981. Nilo-Saharan moveable-k as a stage III article:(with a Penutian typological parallel). *Journal of African Languages and Linguistics*, 3(2): 105-112.
- Haaland, Gunnar 1978. Ethnic Groups and Language Use in Darfur. In: *Aspects of Language in the Sudan*. Thelwall, Robin (ed.) 181-199. Ulster: The New University of Ulster.
- Keegan, John M. 2016. *Comparative Sara Languages*. Cuenca: Morkeg Books.
- Kutsch Lojenga, Constance 1994. *Ngiti, A Central-Sudanic language of Zaire*. Köln: Rudiger Köppe.
- Nougayrol, Pierre 1999. *Les parlers gula (Centrafrique, Soudan, Tchad), Grammaire et lexique*. Paris : CNRS Editions.
- Santandrea, Stefano 1966. *The Birri Language: Brief Elementary Notes*. (Museum Combonianum, 20.) Bologna: Editrice Nigrizia.
- Santandrea, Stefano 1976. *The Kresh Group, Aja and Baka languages (Sudan)*. Napoli: Istituto Universitario Orientale.
- Vorbichler, A. 1965. *Die Phonologie und Morphologie des Balese (Ituri-Urwald, Kongo)*. Glückstadt : Verlag J.J. Augustin.
- Vorbichler, A. 1971. *Die Sprache der Mamvu*. Hamburg: Verlag J.J. Augustin.