

Do Heiban and Talodi form a genetic group and how are they related to Niger-Congo?



**SUBMITTED FOR AN EDITED VOLUME FROM THE NUBA MOUNTAINS LANGUAGES
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ABSTRACT

Since Greenberg, Kordofanian languages are generally considered to be part of Niger-Congo. However, the number of subgroups they fall into and how far these are related to one another and to Niger-Congo more broadly remains disputed. The paper concentrates on two families, Heiban and Talodi, both of which have alternating nominal affixes and alliterative concord. They are generally considered to be related, but published argument to support this is scarce. The paper reviews the evidence for lexical cognacy and nominal affixing when the proto-forms are compared. The percentage of cognate items on a 200-word list is surprisingly low, less than 10%, making regular phonological correspondences difficult to recover. The nominal affixes show very limited segmental cognacy despite common patterns of semantic grouping. However, their similarities to other Niger-Congo systems are doubtful; many idiosyncratic pairings seem to have no parallel. The paper concludes that Heiban and Talodi may well be independent Niger-Congo branches and the similarities due to more recent borrowing. Kordofanian has retained the essential structures of the Niger-Congo system, but segmental cognacy has become heavily eroded, perhaps due to contact with Nilo-Saharan.

Keywords: Niger-Congo; Kordofanian; Heiban; Talodi

1. Introduction

Kordofanian is conventionally defined as four groups of languages (excluding the Nilo-Saharan Kadu) spoken in the Nuba Hills of Kordofan, southwest of Khartoum in the Sudan (Greenberg 1963; Schadeberg 1989; Schadeberg & Blench 2013). Stevenson (1956-7, 1962-4) was the first researcher to present extensive datasets on these languages. The next major advance in data availability was when Thilo Schadeberg made available both unpublished archive materials and the results of his surveys of Kordofanian (Schadeberg & Elias 1979; Schadeberg 1981a,b,c). This is often thought to establish their classification as Niger-Congo although Schadeberg (1981a:7) himself expressed a sceptical view and apparently regarded the issue as far from settled. Schadeberg says, ‘Greenberg’s affiliation of Kordofanian with Niger-Congo has ... never been seriously challenged. Many authors, however, take a more cautious position, leaving Kordofanian unclassified. Such reticence seems wise in view of the paucity of our knowledge about these languages and their relationships’. Indeed Hammarström (2013) argued that these could be an independent development, although it is safe to say few Niger-Congo specialists would agree with that. Nonetheless, most researchers do not now consider Kordofanian to constitute a single branch, although exactly how many subgroups the known languages fall into remains controversial (Blench 2013). Glottolog¹ treats all four as distinct ‘top-level’ families.

Schadeberg (1981c:123), later reprised in Schadeberg (1989), also provided a more comprehensive overview of Kordofanian, in particular setting out a table of correspondences between Kordofanian affixes and those occurring in other branches of Niger-Congo². The persuasive morphological feature of Kordofanian that has led to its assignment to Niger-Congo are its alternating C(V) prefixes and concord, characteristic of much of Niger-Congo (Williamson 1989; Williamson & Blench 2000). Despite the presence of these systems, actually mapping the segments against other branches of Niger-Congo has proven a challenge.

The Heiban and Talodi families have the most prominent noun class systems and it is usually accepted that these are indeed related to one another, although proof is conspicuous by its absence. For many years the main data source for these two groups was Schadeberg (1981a,b) and this is still the most important comparative wordlist. Roland Stevenson (n.d.) compiled an extensive ‘Koalib-Moro’ wordlist (cf. Blench 1997), but this was never published. Guest (1997a,b; 1998a,b,c,d,e) also undertook a series of studies of Heiban languages which were never published. Recent years has seen a major expansion of data on individual languages, as well as an attempt to describe the inter-relations of Talodi languages in greater depth (Norton & Alaki 2015). For this reason it seems worthwhile to undertake a new analysis of Heiban-Talodi relations and compare them with Niger-Congo more broadly, to see whether a convincing case can be made for their affiliation. The paper³ reviews the data for both Heiban and Talodi (excluding Tegem-Amira whose Talodi affiliation is unclear) and then considers the case for classifying them together. The evidence for linking them to Niger-Congo is then set out briefly, together with some discussion about the process which resulted in their current location, so remote from the remainder of the phylum.

The detail of nominal affix systems for Heiban languages is covered in greater detail since there is no recent overview. The systems for Talodi languages are largely taken over from Norton & Alaki (2015) and so are considered more briefly.

2. The Heiban languages

The Heiban cluster was first characterised by Stevenson (1956-7) as Koalib-Moro and then in a comparative manner by Schadeberg (1981a). Guest (1998e) undertook a separate survey of nominal affix alternations which drew on a larger sample than Schadeberg. Nonetheless nothing like a true reconstruction of the proto-system exists, in contrast to Talodi. This section therefore summarises some of the existing data to make a

¹ <http://glottolog.org/>

² Note that Schadeberg (1981d, 1989) still includes Kadu in Kordofanian, although the text expresses scepticism about its membership.

³ Thanks to Elizabeth Guest for access to her original files on Heiban languages. I was unable to be present at the Paris meeting in 2014, so this paper was contributed subsequently.

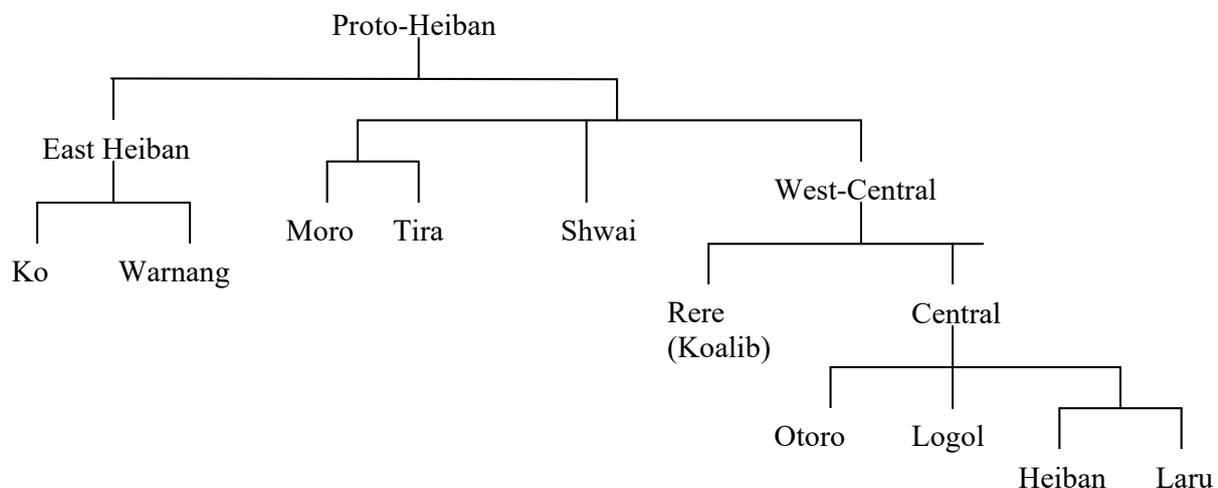
comparison analogous to the Talodi system. The Heiban languages are spoken in the Southeast of the Nuba Mountains, between Dilling and Malakal. For a recent map, see Schadeberg & Blench (2013). Significant publications or unpublished on individual Heiban languages since the 1970s include;

Table 1. Recent publications and documentation on Heiban languages

Language	Publications
Ko [Kau, Fungor]	[Kau, Faris (1978)]
Werni [Warnang]	—
Moro	Black & Black (1971), Guest (1997b, 1998a,d), Gibbard et al. (2009), Jenks & Rose (2011), Jenks (2013)
Tira	Watters (1993, 1995), Stevenson (2009)
Shwai	Guest (1997a)
Rere [Koalib]	Guest (1998c), Quint & Kokko (2009), Quint (2010, 2013)
Otoro	Blench (n.d.), Guest (1998b), Stevenson (2009)
Lukha [Logol]	—
Ebang [Heiban]	Schadeberg & Kossmann (2010), Schadeberg (2010)
Laru	Schadeberg (1981d), Kuku (2012, 2015)

I have not listed all the earlier publications which are covered extensively in Blench (2013). Figure 1 shows the hypothetical internal structure of the Heiban group.

Figure 1. Internal structure of the Heiban group



From the more recent literature we can draw up tables of the noun-class affix alternations attested in individual Heiban languages. Sometimes the concord system is also recorded. Although I have included a column for semantics, this should be treated with appropriate scepticism. Many nouns in a given class do not seem to fit into any overall scheme.

Table 2 sets out the system of Kwalib noun-class affixes established in Guest (1998c) with the semantics expanded from an unpublished wordlist from Khartoum. Quint & Kokko (2009: 26) refer to a more recent analysis of the noun affixes, and a version of this appears in Quint (2013).

Table 2. Kwalib noun-class affixes

No.	sg.	pl.	Semantics
1,2	kw-, k-, ø	l-, nd-	people, animals, trees
2a	-ø	-ŋa	relatives
3,4	kw-	y-	trees
5,6	l-, nd-	ŋ ^w -	round things, body parts
7,8	k-	y-	common objects
9,10	t-	r-	long things, large animals
11,12	t-	y-	large things
15,16	t-	ɲ-	small round things
15a	t-	ɲ-	diminutive (persons)
20	—	ŋ-	liquids, abstracts
21, 22	ŋ-	ɲ-	cow, goat
23, 24	l-	y-	eye, tooth
25, 26	ø-	y-	initial vowel
29, 30	l-	y-	miscellaneous

Source: expanded from Guest (1998c)

Our understanding of the Tira noun-class affix system is based mainly on an unpublished grammar sketch by Roland Stevenson (2009) edited by Thilo Schadeberg. Included in the same publication is part of an MA thesis by Watters (1993) which also sets out the affix system. Table 3 shows a composite table of Tira affixes. The semantics have been compiled from inspection of the examples in Stevenson (2009) but they are extremely loose and many items in particular classes do not obviously fit into these categories. The numbers are restructured to match those in Kwalib.

Table 3. Tira noun-class affixes

No.	Noun stem		Concord		Semantics
	sg.	pl.	sg.	pl.	
1,2	w-, ø-	l-	k,g-	l-	persons, ethnonyms, animals
1,2	ð-	ø-	ð-	k,g-	trees, crops, insects
3,4	l-	ŋ ^w -	l-	ŋ ^w -	collectives with singulative, diminutives
	t-	ŋ ^w -	l-	ŋ ^w -	liquids
4a	none	ŋ-		ŋ-	abstracts
5,6	ø-	n-	k,g-	n-	household objects, some animals
7,8	ð-	y-	ð-	y-	animals, miscellaneous
9,10	ð-, th-	r-	ð-	r-	long things, bushy things
11,12	ŋ-	ɲ-	ŋ-	ɲ-	animals, miscellaneous
15,16	s-	ɲ-	t-	ɲ-	collectives with singulative, diminutives
15a	a-,o-	i-,e-	y-(i-)	y-(i-)	initial vowel

Source: Stevenson (2009: 28)

The Otoro system of noun-class affixes is drawn from the same source. Table 4 is restructured from the table on p. 162 in Stevenson (2009).

Table 4. Otoro noun-class affixes

Class	sg.	pl.	Concord	Example	Gloss	Semantics
1/2	gw-	l-	gw-/l-	gwiji/liji	person	persons
1a		-ŋa			people	persons
3/4	gw-	j-	gw-/j-	gwaŋe/jaŋe	tree	nature
	l-	ŋw-	l-/ŋw-	lɔn/ŋwɔn	dura grain	collectives with singulative
4a	ŋ-		ŋ-	ŋau	water	liquids, abstracts
				ŋəma	strength	
5/6	g-, k-	ɖɖ-, ʃ-	g-, k- /ɖɖ-, ʃ-	gilið/ɖɖilið	hoe	objects
7/8	ð-, th-	ɖɖ-, ʃ-	ð-, th- /ɖɖ-, ʃ-	ðimu/ðimu	scorpion	harmful things
9/10	ð-, th-	d-	ð-, th-/d-	ðe/de	arm	long things
11/12	ŋ-	ɲ-	ŋ-/ɲ-	ŋaŋe/ɲaŋe	child	diminutives
15a	ø-	ɖɖ-	y-/ɖɖ-	ɛɛ/ɖɖilɛ	grindstone	vowel-initial singular
	g-	n-	g-/n-	gini/nini	ear	deep or hollow things
	ð-		ð-	ðitha	eating	verbal noun
	ø-, w-, b-, m-		y-, gw-	amen	bamboo	mass nouns
				wo	breath	
				bulo	dust	
				marɔmɔthɔ	gunshot	

NB. There are further examples of mass nouns with a variety of initials. I have converted Stevenson's original ö to i, based on its position on the vowel chart.

The Moro system of noun class affixes illustrated in Gibbard et al. (2009: 107) is shown in Table 5 and Table 6. I have expanded the lexical examples and semantics based on the Moro dictionary (Blench 2016).

Table 5. Moro paired noun class affixes

Class	sg.	pl.	Concord	Example	Gloss	Semantics
1/2	ø-	l-	g-/k-	evaja/ləvaja uðó/ləðwá	poor person worm	persons vowel-initial singular
3/4	ø-	n-	g-/k-	oʃ:a/nəʃ:a a-bəreɖa/n- e-mərtá/nə-mərtá e-bartəŋ/nə-	milk-pot paper horse tree sp.	round hollow things flat things animals, insects trees
5/6	l-	ɲ-	l-	laŋwata/ɲaŋwata lá:wá/ɲá:wa l-oŋe/ɲ-	water cup mosquito ankle	household objects animals body parts
9/10	ð-	r-	ð-	ðaba/raba ðað/rað ðáp:á/ráp:á	cloud road friend	things in a cluster long straight things persons
11/12	ŋ-	ɲ-	ŋ-	ŋerá/ɲerá ŋəndəri/ɲ- ɲusí/ɲusí	girl ox chick	diminutives domestic animals
13/14	l-	ŋ-	l-	lavəra/ŋavəra l-əðorəba/ŋ-	stick flower of tree	long thin things fruits and flowers, round things
	ð-	y-	ð-	ləbú/ŋəbú ðamala/yamala ðará/yará ðu/ɣu	well camel rope intestine	body parts animals long things
	low V-	higher V-	y-,k-,s-	ayén/eyén λðúni/iðúni	mountain hearthstone	stones

Table 6. Moro unpaired noun-class affixes

No.	Affix	Concord	Semantics
	V-	g~k-	mass nouns
	V-/s-	j-, k-, s-	mass nouns
	ŋ-	ŋ-	mass nouns
	b/p-, m-, ð-	ð-	crops
	ð-	ð-	infinitives

Gibbard et al. (2009) also note there are a small number of single or extremely rare class-pairings. Note that some of the semantics are very similar to Tira (Table 3) but the affixes are not apparently cognate.

The most recent overview of Ebang noun classes in Schadeberg (2010) and Schadeberg & Kossmann (2010).

Table 7, Ebang noun class affixes

No.	Prefixes	sg.	pl.	Concord	Gloss	Semantics
1/2	gw-, kw-/l-	kw-iji	l-iji	gw-, l-	person	persons, trees
3/4	gw-, kw-/j-	kw-ari	j-ari	gw-, j-	tree	trees
4a	ŋ-	ŋ-era	ŋ-era	ŋ-	girl	animals, long thin things
7/8	dh-/j-	dh-uma	j-uma	dh-, j-	snake	harmful or disgusting things
9/10	dh-/d-	dh-ugor	d-ugor	dh-, d-	heart	round hollow things, long curved things
13/14	l-/ŋw-	l-ora	ŋw-ora	l-, ŋw-	foot, leg	animals, long thin things
15a	ø-, V-	uru		i-, y-, gw-	hair	vowel-initial singular
	g-, k-/j-	g-udhur	j-udhur	g-, j-	pig	round things
	g-, k-/ŋ-	g-ol	ŋ-ol	g-, ŋ-	stone	unique

Ebang also has the *-aŋ* suffix for collective nouns referring to persons, found in other Heiban languages.

The most comprehensive overview of Ko noun classes is in Faris (1978) although Ko data also features in Schadeberg (1981a). Table 8 is compiled from the tables in Faris (1978) where the semantics are split from the morphology. Faris does not mark tone and although he discusses concord, does not list it systematically. Faris marks many vowels with a macron, presumably to indicate length, but other data on Ko does not suggest this profusion of length distinctions, so these are omitted in the table. Faris does not specifically list single-class genders, so these are adapted from Schadeberg (1981a: 98). I have not tried to match the class numbers with the rest of Heiban.

Table 8. Ko paired noun class affixes

No.	Prefixes	Examples	Gloss	Semantics
1.	k-/ʃ-	k-ara/ʃ- k-da/ʃ- k-la/ʃ-da	Shilluk mountain biceps	larger objects, people, body parts animals, plants things in ones or twos
2.	t-/d-	t-e/d- t-u/d- t-ibul/d-	hole sister (of male) hollow straw	hollow things relatives on father's side plants and animals
3.	l-/ŋ-	l-oen/ŋ- l-ŋa/ø- l-umto/ŋ-	egg drop of water corpse	round things which are not hollow liquids things to be avoided
4.	ø-/l-	ø-una/l- ø-anuya/l- m-ugu/l-	affine animal afterbirth	anything foreign, people from elsewhere animals (generic)
5.	ʔ-/ɲ-	ʔ-ere/ɲ- ʔ-in/ɲ- ʔ-agr/ɲ-	spear dog baobabs	diminutives domestic animals
6.	w-/l-	w-aŋ/l- w-eɽe/l- w-oɲin/l-	brother home adopted child	people houses
7.	t-/ø-	t-oge/ø- t-ɽu/ø- t-oreŋe/ø-reŋa	thorn hair on head feather	mass nouns protruding things insects
8.	d-/ʃ-	d-ŋr/ʃ- d-ama/ʃ- d-eŋa/ʃ-	elephant locust snake	dangerous or harmful animals female domestic animals
9.	k-/ø-	k-atuŋ/ø- k-ero/ø- k-ere/ø-	tree crop white ant	plants and plant parts insects
10.	ø-/t-	ø-ure/t- ø-ele/t- ø-wa/t-wa	bull seed goat	male domestic animals seeds
11.	ŋ-/ɲ-	ŋ-athin/ɲ- ŋ-ororo/ɲ- ŋ-erea/ɲ-	bushbaby burrowing owl small bat sp.	small animals
12.	l-/ɲ-	l-amen/ɲ- l-emeŋe/ɲ- l-erget/ɲ-	beans warts sesame grains	small round things
13.	t-/ʃ-	t-egal/ʃ- t-agr/ʃ-agr t-emto/ʃ-	small basket lung wood support for building	small spherical things

Both Faris and Schadeberg note that there are many more class pairings which are unique or very low frequency. Schadeberg (1981a: 98) lists the following unpaired classes (Table 9).

Table 9. Ko unpaired noun class affixes

Prefix	Example	Gloss	Also
w-	w-a ^h íj ^h n	forest	
l-	l-í ^h mú ^h tɛ	salt	
k-	k-əlu	smoke	dust, fog, cloud, rain, sand, sky, night
t̥-	t̥-é ^h ɲán	sun	
ŋ-	ŋ-ɲá	spittle	blood, fat, water
ʃ-	ʃ-u ^h yɛ	meat	
ø-, V-	ø-ige	fire	ashes, wind

In the light of this, Table 10 is an extremely preliminary compilation of the possible noun-classes of proto-Heiban, with an even more speculative proto-Heiban (PH) form. It should be compared with the lists in Schadeberg (1981a) and Guest (1998e). Square brackets around the PH form indicate it is too sparsely attested to be safely reconstructed.

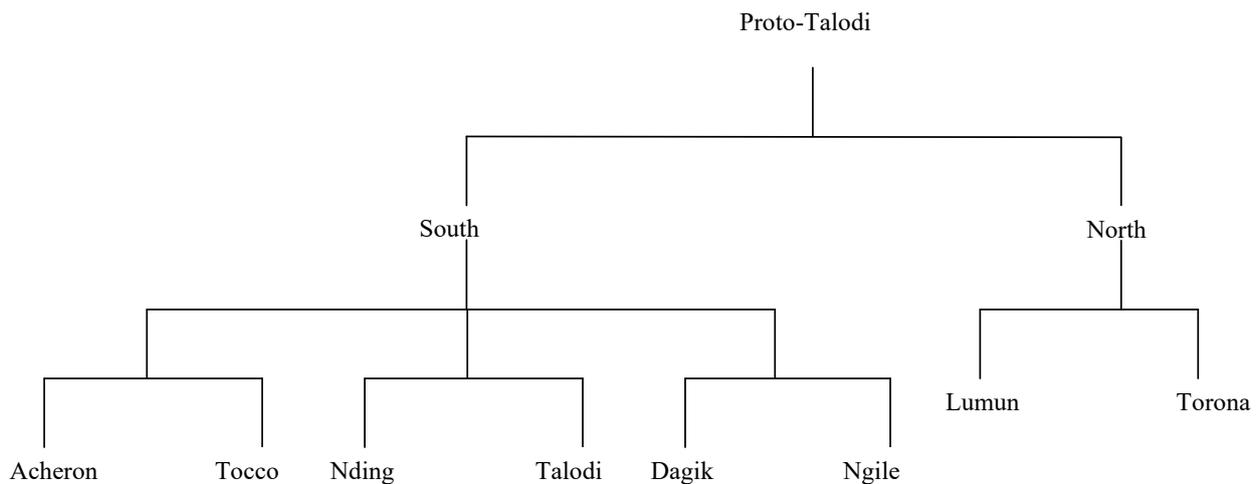
Table 10. Comparative Heiban noun class affixes

PH	Ko	Tira	Moro	Shwai	Koalib	Otoro	Heiban	Laro	Lexical items	Semantics
gw-/li- -ŋa	(w)u- /li-	w-/l- ø-/l-, ø-/ŋa	w-/l- ø-/l-	x-, w-, m-, ø-/l-	kw-/l- li- ø-/ŋa	gw-/ l- ø / li- , - ŋa	kw- , gw- / l- , ø / li- , -ŋa	ɖ- /ŋw- ø / -ŋa	woman, fish, neck, father	persons, ethnonyms some animals parents, sequential children
g(w)-/ j-	k-/ø-	ð-/ø-		x-, w-, m-, ø-/y-	apart from ‘tree’, in persons class	gw / j- ø / ji-	kw- , gw- / j- ø / ji-		tree	trees and plants
li-/ŋw- ?	l-/ŋ- u-/ɬ-	l-/ ŋ(w)- ɽ / ŋ- d- / ø	l-/ŋ- d-/t-	l-/ŋ- ŋ-	l-/ŋw- ŋ-/y-	l-/ŋw- ŋ-/j-	l-/ŋw- ŋ- /j-	k-, g-/y- in unit/mass class	egg, seed, head	round things goat/cow
l-/j-		l-/ ø	l-/ i-	l-	l-/ y-	l-/j-			tooth	eye and other body parts
g-/C- g-/n- ð-/r-	k-/ɟ- —	ø-/ n- ð-/r-	ø / n- ɖ- /ar-	x-, w-, m-, ø-/y- z-/r-	k- / y- ɽ- / r-	k- , g- / j- ð-, ɽ- / d-	k- , g- / j- k- / c- ɖ- / d-	in unit/mass class k-, g-/ ŋw-	belly, ear, stone, wing	common things long things, bushy things
d-/j-		ð- / y- in common things	ð- / ø ð- / y- in common things	z-/y-, ø-	ɽ- / y- d- / c- k- , g- / ŋy-	ð- / j- ɽ- / c- g- / n-	ɖ- / c- , j- ɽ- / c-	l- / ŋw-	in common things	hollow, deep things
ŋ-, t-/ɲ-	ɽ-/ɲ-	ŋ-/ɲ-	y- /ɲ-		t- /ɲ-	ŋ- /ɲ-	ŋ- /ɲ-	in unit/mass		domestic & small animals, weapons
ɽ-,l-/ɲ-	—	ɽ-,l-/ɲ-	—	t-	t- /ɲ-	—	—	—		diminutives
ði- ŋ-	— ŋ-	ð-, ði- ŋ-, ŋə-	ɖə- ŋ-, ŋə-	z- ŋ-	ɽ- , ɽi- ŋ-	ð- , ði- ŋ-, ŋə-	d- , di- ŋ-	d- , di- y-	blood, fat, water	liquids, abstract nouns
[k-]	k-								grass, night, rain, smoke	mass nouns, natural world
[ɟ-]	ɟ-								guts, meat, name	mass or abstract nouns, animates
[ø-/y-]		a-/ i- , e-			ø-/y-	ø-/y-			fire, salt, sun	nouns beginning with a vowel

3. The Talodi languages

In contrast to Heiban, the Talodi group has been the subject of a recent overview which presents a comparative phonology, classification and proposals for noun class reconstructions (Norton & Alaki 2015). It is ambiguous on whether the Tegem [Lafofa]-Amira languages should be included. Some noun-class alternations definitely resemble Talodi, but Tegem often show quite variant lexicon. Blench (2013) concluded that Tegem-Amira was probably better explained by contact and constitutes a distinct branch of Niger-Congo, so it is excluded from the discussion here. The Talodi group would then consist of eight languages ('Narrow Talodi'), whose approximate configuration is shown in Figure 2;

Figure 2. Internal structure of the Talodi group



The Torona language is moribund, down to a single speaker interviewed in 2012 (Norton & Alaki 2015) and the only data available is their discussion, so their account is adopted here. Map 1 shows the known locations of the Talodi languages.

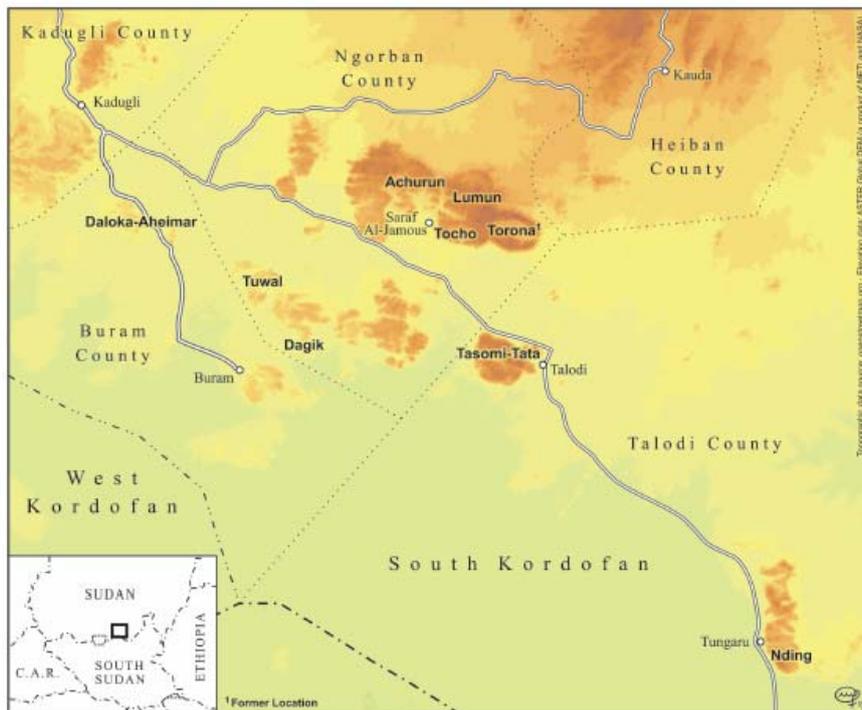
Table 11 shows the consonants of proto-Talodi;

Table 11. Proto-Talodi consonants

	Labial	Dental	Alve- olar	Retro- flex	Pala- tal	Velar	Glottal
Plosive	p b	t̪ d̪	t d		c ɟ	k g	
Implosive							ɗ
Nasal	m		n		ɲ	ŋ	
Laterals			l				
Trills			r				
Flap			ɾ	ɽ			
Fricative	ɸ β	θ ð	s z		ɕ ʝ	x ɣ	h
Approximant	w				y	ɥ	

Source: Norton & Alaki (2015)

Map 1. The Talodi languages



Source: Norton & Alaki (2015)

Similarly, Table 12 shows the proposed vowels for proto-Talodi.

Table 12. Proto-Talodi vowels

	Front	Central	Back
Close	i		u
Mid-High	ɪ		ʊ
Mid-Low	ɛ	ə	ɔ
Open		a	

If it is the high vowels that split as part of an ATR system, then there is more than a passing resemblance to the system proposed for proto-Bantu.

Table 13 shows the proposal in Norton & Alaki (2015) for noun-class affixes in individual Talodi languages as well for a hypothetical proto-Talodi. The reader is referred to the original source for further details on the compilation of these datasets.

Table 13. Talodi noun-class affixes

Proto-Talodi	Tor	Lum	Toc	Ach	Dag	Tuw	Dal	Tas	Ndi	Lexical items included	Semantics
*p/ø	p/0	p/0	p/0	b/w	p/0	b/0	b/y	p/0		person, lyre, ostrich, wife	people, birds, man-made objects
*p/k	p/w	p/k	p/k	b/g	p/k	b/k	p/k	b/g	p/k	tree, father, mother	plants, kinship terms
*ø/k	0/k	0/k	w/g	w/k	w/g	0/k				giraffe, gazelle	hunted animals
*c/k	c/k	c/k	c/k	z/g	s/k	ð/k	s/k	j/g	c/k	breast, eye, neck, tooth	symmetrical body parts
*c/m	c/m	c/m	c/m	z/m	s/m	ð/m	s/m	j/m	c/m	back ¹ , bone, egg, head, heart, seed, star, sun	vital body parts, round objects
*k/ø	k/0	k/0	k/0	g/w	k/w	k/w	k/w	g/l	k/0	back ² , ear, field, knee	distinctive body parts
(*k/n)	k/n		k/n	g/n	k/n				k/m	knife, name, nose, road, scorpion, skin/shield, spear, tortoise, wing	distinctive animals, accessories, land
*k ^w /ø	k ^w /?	k ^w /0	k/0	g/w	k/w	k/w	k/w	g/l	k/0	moon	
*t/n	t/n	t/n	t/n	y/n	t/n	ɾ/n	d/n	g/l	t/n	bark, cloud, guts, hair	long thin objects
			k/n	g/n			ɖ/n		ɽ/n	pig, worm	
*ɽ/l	ɽ/l	ɽ/l	ɽ/l	ɖ/r	ð/r	ɖ/r	ɽ/l	ɖ/r	ɽ/n	chicken, dog, fire, mouth, rope, thorn, year	long objects, domestic animals,
(*ɽ/n)		ɽ/n							ɽ/t	blood, fat, water, drum, nail	liquid portions, small objects,
			ɽ/n		ɽ/n	ɽ/n	ɽ/n	ɽ/n	ɽ/n	bird, child, dog, fish, elephant, pig, knife	animals
*ɽ	ɽ	ɽ	ɽ	ɽ	ɽ	ɽ	ɽ	ɽ	ɽ	blood, fat, milk, water	liquids
*t	t	t	t	y	t	ɾ	ɖ	d		dust, earth, grass	uncountables
*p	p	p	p	b	p	b	p	0	p	fog, rain ²	wet masses
*k	k	k	k	g	k	0	k	g	k	ash ¹ , wind	dry masses
*k	k	k	k	g	ð	ɖ	ɽ, k	g	k	glossonym (word)	speech
*ɽ		ɽ		(ɖ)	(ð)	(ɖ)					abstracts

4. Is Heiban-Talodi a single branch of Kordofanian?

4.1 General

With the exception of Glottolog, most discussions take Heiban and Talodi to constitute a single branch of Kordofanian, but proof for this hypothesis is distinctly lacking. Arguments have been based on typology, the Niger-Congo-like system of affix alternation and concords, and similarities such as the velar nasal prefix for mass nouns, which may correspond to Niger-Congo *m-*, or Bantu Class 6 (Schadeberg 1989). Greenberg's original argument had a crypto-geographic component; it seemed unlikely that groups in such a restricted and in an area isolated from the main body of Niger-Congo could not be closely related (see also Bendor-Samuel 1989). But with an expansion of data on all branches of Kordofanian, it seems the evidence for a coherent branch of Niger-Congo is very weak. This can be seen when exploring cognates with the main body of Niger-Congo. Although all four (or five) branches of Kordofanian have clear sets of cognates, they are not always the same lexical items. Even Heiban and Talodi seem to differ in their relationship with Niger-Congo. This is an argument too lengthy to make in detail in this paper, but it opens up the possibility that the similarities between Heiban and Talodi are due to borrowing and regional influences rather than genetic affiliation.

There are two main types of evidence for a Heiban-Talodi link in the present state of documentation, lexical cognates and the nominal affix system. The phonology of the two families is similar, and is shared with other Nuba Hills languages, including Nilo-Saharan. Comparative syntax is simply not documented in enough depth to draw any conclusions. I include an observation on a distinctive polysemy found in Heiban and Talodi, which is intriguing because it is found globally, but not in West African Niger-Congo.

4.2 Lexicon

Lexical cognates between Heiban and Talodi, even for basic vocabulary, are not very abundant, except where, in word like 'ear', they are shared with other Kordofanian languages and with broader Niger-Congo, which is evidently not proof of a special relationship. Table 14 sets out as many examples as I can find of lexemes where the apparent proto-forms are cognate in the two families, sometimes with a rather charitable notion of similarity. Based mainly on 200-word lists in Schadeberg (1981a,b), proposed proto-Heiban forms are compared with the reconstructed Talodi forms in Norton & Alaki (2015). As noted, Heiban is far more internally diverse than Talodi and the shape of the proto-form is sometimes unclear. I have excluded cases where the proto-form in one family only matches one or two languages in the other, on the grounds this might well indicate borrowing.

Table 14. Potential shared cognates between Heiban and Talodi proto-forms

Gloss	Proto-Heiban	Proto-Talodi	Comment
belly	*k-aaRi/ŋ-	*C-a[a]rək/kə-	Extremely similar to a widespread Nilo-Saharan root for ‘belly, intestines’ and thus a probable regional borrowing
dry	*ø-undu/k-	*ø- andu[k]/t~k-	
ear	*k-εeni/ŋ-	*k-ε[ε]nu/ ø-	Found across all Kordofanian languages and in virtually all Niger-Congo branches, reducing its evidential value.
fire	*iiga	*t-ɪ[ɪ]k/ɪ-	
give	*N-dɛ-dí	*N-dí	
guts	*t-y/ŋ-u	*t-u[u]k/n-	
hear	*g-aani/n-	*g-eenu/w-	The root is the same as ‘ear’ and thus not independent evidence
hole	*li- buŋul/ŋu-	*t-ɔbɔ/n-	
horn	*l-uuba/ŋ-	*t~C- uubɔk/n~m-	Heiban reflexes confined to three languages
left side	*t-agur	*ø-ɔgɔɛ /C-	
name	*C-irijŋ	*k- ɔlɔŋŋ/N~ø-	
pull	*uudɪ	*aadu	
red	*k-ɔɔɪ	*ɔɔɪɛ	
rope	*d-aar/ŋw-	*t-ɔ[ɔ]lɔk/ɪ-	
small	*-itti(ŋ)	*ɔtɪɛ(ŋ)	Also widespread in West African Niger-Congo
star	*l-ɔrɔm/ŋ-	*C-ɔ[ɔ]dɔt/m-	
stone	*k-adɔl/y-	*p-ədɔk/m-	
tongue	*d- iŋgɔla/r-	*t-ɔlɔŋɛ/ɪ-	Assuming metathesis. A rare item where the noun class affixes in Heiban and Talodi match
tooth	*l-iŋgat/y-	*C-əni[t]/k-	This root is very widespread in all Niger-Congo branches and much of Nilo-Saharan, so not diagnostic
wing	k-ibɔ /tʃ-	*k-ɔbɪ/ø-	Not attested throughout Talodi or Heiban probably due to semantic shifts to ‘shoulder/arm’. Matching prefix but vowel metathesis.

Twenty items over a wordlist of 200 or 10%, is hardly an impressive total, especially when some of the ‘compromised’ items are withdrawn from consideration. A figure like this is barely above the level of chance. None of the numerals are similar, nor are any words for persons. The very small number also makes the quest for regular sound correspondences unfeasible. There is no evidence that extending the list would increase the number of resemblances.

4.3 Noun class affixes

The noun class affixes of Talodi is better understood than Heiban, but still it is difficult to see what the proto-affix should as the class system varies substantially between languages. Stevenson (1952 et seq.) was heavily influenced by Bantu morphology and semantics and tried to fit the affix systems of the languages he studied into a frame of nominal classes with semantic assignments. Still the Heiban-Talodi system has some idiosyncrasies which seem to point to a common origin.

All Kordofanian languages today show a dominant pattern of C- or ø- prefix alternation. This is typologically extremely unusual within Niger-Congo, where prefixes are typically V- or CV-. Even where it does occur in West Africa, such as in Northwest Kainji, the outcome is usually initial CC clusters, not C- prefixes. As Schadeberg (1989) observes there is some morphological evidence for initial CV- prefixes and indeed this must have been the case, if these prefixes are indeed cognate with those elsewhere in Niger-Congo. The assumption must be that the original canonical form of Kordofanian nouns was CV-CVCV. The

loss of C₁ in the stem led to CV-VCV and then C-VVCV, which is widely attested synchronically. This is the pattern across Heiban, Talodi, those parts of the Rashad group which have noun class markers, and Katla-Tima (though these are probably not true class prefixes). So either this change occurred when these language did exist in a single proto-language or else this is a regional typological shift, perhaps under influence from neighbouring Nilo-Saharan languages.

§2 and §3 present a preliminary model of Heiban and Talodi noun affixes and their broad semantic associations. It is evident that the semantic associations show more parallels than the affixes show segmental cognates. Table 15 shows a comparison of Heiban and Talodi noun classes, based on semantics. I have not tried to assign class pair numbers.

Table 15. Comparison of Heiban and Talodi noun affixes

Semantics	Heiban	Talodi
Persons	*k ^w ,g ^w -/l-	*p,b-/ø-
Trees and plants	*k,g/y-	*p-/k-
Round things, vital body parts	*li-/ŋ ^w -	*ʃ-/m-
Symmetrical body parts	*l-/j-	*ʃ-/k-
Long thin objects, bushy objects	*ð-/r-	*t/n
Small objects, animals	*ŋ-, t-/ɲ-	*ŋ-/ɲ-
Liquids	*ŋ-	*ŋ-
Uncountables, [dust, grass]	*k-	*t-

As will be apparent, segmental cognates are sparse, but the cognacy of ideas between Heiban and Talodi is evident. One of the striking features that seems to bring together Heiban and Talodi is the assignment of specific lexical items to the same nominal affix pairing, no matter how unclear the semantics. Thus, ‘lyre’ and ‘ostrich’ are put in the same class, although the affixes which alternate are not cognate. Similarly ‘egg’, ‘seed’ and ‘head’. Unfortunately, this can be interpreted in two senses, either as evidence for a deep connection between the two or as a regional cognitive association which is non-genetic.

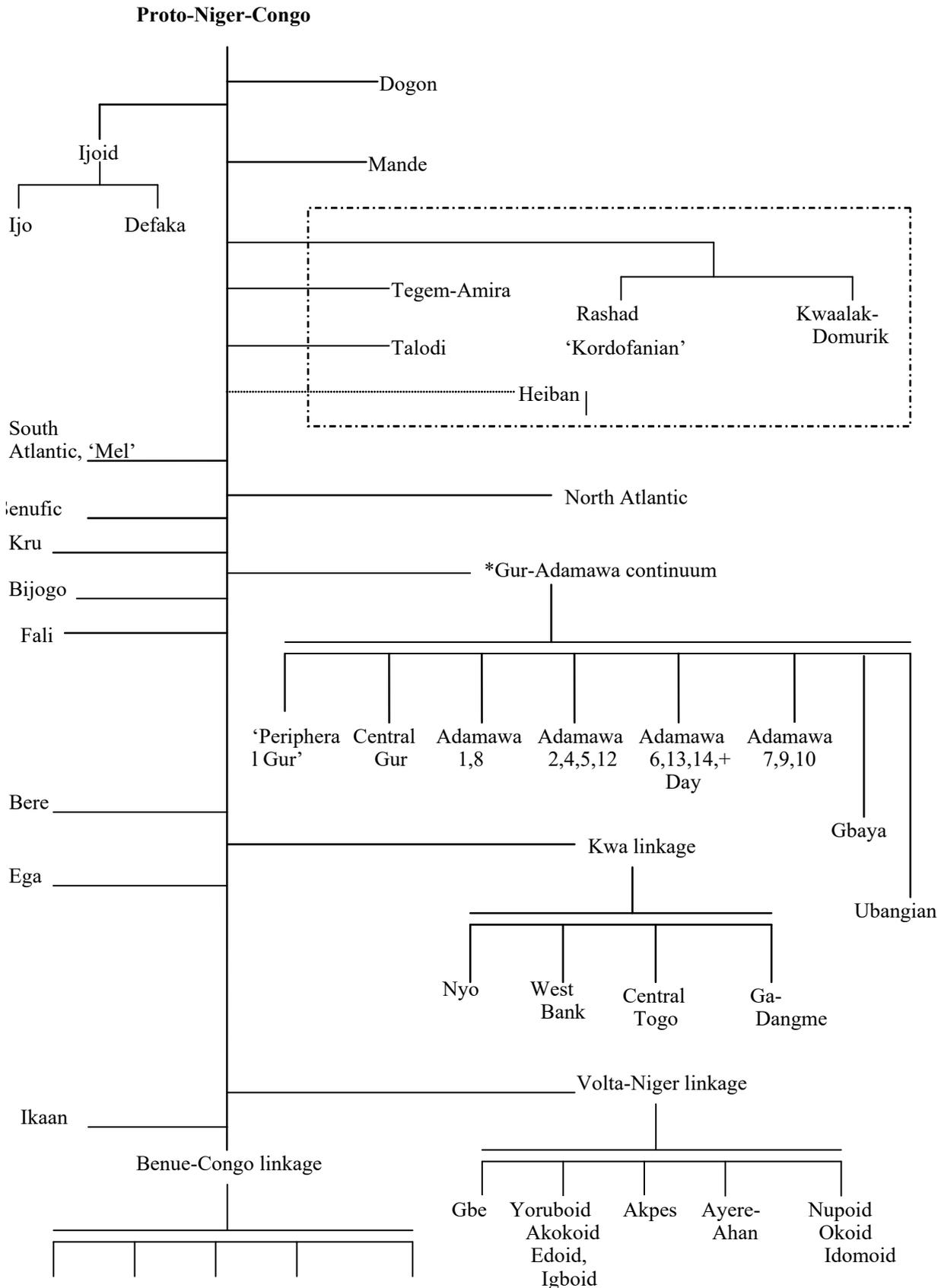
4.4 Polysemy

One of the most intriguing polysemies in Kordofanian is that between ‘rain’ and ‘snake’. The idea that that rain and snakes are connected via the rainbow has a global distribution, but is not found in West Africa. However, in both Heiban and Talodi.

5. How far do Heiban-Talodi affixes correspond to the remainder of Niger-Congo?

If it is accepted that Kordofanian does not constitute a genetic unity, then the problem remains as to the placing of individual branches within the broader framework of Niger-Congo. Figure 3 presents my most recent version of the Niger-Congo ‘tree’ with all the usual reservations.

Figure 3. Niger-Congo restructured



It is possible to show that a small number of lexical items with specific prefixes do have fairly clear cognates outside the Kordofanian region. The following tables only cite cases where the noun-class affixes are

evidently cognate. Table 16 shows a cognate set for 'ear/hear' where the singular prefix with a velar is found both across Kordofanian and in a representative sample of languages in West African Niger-Congo.

Table 16. Kordofanian cognates for 'ear/to hear'

Family	Subgroup	Language	Attestation	Gloss	Source
Dogon		*Dogon	sugunu	ear	Ho04
Kaalak-Domurik		Kaalak	gu-no/u-	ear	RCS
Kaalak-Domurik		Domurik	kò-nò /i-	ear	Sc12
Kordofanian	Proto-Heiban		*g-aani/n-	hear	Sch81a
Kordofanian	Proto-Talodi		*g-eenu/w-	hear	Sch81b
Kordofanian	Talodi	Asheron	ge-nu/we-	hear	No00
Atlantic	South	Gola	ke-nu	<i>öhr</i>	We21
Bijogo		Bijogo	kɔ-nnɔ /ŋa-	ear	Sg
Kwa		Alladian	núkù	<i>oreille</i>	ALKwCI
Kwa	GTML	Animere	gu-ɲũ /a-	ear	Ca

Table 17 shows Kordofanian cognates for 'knee' with other branches of Niger-Congo, showing the persistence of the k- prefix in the singular. Notably, the plural prefix seems to show no consistency within Nuba Hills languages and certainly no obvious correspondence with outside Niger-Congo branches.

Table 17. Kordofanian cognates for 'knee'

Family	Subgroup	Language	Attestation	Gloss/comment	Source
Dogon		Tebul Ure	kundugɔ	knee	RMB
Kaalak-Domurik		Tima	kù-rúŋò /i-	knee	Sc12
Kordofanian	Talodi	Masakin	k-ɔŋɔ/m-	knee	Sch81a
Kordofanian	Heiban	Warnang	kərgá/kʀrgá	knee	Sch81b
Kordofanian	Heiban	Ko	k-régé/ɟ-	knee	Sch81b
Mande		Soninke	xuruŋi/o pl. -onu	<i>genou</i>	VV
Kru		Jrewe	kùrù	<i>genou</i>	ALKrCI
Ubangian		Yakoma	li-kũrũ	<i>genou</i>	Mo95
Kwa	Guang	Chumburung	kù-ŋúrí?	knee	Sn89
Kwa	GTML	Igo	ì-lùkù /a-	if metathesis	JR

Schadeberg (1989: 72) makes some further proposals for links with non-Kordofanian Niger-Congo. The most well-known of these is the ŋ- prefix for mass nouns, attested in both Heiban and Talodi. Although this could correspond to m- in some languages, a nasal or velar prefix for 'water' for example is widely attested in West Africa (Table 18). The evidence for a second syllable in Talodi, something like -l(i) is quite strong and Gbaya and Ubangian seem to have lost the nasal prefix and only retained C₂V₂.

Table 18. Kordofanian cognates for 'water'

Family	Subgroup	Language	Attestation	Gloss	Source
Rashad	Tagoi	Moreib	ɲai	water	RCS
Kordofanian	Lafofa	Tegem	ɲii	water	RCS
Kordofanian	Talodi	P-Talodi	*ɲ-ɪl(ɪ)	water	NA15
Kordofanian	Heiban	P-Heiban	*ɲ-aw	water	Sc81a
Mande		Mende	ɲia	water, rain, river	VV
Atlantic	North	Nalu	a-ɲɔl	water	Wi07
Kru		Bakwe	ní, níé	<i>eau, fleuve</i>	Ye09
Kru		Grebo	ni	<i>eau</i>	ALKrCI
Kru		Aizi	nri	<i>eau</i>	He71
Kru		Kuwaa	nímí	<i>eau</i>	ALKrCI
Gur	Isolate	Tiefó	ò-ɲú	water	Ha13
Gbaya		P-Gbaya	ɲi	<i>eau</i>	Mo95
Ubangian		Ngbaka	li	<i>eau</i>	Do07
Ubangian		Indri	ɲgwa	water	Sa50
Ubangian		Sango	ngú	<i>eau</i>	Mo95
Kwa		Ga	nũ	water	Kr99
Bantu		CB, PB	-jí, -njí, -yíjì	water	G, BLR3

Schadeberg also cites the prefixes on the word for 'egg' as *li-/ɲ^w-. Norton & Alaki (2015) reconstruct proto-Talodi as ʃ-/m- so this cannot be cognate. This must be based on Heiban which has something like *l-ɔɲ/ɲ^w-ɔɲ for 'egg'. The problem is that other Niger-Congo languages do not seem have segmental cognates with this root. It is true that for the GTM [Heine's Togo-Remnant] languages a prefix *lV-* should probably be reconstructed, although there are no nasals in the plural forms, and the diverse GTM roots do not correspond to Heiban. Similarly, some Kainji languages have a *li-* prefix for 'egg', for example Shau *li-kpa/tu-kpa*, the apparent source of De Wolf's Benue-Congo reconstruction. But again the plurals do not have a nasal and the root is not cognate. In this case, the diversity of prefixes on words for 'egg' is so great that evidence for almost any correspondence can be constructed.

Similarly, Heiban and Talodi have a 'trees' class, which is familiar from Bantu. Schadeberg (1989:72) give this as *gu-/dʒ- which is Heiban, since Talodi is *p-/k- according to Norton & Alaki (2015). The pronominal prefix (not the noun itself) for 'tree' in Bantu is *gu/gi- according to Meussen (1967:97) where as the class 3/4 nominal prefixes are *mu-/mi-. However, 'tree' in Bantu is -tí (and elsewhere in Niger-Congo), whereas in Heiban the root is something like *-aari and the singular prefix a labialised velar, k^w- or g^w-. The plural prefix in Heiban is highly diverse; there is a choice of y-, dʒ-, ø-, ɲ^w-, n-, r-, ʃ-, l-. As with 'egg' the problem is that the root does not show cognacy and the range of prefixes in other Niger-Congo languages is so wide that a match is easy to make and thus has a low evidential value.

6. Conclusion

The relationship between Heiban and Talodi is perplexing, to say the least. Although the two families share significant typological commonalities, lexical and thus segmental cognates are extremely scarce. Apart from the ɲ- prefix for mass nouns, and possibly the ɲ-/ɲ- pair for small things, none of the nominal prefixes can be definitely mapped against one another, although the content of noun classes is often strikingly similar. The content of noun classes in turn bear some relation to other Niger-Congo languages (persons, trees, liquids) but these semantics are often self-evident and do not show the detailed similarities that might be expected. A couple of words, 'ear', 'knee' do show similarities in both root and prefix to other Niger-Congo languages. Outside these rare cases, arguments for segmental cognacy of prefixes are sabotaged by the lack of cognacy in roots and the wide choice of possible matches. Heiban and Talodi share a feature with the Rashad group, the reduction of CV- prefixes to C-, typologically highly unusual in Niger-Congo as well as at least one regional polysemy abset in West Africa.

Strikingly, both Heiban and Talodi show numerous cognates with West African Niger-Congo, but rarely with the same roots. This would support the idea that these are distinct branches whose similarities are a consequence of long-term contact. In a sense, this is not so surprising in the Nuba Mountains, where the nature of the terrain induces high levels of local interaction. Further investigation and comparison with neighbouring Nilo-Saharan languages would undoubtedly show high levels of mutual influence.

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