Comparative Heibanic

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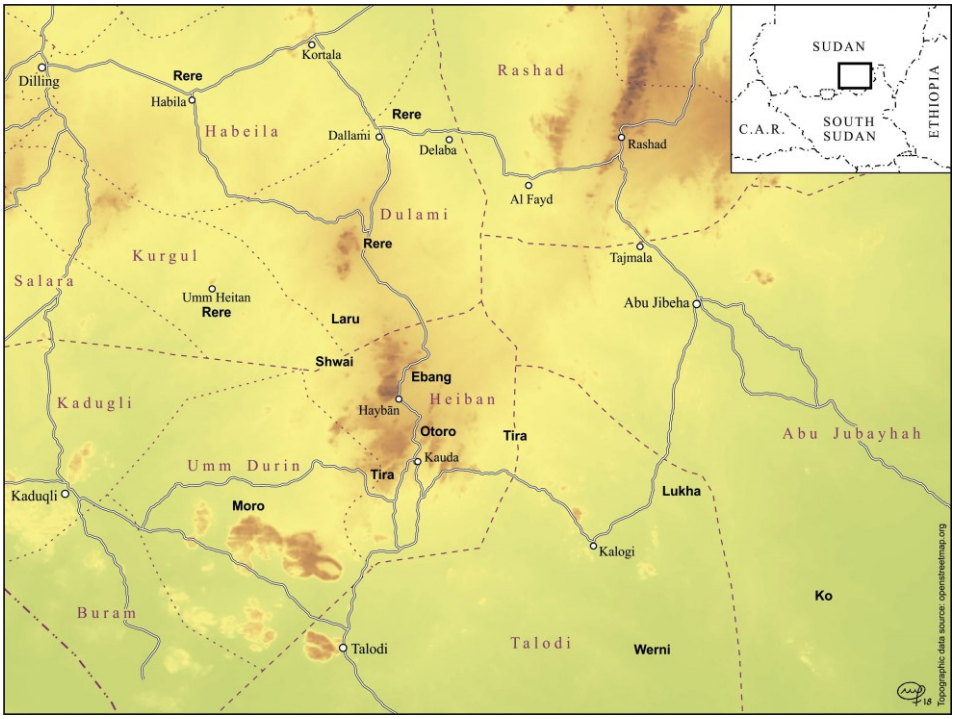
1 Introduction

This paper is an overview of the Heibanic languages, part of the disputed Kordofanian branch of Niger-Congo. It outlines the possible phonemic inventory of Proto-Heibanic [PH], and then sets out a series of cognate sets which provide evidence for the reconstruction of individual phonemes. The only previous synthesis of Heibanic is Schadeberg (1981a), which remains an important source for some of the lesser-documented speech varieties. Not all attested phonemes are supported by individual datasets. The paper makes use of modern published literature, as well as the unpublished materials of Roland Stevenson (1925-1990), listed in the references as Stevenson (ined.). Blench (1997) published a short catalogue of the files in his storage boxes. The final section of the paper synthesises the possible noun-class alternations of Heibanic and speculates on their semantic associations. The absence of modern documentation on some varieties makes this inevitably a work in progress.

The Heibanic languages were first characterised by Stevenson (1956-7, 1962-64) as 'Koalib-Moro' and subsequently by Schadeberg (1981a), who published a comparative wordlist with analyses. The Heibanic languages (see TABLE 1) are spoken in the southeast of the Nuba Mountains, between Dilling and Talodi. MAP 1, from Schadeberg & Blench (2013), shows the approximate location of these languages. The continuing civil war in Sudan has displaced many communities and there are significant diaspora groups in Khartoum. Some smaller languages may be severely endangered.

Heibanic was formerly considered one of the branches of Kordofanian, itself a primary branch of Niger-Congo (Greenberg 1963; Schadeberg 1989). However, in recent times it has become clear that Kordofanian is not a genetic unit and that it consists of several independent branches (Blench 2013). Blench (2018) considered the claims that Heiban and Talodi form a branch, but found the evidence to be less than convincing. However, both have rich noun class systems and some of the prefix alternations look remarkably similar to those

present in the other branches of Niger-Congo, so we can presume the relationship is genetic.



MAP 1: The Heibanic languages

The literature on Heiban was reviewed in Blench (2018) and some preliminary proposals made for the reconstruction of its noun classes. This paper extends the evidence base for Proto-Heibanic by setting out the evidence for the individual reconstructions which underlie the suggested proto-forms. Fresh data have emerged for several languages, although many remain severely underdocumented. It is intended to complement the comparative study of the Talodi branch by Norton & Alaki (2015).

Elisabeth Guest[1] (1998e) undertook a separate survey of nominal affix alternations which drew on a larger sample than Schadeberg (1981a). Significant newer publications and unpublished material on individual Heiban languages since the 1970s are listed in TABLE 1.

[1] I would particularly like to acknowledge Elisabeth Guest's kind permission to make use of her unpublished materials on the Heibanic languages.

LANGUAGE	PUBLICATIONS
Rere [Koalib]	Guest (1998c), Quint (2009), Quint (2010a,b, 2018), Quint & Manfredi (2020), Boychev (2013)
Ebang [Heiban]	Meinhof (1943-1944), Schadeberg & Kossmann (2010), Schadeberg (2010, 2020)
Ko [Kau, Fungor]	Faris (1978)
Werni [Warnang]	No new data
Moro	Black & Black (1971), Guest (1997b, 1998a,d), Gibbard et al. (2009), Rose (2013), Rose et al. (2014) Jenks & Rose (2011, 2012, 2015, 2017), Jenks (2013, 2014), Jenks & Sande (2017), Naser & Rose (2020), Jenks et al. (2024)
Tira	Watters (1993, 1995), Stevenson (Schadeberg 2009)
Shwai	Guest (1997a)
Otoro	Blench (n.d.), Guest (1998b), Stevenson (Schadeberg 2009)
Lukha [Logol]	No new data
Laru	Schadeberg (1981b), Kuku (2012, 2015)

TABLE 1: Recent publications and documentation on Heiban languages

I have not listed all the earlier publications, which are covered extensively in Blench (2013). Particular attention is drawn to Jenks et al. (2024), published since the initial version of this paper, which is a full-length grammar of Moro with a significant dictionary appended. Its findings are incorporated into the revised text.

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 due scepticism. Many nouns in a given class do not seem to fit into any overall semantic scheme.

FIGURE 1 shows the hypothetical internal structure of the Heibanic group, slightly updated from Blench (2018). Schadeberg (1981a) uses various lexicostatistical procedures to come up with different genetic trees. However, the present classification is based on more impressionistic shared lexical items.

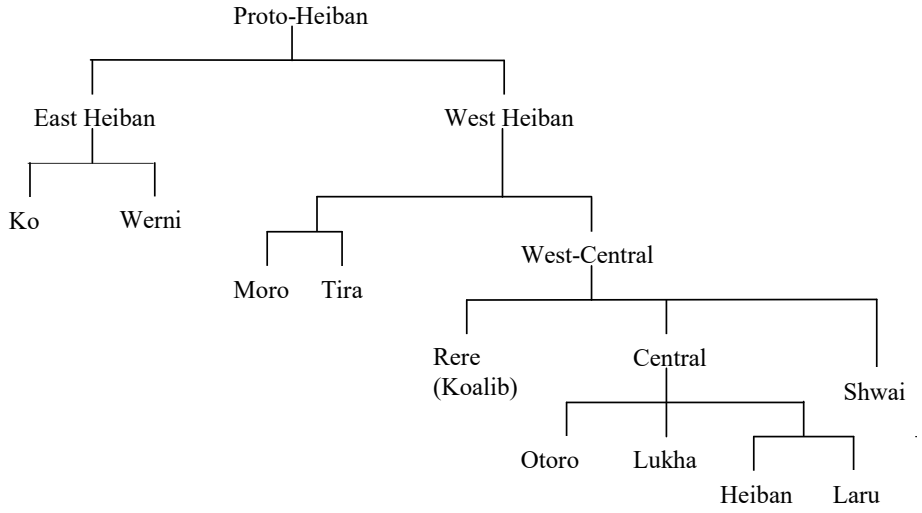


FIGURE 1: Internal structure of the Heibanic group

2 Phonemic inventory

2.1 Consonants

The reconstruction of the Proto-Heibanic phonemic inventory encounters difficulties from the varying transcriptions in different sources, particularly in relation to dentals. The consonants otherwise are relatively uncontroversial, and wherever a shared lexeme provides evidence for a specific consonant, this is mentioned. By contrast, the vowels and tones are largely guesswork, as they are not apparent from the datasets. TABLE 2 shows my reconstruction of the consonants of Proto-Heibanic.

	LABIAL	DENTAL	ALVE-OLAR	RETRO-FLEX	PALA-TAL	VELAR	GLOT-TAL
Plosive	p b	t̪ d̪			c ɟ	k, k^{w} g, g^{w}	
Fricative	f v	θ ð	s				h
Nasal	m		n		ɲ	ŋ	
Laterals			l				
Trills			r				
Flap				ɽ			
Approximant	w				y		

TABLE 2: Proto-Heibanic consonants

For Rere [Koalib], Quint (2009: 49) proposes a distinction between 'plain' and 'strong' consonants, and he marks the 'strong' consonants by doubling. These are also transcribed in the wordlists in Schadeberg (1981a) for some languages. TABLE 27, which presents the dataset for 'bad' and shows consistent *-kk-* in medial position, is the only example where this can be reconstructed. This is presumably the same as the fortis/lenis distinction found in West African Niger-Congo languages, such as Upper Cross and some Plateau languages. Kuku (2012) similarly transcribes these for Laru and it is plausible that the voiced obstruents showed this distinction in PH.

Homorganic prenasalisation was also characteristic of PH. Dental stops are preceded by /n/, bilabials by /m/ and velars by /ŋ/ (Schadeberg 1981a: 119 for *nD-). Not all the attested prenasalised segments can be reconstructed. Consonants show limited prosodic modification, but there is evidence for /kʷ/ and /gʷ/ contrasting with their unmodified counterparts.

This should be compared with the table in Schadeberg (1981a: 116). I have omitted the fortis/lenis contrasts that he includes, although I think some of these are quite plausible, as the evidence is often contradictory. He proposes an additional liquid *L, based on *l* ~ *ɾ* correspondences. I prefer to reconstruct this as *ɽ. Guest (e.g., in 1998e) transcribes /x/ for several Heibanic languages, but this phoneme is not recorded by other authors, so I have omitted it.

2.2 Vowels

Vowels are more problematic. Phonologies of Heibanic languages (e.g., Guest 1997c) suggest that they have nine vowels arranged in +/- ATR sets, as with Talodi. The general pattern of vowels in Nuba Mountain languages has been reviewed in Bashir & Rose (2024), although they appear to consider that languages do not have ATR systems unless explicitly mentioned by the author. But transcription moves on and it seems more plausible that languages with eight or nine vowels are indeed harmony systems. Kuku (2012) proposes eight vowels for Laru, which lacks the +ATR counterparts of the mid-vowels /ɛ/ and /ɔ/. Quint (2009) sets up a quite different inventory for Rere (TABLE 3).[2]

[2] Rere is technically the main dialect of Koalib and the one in which most materials have been published. I therefore use it in preference to the more general cover term Koalib.

	FRONT	CENTRAL	BACK
Close	i		u
Mid-High	e		o
Mid-Low	ɛ	ɐ	ɔ
Open		a	

TABLE 3: Rere vowels (Source: Quint 2009)

Jenks et al. (2024: 19) argue for quite a different approach to the vowels of Thetogovela Moro (TABLE 4).

	FRONT	CENTRAL	BACK
Close	i		u
Mid-High	e	ə	o
Mid-Low		ɜ ə	
Open		a	

TABLE 4: Moro vowels (Source: Jenks et al. 2024)

Moro was previously analysed as having seven vowels. The vowel /ɜ/ is written in the orthography as *ë*, but the additional vowel /ə/ is not marked. Indeed, the authors point out that the two are difficult to distinguish perceptually. Moro has vowel harmony (see Ritchart & Rose 2017), in which the vowels /e a o ə/ alternate with /i ɜ u ə/ and roots contain vowels from only one of the sets.

However, these distinctions are not transcribed in the major comparative sources (Stevenson ined.; Schadeberg 1981a). TABLE 5 shows the proposed vowels for Proto-Heibanic, which I consider to have been an ATR system.

	FRONT	CENTRAL	BACK
Close	i		u
Mid-High	ɪ		ʊ
Mid-Low	ɛ	ə	ɔ
Open		a	

TABLE 5: Proto-Heibanic vowels

Quint (2009: 41) argues that Rere shows systematic length contrast in vowels, as illustrated in the examples in TABLE 6.

RERE	GLOSS	RERE	GLOSS
kéràò	'snake'	*kéeráo*	'fawn'
kèɽà	'skull'	*kèɽáa*	'season'
kétɔ̀	'temporary pool'	*kètɔ̀ɔ̀*	'froth'
lòmòr	'stick'	*lóómór*	'period'

TABLE 6: Rere long/short vowel contrasts

On the other hand, Laru (Kuku 2012), and indeed most other languages for which we have evidence, does not show such contrasts. Nonetheless, as the reconstruction for 'belly' (TABLE 18) shows, a consistent transcription of the stem-initial vowel as *aa-* argues for a possible contrast of the central vowel in Proto-Heibanic. TABLE 25 gives evidence for the long vowel -εε- in PH. The widespread development of length contrast in Rere may be a local innovation.

2.3 Tones

Proto-Heibanic was almost certainly tonal. Schadeberg (1981a) transcribes high, low and falling tones for some languages. This system is independently confirmed for Shwai in Ali et al. (1998), and for Tira in Watters (1993). Quint (2009) and Kuku (2012) propose a similar two-tone height system for Rere and Laru with an additional rising tone. Moro (Jenks et al. 2024: 89) also has two contrastive tone heights, which are only present on nouns. These occur on vowels, but also on nasals and on /r/ when syllabic.

3 Heibanic reconstructions

3.1 General

Schadeberg (1981a) is the only existing proposal for the Proto-Heibanic lexicon, although Guest (1998e) and Blench (2018) have put forward a scheme for nominal affix alternation. In an ideal world, we would have comparable transcriptions for all the languages included and modern phonologies. However, the data are more of a mosaic, and have to be normalised to develop a comparative lexicon. This section puts forward a small sample of the items which will potentially be included in such a lexicon to illustrate the arguments for the reconstruction of phonemes and affix alternations. The entries for

individual languages are derived from the sources listed in TABLE 1, harmonised to a common transcription. I have arranged the languages according to the order in Schadeberg (1981a) for easier comparison, although this does not reflect the classification in FIGURE 1. Where there are apparently multiple roots, I have arranged the attested forms in several columns, the first column containing the cognate set which I consider supports the reconstructed form. Jenks et al. (2024) includes a dictionary and I have crosschecked the Moro from other sources with their citations. For reasons not fully understood, the lexemes they record are often outliers, not cognate with other Heibanic lexemes, in contrast to previous sources. This may be a matter of dialect, in that the lect they have recorded is innovative. Certainly more will need to be done on comparative Moro.

3.2 Pronouns

TABLE 7 provides justification for *ɲ and *i for 1SG, *ŋ and *a for 2SG, and *ŋ and *u for 3SG. The extended forms with *-(n)d(V) for the latter are all confined to West-Central Heibanic.

LANGUAGE	'I, me'	'you SG.'	'he, she, it'
Rere	*ɲi*	*ŋa*	*ŋundu*
Heiban	*ɲi*	*ŋa*	*ŋɛda*
Abul	*ɲi*	*ŋa*	*ŋinda*
Laru	*ɛɲ*	*ŋa*	*ŋindɛ*
Otoro	*ɲi*	*ŋa*	*ŋun*
Shirumba	*ɲi*	*ŋa*	-
Tira	*iŋi*	*ŋŋa*	*ŋŋu*
Moro	*ɲ́ŋ́*	*ɲ́ŋ́á*	*ɲ́ŋúŋ*
Ko	*iɲi*	*ŋwa*	*wa*
Warnang	*ɲŋi*	*uŋa*	*ŋanɛ*
Logol	*gweeni*	*ŋa*	*gʊʊnʊ*
Shwai	*ɲi*	*ŋa*	*ŋu*
Proto-Heibanic	***-ɲi**	***ŋa**	***ŋu**

TABLE 7: Heibanic pronouns

The reconstruction of Heibanic pronouns is relatively simple compared with other parts of speech. See Schadeberg (1981a: 181ff.) for a preliminary discussion. Heibanic pronouns are remarkably conservative, given the general diversity in the lexicon.

3.3 Nouns

Nouns provide the bulk of reconstructions in this paper, in part because of the interest of affix alternations but also because they are far less subject to semantic diversification than other parts of speech, such as verbs and adjectives. Jenks et al. (2024: 154) give a rich account of Moro noun-class affix alternations and the associated concord system. In the following tables I have given Roman numerals II and occasionally III to forms which are apparently non-cognate with the main reconstructed form. Sometimes these are cognate with one another, as in the reconstruction for 'grass' in TABLE 8 below, but are not sufficiently widespread to assign them to PH.

I have divided the entries in TABLE 8 into two sets, but the attestations in Ko (East Heibanic) and Lukha (West-Central Heibanic) suggest that a form similar to **k-aaɽu* must be reconstructed to PH. *k- would then be an unpaired prefix for mass nouns, as listed in TABLE 29. Intriguingly, the velar in the plural prefix of the Ko attestation corresponds to the singular prefix in the other languages, suggesting it may be a back-formation from common Heibanic. These forms provide possible evidence for *ɽ and *k as PH.

LANGUAGE	SG	PL	II
Rere	*k-arawa*		
Heiban	*k-áárɔ́*		
Abul			
Laru			
Otoro	*g-árúm*		
Shirumba		*ŋ-*	*l-áɲá*
Shwai			
Tira		*ŋ-*	*l-aiɲa*
Moro		*ŋ-*	*ŋ-aɲa*
Ko	*t̰-uɽú*	*k-aɽú*	
Logol	*g-aaɽu*		
Proto-Heibanic	***k-aaɽu[m]**		

TABLE 8: Heibanic 'grass'

TABLE 9 constitutes evidence for the labialisation of the velar /k^{w}/ at PH level and for the contrastive status of *k^{w}*- in PH (cf. TABLE 29). The Heibanic forms show a surprising similarity to Hausa *kwado* 'toad' and other Chadic attestations. I presume the second attestation for 'frog' in Moro is a different species.

LANGUAGE	SG	PL	SG	PL
Rere	*kw-urɔ́*	*l-*		
Heiban	*gw-udɔ*	*l-*		
Abul				
Laru				
Otoro	*gwu-rɔ*	*li-*		
Shirumba				
Shwai	*x-ádda*	*l-*		
Tira	*l-uli*	*ŋ-*		
Moro	*l-du*	*ɲəlu*	*liŋwɜ*	*ɲiŋwɜ*
Ko	*kudro*			
Logol				
Proto-Heibanic	***kw-udrɔ**	**l-**		

TABLE 9: Heibanic 'frog'

As for 'charcoal', for which the forms are given in TABLE 10, only Otoro and the second Moro form show a singular/plural alternation and it is the plural which corresponds to the usual Heiban root. I am therefore interpreting these as back-formations. These forms provide evidence for *ŋ, *a, *r and the labialised form of /ŋ, ŋ^{w}/.

LANGUAGE	SG	PL	SG	PL
Rere	*ŋwurɔ́*			
Heiban	*ŋwuraŋ*			
Abul				
Laru	*yeraŋ*			
Otoro	*l-ra*	*ŋwu-*		
Shirumba				
Shwai	*ra*			
Tira	*ŋwura*			
Moro	*ŋwura*		*lɜ́míníɜ́*	*ŋɜ́míníɜ́*
Ko	*ŋiraŋ*			
Warnang				
Logol				
Proto-Heibanic	***ŋwuraŋ**			

TABLE 10: Heibanic 'charcoal'

TABLE 11 provides justification for the reconstruction of PH *ɽ and *u. All terms refer to the olive baboon, *Papio anubis*.

LANGUAGE	SG	II	PL
Rere	*kw-eɻuwel*		*l-*
Heiban	*kw-uruwel*		*l-*
Abul		*iraŋar*	
Laru	*th-iruel*		
Otoro	*gw-uɻuvel*		*l-*
Shirumba			
Shwai			
Tira		*tamburu*	
Moro	*oruvela*		
Ko			
Warnang		*karawar*	
Logol			
Proto-Heibanic	***gw-uɻuvel**		**l-**

TABLE 11: Heibanic 'baboon'

For 'cow, cattle', the forms of which are presented in TABLE 12, two roots are reconstructible, one for PH and one for PWCH. *ŋi-da provides evidence for PH *d and *i.

LANGUAGE	SG	PL	SG	PL
Rere	*ŋ-ida*	*y-*		
Heiban			*ŋ-imiro*	*ɲ-*
Abul				
Laru	*g-ida*			
Otoro			*ŋ-imiro*	*ɲ-*
Shirumba				
Shwai			*ŋ-imiro*	*ɲ-*
Tira	*di-o*	*ir-o*		
Moro	*d-iə*	*ir-iə*		
Ko	*da*			
Warnang				
Logol				
PWCH			***ŋ-imiro**	**ɲ-**
Proto-Heibanic	***ŋi-da**	***ir**		

TABLE 12: Heibanic 'cow, cattle'

The reconstruction of 'elephant' (see TABLE 13) provides evidence for *ð, *o, *ŋ and *r. The alternation of *ð-/r-* prefixes is attested in Moro (TABLE 15) although the attestations in Moro dialects do not show this for 'elephant'. This

root is quite widespread elsewhere in Africa, appearing in other language phyla, including Afroasiatic and Niger-Congo. For example:

Omotic	P-Mao	*tongVl-
Dogonic	Dogon Toro	dúŋ(u)

LANGUAGE	SG	PL	SG	PL
Rere	*ð-oŋɔr*	*r-*		
Heiban	*ð-oŋɔr*	*r-*		
Abul				
Laru	*ð-uŋur*			
Otoro	*ð-uŋɔr*	*d-*		
Shirumba				
Shwai	*ð-oŋɔr*			
Tira	*ð-oŋɔr*	*y-*		
Moro	*ð-əŋɔr*	*y-*	*ʈóːŋór*	*róːŋór*
Ko	*ð-oŋɔr*			
Warnang				
Logol				
Proto-Heibanic	***ð-oŋɔr**	***r-**		

TABLE 13: Heiban ‘elephant’

The forms for ‘bee’, given in TABLE 14, provide evidence for PH *g^{w}- and *l-.

LANGUAGE	SG	PL	SG	PL	II
Rere		*d-*			*θ-ömani*
Heiban	*gw-ai*	*l-*			
Abul					
Laru	*ɣ-ai*				
Otoro	*gw-aia*	*l-*			
Shirumba					
Shwai	*lai*				
Tira	*ø-oi*	*l-ai*			
Moro	*w-ai*	*l-ai*	*wáyá*	*láyá*	
Ko	*w-ai*	*l-ai*			
Warnang					
Logol					
Proto-Heibanic	***g^{w}-ai**	***l-**			

TABLE 14: Heiban ‘bee’

The bow and arrow is not very widespread in the Nuba Mountains and the word for 'arrow' is absent in several lexical sources. The available forms are listed in TABLE 15. The additional Moro forms may apply to different arrow types. I have given the non-cognate forms under II. The forms provide evidence for *θ and *r.

LANGUAGE	SG	PL	SG	PL	SG	PL	II
Rere	*θ-orɔŋ*	*ɗ-*					
Heiban							*lu-pire*
Abul							
Laru							*gi-burθa*
Otoro							
Shirumba							
Shwai							
Tira							*dhopi*
Moro	*ð-uru-va*		*ðóláŋ*	*róláŋ*	*ðamʧa*	*ramʧa*	
Ko	*θuru*						
Warnang							
Logol							
Proto-Heibanic	***θ-uru**						

TABLE 15: Heibanic 'arrow'

LANGUAGE	SG	II	PL
Rere		*k-ɛ́rígɛ*	*y-*
Heiban	*ɗ̰-ɔy*		*ɗ-*
Abul	*ɗ̰-i*		*r-*
Laru	*g-ui*		*ŋw-*
Otoro		*g-írgɛ*	*j-*
Shirumba	*ð-ɛ*		*r-*
Shwai		*z-ah*	*r-ah*
Tira		*i-rɛð*	*ǹ-drɛð*
Moro	*ð-ey*	*ð-áŋ*	*r-*
Ko	*ṭ-úí*		*ɗ-*
Warnang	*á-wí*		*cú-*
Logol	*ɗ̰-í*		*ɗ-*
Proto-Heibanic	***D-wi**		***r-**

TABLE 16: Heibanic 'hand'

The lexeme for 'hand' (see TABLE 16) also usually refers to 'arm'. Strictly speaking the data are too differentiated to support a reconstruction of *ð-, hence I have indicated *D-. However, they clearly align with a widespread *ð-/r-

alternation and are so listed in TABLE 29. It is surprising that the attestations for a basic body part should be so diverse and this may be an artefact of the elicitation process. The dentals in the singular prefix do not seem to form a consistent pattern.

The variants in TABLE 17 provide evidence for PH *θ. This is one of the few Heibanic roots which show widespread cognates elsewhere in Niger-Congo.

LANGUAGE	SG	PL
Rere	*θ-iri*	*r-*
Heiban	*ð-iri*	*d-*
Abul		
Laru	*g-iri*	
Otoro	*ð-iri*	*d-*
Shirumba		
Shwai		
Tira	*u-riθ*	*n-*
Moro	*u-nderi*	
Ko	*θ-iri*	
Warnang		
Logol		
Proto-Heibanic	***θ-iri**	***r-**

TABLE 17: Heibanic 'vein'

LANGUAGE	SG	PL	SG	PL
Rere	*k-áaré*	*y-*		
Heiban	*k-ááʈɛ*	*ɲ-*		
Abul	*g-aarɛ*	*ɲ-*		
Laru	*l-aari*	*ŋw-*		
Otoro	*g-aarɛ*	*ʤ-*		
Shirumba	*i-riŋ*	*nd-riŋ*		
Tira			*ari*	*na-ari*
Moro	*é-káré*		*árá*	*ná-árá*
Ko	*ɛ-wíɲ*	*ʧu-*		
Warnang	*ø-ariŋ*	*ʧ-*		
Logol	*g-aari*	*ʤ-*		
Shwai	*x-aʈiɲ*	*n-*		
Proto-Heibanic	***k-ariŋ**	***nʤ-**		

TABLE 18: Heibanic 'belly, stomach'

As for the realisations of 'belly, stomach' (see TABLE 18), the PH initial is most plausibly the voiceless velar, i.e. *k. This is a rare case where a long

vowel appears to be reconstructible. The final palatal nasal /-ɲ/ must almost certainly be reconstructed, as it is attested in both East and West Heibanic. Logol provides evidence for an affricate in the plural, which presumably must be combined with a nasal prefix, hence the plural reconstruction.

LANGUAGE	SG	PL	II	III
Rere	*k-iaw*	*y-*		
Heiban	*g-iô*	*ʤ-*		
Abul	*g-íyu*	*ø-íyu*		
Laru	*ṭ-íyú*	*ŋw-*		
Otoro	*g-iya*	*ʤ-*		
Shwai		*ø-*	*x-abxur*	
Shirumba		*n-*	*áb(ú)gúr*	
Tira	*ð-íyyu*	*ø-*		
Moro			*ð-isiá*[3]	*imɜðɜ́lwɜ́*
Ko	*k-iye*	*ʧ-*		
Warnang	*k-íya*	—		
Logol	*g-iyyú*	—		
Proto-Heibanic	***k-iyu**	***ʤ-**		

TABLE 19: Heibanic ‘bark’

Other Kordofanian languages distinguish ‘fresh’ and ‘dried’ bark, so this may explain the divergent forms here. As demonstrated in TABLE 19, /k/ is retained as a prefix with the realisations of ‘bark’ in more languages than with ‘stomach’ (TABLE 18). The Shwai form is from Guest (1998) and the Shirumba from Schadeberg (1981a). They are clearly related but far from identical and not cognate with common Heibanic, as also is the case for Moro. Laru and Tira have developed a divergent dental prefix in the singular.

For ‘wing’, TABLE 20, there appear to be two distinct roots with evidence for the second form being rather weak; hence the reconstructed form remains speculative. TABLE 20 also provides evidence for *k and *b.

TABLE 21 provides evidence for PH *ŋ, *i and final *-n, with plausible evidence for *v.

[3] According to Jenks et al. (2024), this is a bark loincloth.

LANGUAGE	SG	PL	SG	PL	SG	PL	COMMENT
Rere			*k-ílli*	*y-*			*= 'shoulder'*
Heiban	*k-íbɔ́*	*ɲ-*					
Abul							
Laru							
Otoro	*g-íbɔ́*	*ʤ-*					
Shwai	*u-bbɔ*	*nə-*					
Tira							
Moro			*élle*	*nə́lle*	*ɛ-ldia*	*nə-*	*also 'feather'*
Ko	*k-əbɔ́w*	*ʧ-*					
Warnang							
Logol	*ḍ-uffú*	*ɗ-*					
Proto-Heibanic	***k-ibbɔ**	***nʧ-**	***k-illi**				

TABLE 20: Heibanic 'wing'

LANGUAGE	FORM	COMMENT
Rere	*ŋ-în*	
Heiban	*ŋ-în*	
Laru	*ŋ-în*	
Moro	*ŋ-əfáni, ŋəvəni*	
Otoro	*ŋ-în*	
Shwai	*ŋ-əv(v)in*	
Tira	*ŋ-əvin*	
Ko	*ŋ-un*	
Warnang	*ʧ-uunu*	? prefix unexplained
Logol	*ŋ-ivín*	
Proto-Heibanic	***ŋ-əvin-**	

TABLE 21: Heiban 'blood'

3.4 Numerals

Numerals can only be reconstructed to Proto-Heibanic for 'one', 'three', 'five' and 'ten'. However, Moro-Tira and West Heibanic have distinctive forms, which map well onto the proposed tree in FIGURE 1. Tables are given below for 'one', 'five' and a summary table for 1-10 showing reconstructions for mesolects. Numerals above 'five' are often additive ('six' is 'three + three', for example).

All the forms for 'one' in TABLE 22, except Ko, are plausibly related. However, the Heiban, Abul and Shirumba forms have suffixed an *-ip(p)o* element not found elsewhere, so I have segregated them in a second column

entry. Furthermore, TABLE 22 provides evidence for *k and a fortis dental, either *-tt-* or *-t̪t̪-*.

LANGUAGE	FORM	II	III
Rere	*kwʊttɛ*		
Heiban		*gwɛtipɔ*	
Abul		*gwɔdippɔ*	
Laru	*gwɛttɛ*		
Otoro	*gwɛdɔŋ*		
Shirumba		*it̪t̪íβɔ́*	
Shwai			
Tira	*kɛnnɛ*		
Moro	*kʊntʊ, gw-ənto*		
Ko			*t̪ákkan*
Warnang	*ŋút̪t̪ɔ*		
Logol	*gwát̪t̪ɛ*		
Proto-Heibanic	***(n)kʷʊt̪t̪ɔn**		

TABLE 22: Heibanic ‘one’

TABLE 23 is evidence for the dental fricatives *θ and *ð, as well as for *n and *i. The long vowel in V_1 position changes its segmental character, but its persistent presence suggests that it may be reconstructible.

LANGUAGE	FORM
Rere	*θúðɔ́ni*
Heiban	*θuðəna*
Abul	*θúúðəna*
Laru	*θúðini*
Otoro	*θɔ́ɔ́ðanɛ*
Shirumba	*ðinné*
Shwai	*ðɛnɛ*
Tira	*ðɛ(n)ɛnɛ*
Moro	*ðéénaŋ, ðénə́ŋ* (Jenks et al. 2024)
Ko	*θɔ́θθúí*
Warnang	
Logol	*θúðíní*
Proto-Heibanic	***θú(ú)ðini**

TABLE 23: Heibanic ‘five’

TABLE 24 presents reconstructions of Heibanic numerals in summary form.

NUMERAL	PROTO-HEIBANIC	PROTO-WH	PROTO-MT
One	***(n)kʷʊt̪t̪ɔn**		
Two	not reconstructible		
Three	***θiɽil**		***-ɽidʒin**
Four	not reconstructible	***kɔrɔŋɔ**	***-maralon**
Five	***θú(ú)ðini**		
Six	not reconstructible	***ɲiriɽil**	***kiɽidʒinkiɽidʒin** (3 + 3)[4]
Seven	not reconstructible	***kwɔrɔŋɔ θiɽil**	***maralon ɽidʒin**
Eight	not reconstructible	***dubaŋ**	not reconstructible
Nine	not reconstructible	***kwudine kɔrɔŋɔ**	not reconstructible
Ten	***diðe**	***di(e)**	***reð**

TABLE 24: Reconstructions of Heibanic numerals

3.5 Verbs

Verbs are less well-attested in the sources. By comparison with nouns, Stevenson (ined.) has many fewer datasets which are complete enough to reconstruct.

LANGUAGE	FORM	II
Rere		
Heiban	*gwí-m-ɛɛl-á*	
Abul	*gu-m-ɛɛl-á*	
Laru	*gú-m-ɛɛl-ɛ*	
Otoro		*gw-ind-í*
Shirumba	*ŋ-ɛ́ɛ́l-a*	
Shwai		
Tira	*ŋ-ɛ́ɛ́l-a*	
Moro		*erl-*
Ko		*ú-nuwɔl-ɔ́*
Warnang		
Logol	*m-ɛɛl-ɛ́*	
Proto-WC Heiban	***-[ŋ]-ɛɛl-ɛ́**	

TABLE 25: Heibanic ‘walk’

[4] In Jenks et al. (2024: 223), a quinary-based numeral for ‘six’ is recorded, i.e., ‘5 + 1’, but the form in Stevenson (ined.) is cognate with Tira and presumably older.

The defective evidence of lexemes for 'walk' (see TABLE 25) for East Heibanic means this form may be from West Heibanic. The bilabial nasal /m/ is confined to the Central subgroup and the velar nasal /ŋ/ is attested in Shwai and Tira, so is a more plausible reconstruction at the PWCH level.

The forms for 'wash' in TABLE 26 are mostly drawn from Schadeberg (1981a: 52), where they were recorded as imperatives. The proto-form provides evidence for *w and *y.

LANGUAGE	FORM	II
Rere	*í-yya*	
Heiban	*u-yɔ́*	
Abul		
Laru		
Otoro	*we-u, we-a*	
Shirumba	*wé-yú*	
Shwai		
Tira	*wa-i*	
Moro	*t^{w}aa-ðʊ*	*oas-, áss-u* (imperfective)
Ko	*wɛyɔ-ɔ́*	
Warnang	*uwɔ́y-ú*	
Logol		
Proto-Heibanic	***wé-yɔ́***	

TABLE 26: Heibanic 'wash'

3.6 Adjectives

Adjectives are difficult to record consistently and the data contain many gaps. Some of the citations presented in TABLE 27 are likely to be stative verbs and thus to occur in a variety of surface forms. The dataset in TABLE 27 provides evidence for fortis *kk. The reconstruction of voiceless *T- in the plural reflects uncertainty about the identity of this segment and it therefore does not appear in TABLE 29. Adjectives show concord with head nouns and thus have concord segments, as shown in the PL column below. Jenks et al. (2024: 156) show the concord segments for each noun-class pairing, although they do not give worked examples of their application.

LANGUAGE	FORM	PL	II
Rere	*-gi*	*tí*	*kwú*
Heiban	*-ikkɛ́*		
Abul			
Laru			
Otoro	*-kkɛ́ɲ*		*gwu-*
Shirumba	*-ikkɛ́*	*ð-*	
Shwai			*xa-ka*
Tira	*-co*		
Moro	*-ccíą́*	*θa-*	*c- (be bad)*
Ko	*-ekki*	*t̪-*	
Warnang			
Logol	*-íkkí*	*ŋ-, j-*	
Proto-Heibanic	***-ikkɛ́**	**T-**	

TABLE 27: Heibanic ‘bad’

4 Comparative Heibanic

4.1 Noun classes

Blench (2018: 359ff.) has laid out the nominal affix alternations for documented Heibanic languages and these need not be repeated here. Jenks et al. (2024: 154) present a fresh account of Moro noun classes, which they identify as shown in TABLE 28. Paired classes are followed by single classes.

ALTERNATION	CONCORD	SG	PL	GLOSS
g/l	g/k	*evaja*	*ləvaja*	‘pauper’
l/ŋ	l-/ɽ-	*lavəra*	*ŋavəra*	‘stick’
l/ɲ	l-/ɽ-	*láwá*	*ɲáwá*	‘mosquito’
ð/r	ð-	*ðápá*	*rápá*	‘friend’
ð/j	ð-	*ðárá*	*járá*	‘rope’
g/n	g-/k-	*otʃtʃa*	*nətʃtʃa*	‘milk pot’
ŋ/ɲ	ŋ-	*ŋerá*	*ɲerá*	‘girl’
j/j	j-, k-, s-	*ajén*	*ején*	‘mountain’
ŋ	ŋ-	*ŋgárá*		‘salt’
ð	b-, p-, m-, ð-	*mogwátá*		‘peanut’
j	j-, k-, s-	*ibəgwɜ́*		‘fog’
g	g-/k-	*áŋálá*		‘haze’
ð	ð-	*ðáwárðáŋ*		‘writing’

TABLE 28: Moro noun-class alternations by concord class

TABLE 29 is a revised compilation of the possible noun classes of Proto-Heibanic, with an even more speculative Proto-Heibanic (PH) form. It should be compared with the lists in Schadeberg (1981a) and Guest (1998e). Square brackets around the PH form indicate that it is too sparsely attested to be safely reconstructed. The Werni entries, which are entirely adopted from Schadeberg (1981a: 101), indicate that a significant merger of noun classes has occurred. Two pairings (*ŋ-/ɲ-* and *l-/ɲ-*) are identical to Tira, but elsewhere, neither the semantics nor the segmental forms are a good match. The Moro pairings updated from Jenks et al. (2024) do not entirely correspond to those recorded by other researchers.

4.2 Synthesis and conclusions

This paper provides a preliminary reconstruction of the phonology, comparative lexicon and nominal affix system of the Heibanic languages of Kordofan in the light of scholarship subsequent to the pioneering Schadeberg (1981a). Despite more than forty years intervening, many of his observations concerning the group remain valid. Although we know considerably more about some languages, such as Koalib and Moro, Ko and Warnang remain poorly documented, making hypotheses concerning the entire group speculative. This paper is intended to expand the available dataset of comparative glosses as part of a larger project to bring together the ensemble of evidence for Heibanic as a whole. Evidence for reconstructing some phonemes remains weak, despite their widespread presence in the attested forms. Many languages remain in need of modern transcriptions, especially of vowels and tones, in order to provide wholly convincing proto-forms. Heiban nominal affix alternations do provide some regularities, both segmentally and in their semantics, but their overall diversity remains high and the proto-forms are correspondingly uncertain. The relationship between Heibanic and the Talodi languages remains problematic, but the argument for a direct Niger-Congo affiliation remains strong.

TABLE 29: Comparative Heiban noun class affixes

*PH	Ko	War-nang	Tira	Moro	Shwai	Rere	Otoro	Heiban	Laru	Examples	Semantics
***kw-~gw-/li-**	(w)u-/li-		w-/l- ø-/l-	w-/l- ø-/l-	x-, w-, m-, ø-/l-	kw-/l- li-	gw-/l- ø-/li	kw-, gw-/l-, ø-/li-	ɖ-/ŋw-	woman, fish, neck	persons, ethnonyms, some animals
***k(w)~g(w)-/j-**	k-/ø-		ð-/ø-	k-/nʤ-, ntʃ-	x-, w-, m-, ø-/y-	apart from 'tree', in persons class	gw-/j-	kw-, gw-/j- ø-/ji-		tree	trees and plants, body parts
***li-/ŋw-**	l-/ɲ-		l-/ŋ(w)- ɽ/ŋ-	l-/ŋ-	l-/ŋ-	l-/ŋw-	l-/ŋw-	l-/ŋw-	k-, g-/y-	egg, seed, head, water drop	round things
***ŋi-/-ir**	u-/t̪-		d-/ir-	d-/t-	ŋ-	ŋ-/y-	ŋ-/j-	ŋ-/j-		goat/cow	domestic animals
***l-/j-**			l-/ø-	l-/i-	l-	l-/y-	l-/j-			tooth	eye and other body parts
***k-/C-**	k-/tʃ-					k-/y-	k-, g-/j-	k-, g-/j- k-/tʃ-	k-, g-/ŋw-	belly, ear, stone, wing	common things
***ð-/r-**	t-/d-		ð-/r-	ð-/r-	z-/r-	ʈ-/ r-	ð-, ʈ-/d-	ɖ-/d-		straw, hole	long things, bushy things
***ð-/y-**	d-/ʧ-		ð-/y-	ð-/ø- ð-/y-	z-/y-, ø-	ʈ-/y- d-/c-	ð-/j- ʈ-/c-	ɖ-/ʧ-, j- ʈ-/ʧ-		snake, locust	long, harmful things
***k-/N-**	k-/ø-					k-, g-/ŋy-	g-/n-		l-/ŋw-	common things	hollow, deep things, inc. trees

*PH	Ko	War-nang	Tira	Moro	Shwai	Rere	Otoro	Heiban	Laru	Examples	Semantics
***ŋ-, t-/ɲ-**	ŋ-/ɲ-	ŋ-/ɲ-	ŋ-/ɲ-	y-/ɲ-		t-/ɲ-	ŋ-/ɲ-	ŋ-/ɲ-		bushbaby, owl	domestic & small animals, weapons
***ʈ-, l-/ɲ-**	l-/ɲ-		ʈ-, l-/ɲ-		t-	t-/ɲ-				sesame grains, beans	diminutives
***ŋ- /ɲ-**					ŋ-/ɲ-	ŋ-/ɲ-					augmentatives
***[V]-/y-**		(a)-/c(V)-	a-/i-, e-			ø-/y-	ø-/y-			fire, salt, sun	nouns with initial vowel
Unpaired											
***ø-/-ŋa**			ø-/-ŋa		ø-/-ŋa	ø-/-ŋa	-ŋa	ø-/-ŋa	ø-/-ŋa	father	parents, sequential children
***ð[i]-**			ð-, ði-	ɖə-	za-	ʈ-, ʈi-	ð-, ði-	d-, di-	d-, di-		infinitive, verbal noun
***t-**	t-									thorn, hair	projecting item
***ŋ-**	ŋ-		ŋ-, ŋə-	ŋ-, ŋə-	ŋ-	ŋ-	ŋ-, ŋə-	ŋ-	y-	blood, fat, water	liquids, abstract nouns
***k-**	k-			g-/k-		k-	g-	k-		grass, night, rain, smoke, sand, termites	mass nouns, natural world
***[ʧ-]**	ʧ-									guts, meat, name	mass or abstract nouns, animates

Acronyms

D	voiced dental
PH	Proto-Heibanic
PWCH	Proto-West-Central Heibanic
T	voiceless dental

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