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The phonology of Proto-Central Chadic : the reconstruction of the phonology and lexicon of Proto-Central Chadic, and the linguistic history of the Central Chadic languages

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Section III - PHONOLOGICAL RECONSTRUCTION

In the previous section we looked at the phonological characteristics of each of the Central Chadic languages for which data or an analysis is available. We also reconstructed the key elements of the phonological system for the proto-language of each group – vowels, prosodies and labialized and palatalized consonants – as far as is possible. (No attempt has been made to reconstruct tone or stress.) In this section we will go the next step, and reconstruct the phonological inventory of Proto-Central Chadic.

In chapter 10 we will reconstruct the consonantal inventory, giving evidence for the reconstruction of each phoneme, and a rough history of the phoneme through to the present-day languages. This reconstruction will be compared with Newman's Proto-Chadic reconstruction (Newman 1977a).

In chapter 11 we will look at the status of prosodies in Proto-Central Chadic. We will show that the palatalization prosody can be reconstructed, but that the vowel labialization prosody and non-velar labialized consonants are both innovations.

In chapter 12 we will propose that Proto-Central Chadic had three vowel phonemes, and give evidence for their reconstructions.

Chapter 13 gives a short summary of the phonological system of Proto-Central Chadic, and present a possible scenario for the history of Central Chadic covering people movements, linguistic developments and language contact.

10 Proto-Central Chadic Consonants

10.1 Introduction

This chapter presents the reconstruction of the consonantal system of Proto-Central Chadic. For each phoneme we will give data to justify the reconstruction, along with a description of its distribution in Proto-Central Chadic.

The consonantal system of Proto-Central Chadic is as follows:

	Labial	Alveolar	Laminal	Velar	Labialized Velar
Plosive	p	t	ts	k	k ^w
	b	d	dz	g	g ^w
Implosive	ɓ	ɗ			
Fricative		ɬ	s	h	h ^w
	v	ʒ	z	ɣ	ɣ ^w
Nasal	m	n			
Pre-nasalized	^m b	ⁿ d	ⁿ dz	(^ŋ g)	(^ŋ g ^w)
Liquid		r			
Approximant			j		w

Table 111 - Proto-Central Chadic consonants

The label ‘laminal’ is used, following Roberts (2001) to denote the set of sibilant-based consonants. These consonants function as a distinct grouping in almost all Central Chadic languages.

The phonemes in parentheses are those which are innovations in Central Chadic, but where it is not clear whether they originated in Proto-Central Chadic or shortly afterwards.

Voiced plosives, including pre-nasalized plosives, are not found in word-final position.

10.1.1 Nasals and Pre-nasalized Plosives

There were only two nasals in Proto-Central Chadic, *m and *n. Indeed, in the majority of the present-day languages, there are only these two nasals. In a number of cases /ŋ/ has been added, and in some of these languages there is

also the labialized equivalent /ŋ^w/. There are no known cases of a truly phonemic palatal nasal, though some languages permit the palatalization of /n/.

For the pre-nasalized consonants, *^mb and *ⁿd are well-attested. The phoneme *ⁿdz is present in only one root – *ⁿdzah ‘to sit’ – though the root is extremely well-attested. The other two potential pre-nasalized consonants *^ŋg and *^ŋg^w are difficult to establish for Proto-Central Chadic, and may or may not have existed as phonemes. They are included in the table within parentheses.

10.1.2 Implosives

Proto-Central Chadic had two glottalised phonemes, *ɓ and *ɗ. There is no evidence for a glottalised consonant in the laminal set. There are instances of glottalised consonants around the palatal or velar positions in the data, but these are innovations, and there were no palatal or velar implosives in Proto-Central Chadic.

(123)	Malgwa	*hikin→hikiri→kidɪ→kidʲi→kigʲi	‘three’
	Tera	*ɗit→ɗiti→ɗət	‘bone’
	Bana	*h ^w idɪt ^y →ʔiɪa→ʔiɪa	‘to cough’
	Mser	*ɗikin ^y →nk’in→nk’ir	‘claw’

10.2 Labial Consonants

10.2.1 *p

One major issue in reconstructing the Proto-Central Chadic consonant inventory is deciding whether there were two phonemes *f and *p, or whether [f] and [p] were allophones. The position most consistent with the data is that in Proto-Chadic there was only *p, and in Proto-Central Chadic there was still the one phoneme, but the phoneme had two allophones [f] and [p]. In the proto-languages of the groups within Central Chadic, /f/ and /p/ became contrastive, as they are in almost all of the present-day Central Chadic languages.

Proto-Central Chadic *p has two allophones, [p] occurring initially and medially, and [f] occurring finally. There is one major exception to this, the root *wɪpad ‘four’, where /f/ is attested in all but a few languages.

At the level of the proto-languages of the groups, in most cases it is possible to find examples of contrast between /f/ and /p/, though there is still a strong

tendency towards the distribution described for Proto-Central Chadic. At the level of the individual languages the contrast can be seen clearly.

The split of *p into /p/ and /f/ took place in each group separately, as can be seen from the differences in the distribution of these two phonemes across the groups. However the conditions for the split were already present in Proto-Central Chadic, and the apparent presence of [f] in medial position in the root for ‘four’, may imply that the sounds were already being phonemicised.

Newman (1977a) analyses *p and *f as being distinct phonemes in Proto-Chadic. He notes that this distinction has been lost in many present-day languages. Whilst outside the scope of this study, it is interesting to note that there is no *p/*f contrast in other branches of Afroasiatic, such as Berber (Kossmann 1999) and Semitic (Weninger 2011). If this lack of contrast in Proto-Central Chadic is also the case in Proto-Chadic, this is an important consideration in the reconstruction of Proto-Afroasiatic.

We will distinguish *p and *f in the reconstructions of the proto-languages of the Central Chadic groups, since these two phonemes can be shown to contrast at this level in most groups, and in order to follow the history of these sounds through to the present day languages.

In the following sections we will give the evidence for the reconstruction of *p in different positions in the word. The evidence is presented in the form of the reconstructed roots for the proto-languages of the groups. These languages are displayed according to their genetic groupings, with the first column covering the North and Hurza sub-branches, and the second and third columns covering the South sub-branch. The full data can be viewed at <http://centralchadic.webonary.org/>.

So far it has not been possible to identify regular sound laws to determine when individual languages or groups use /p/ or /f/ as reflexes of *p.

10.2.1.1 Word-initial

(124) *pira 'to untie'

Group	Root	Group	Root	Group	Root
Bata	piri	Margi	pili	Kotoko Island	felu
Daba	pil	Mandara	pila	Kotoko North	fal
Mafa	pir	Mofu	pil	Kotoko Centre	vil
Tera	piri	Maroua		Kotoko South	
Sukur	pir	Lamang	pil	Musgum	
Hurza	para	Higi	pil	Gidar	ippila

(125) *pitsi 'sun'

Group	Root	Group	Root	Group	Root
Bata	fiti	Margi	pitsi	Kotoko Island	
Daba	pits ^y	Mandara	fatsi ^y	Kotoko North	
Mafa	pats	Mofu	pats	Kotoko Centre	
Tera	fida	Maroua	pas	Kotoko South	fatsa
Sukur	pis	Lamang	fiti	Musgum	futij
Hurza	pats	Higi	vitsi	Gidar	

(126) *piri 'butterfly'

Group	Root	Group	Root	Group	Root
Bata	piri	Margi	pir	Kotoko Island	
Daba	pula	Mandara	pala	Kotoko North	
Mafa		Mofu	pila	Kotoko Centre	
Tera	pir	Maroua	pila	Kotoko South	
Sukur	pir	Lamang		Musgum	
Hurza	pala ^y , pira	Higi	pili	Gidar	pala ^w

10.2.1.2 Word-medial

(127) *ɣ^wipa 'flour'

Group	Root	Group	Root	Group	Root
Bata	h ^w ipɪ	Margi	ip ^w ɪ	Kotoko Island	
Daba	ɲfa	Mandara	k ^w ipɪ	Kotoko North	
Mafa	g ^w ifa	Mofu	g ^w ipa	Kotoko Centre	
Tera		Maroua	hapa	Kotoko South	
Sukur	p ^w a	Lamang	h ^w ipaw	Musgum	
Hurza	hi ^m biga	Higi	ɣ ^w ipɪ	Gidar	gipa

(128) *hipaɬ^y 'shoulder'

Group	Root	Group	Root	Group	Root
Bata		Margi	apaɬa	Kotoko Island	
Daba		Mandara	aɬapi ^y	Kotoko North	
Mafa	paɬpaɬ ^y	Mofu	hipaɬ ^y	Kotoko Centre	
Tera		Maroua	papaɬ ^y	Kotoko South	
Sukur	taɬaɬ	Lamang		Musgum	
Hurza	paɬpaɬ ^y	Higi	baɬa	Gidar	

(129) *wipad^y 'four'

Group	Root	Group	Root	Group	Root
Bata	f ^w ad ^y	Margi	f ^w adu	Kotoko Island	
Daba	fad ^w	Mandara	ufadɪ	Kotoko North	
Mafa	fad ^y	Mofu	wifad ^y	Kotoko Centre	
Tera	fodɔ	Maroua	mufad ^y	Kotoko South	fodɪ
Sukur	fwad ^y	Lamang	wifad ^y	Musgum	pidɪ ^w
Hurza	fudaw	Higi	wifadɪ	Gidar	padɔ ^w

10.2.1.3 Word-final

(130) *kirip^y 'fish'

Group	Root	Group	Root	Group	Root
Bata	kirifi ^y	Margi	kilfi ^y	Kotoko Island	
Daba	kilif ^y	Mandara	kilifi ^y	Kotoko North	
Mafa	kilaf ^y	Mofu	kilif ^y	Kotoko Centre	
Tera	yirvi ^w	Maroua	kilif ^y	Kotoko South	kilfi
Sukur	kirif ^y	Lamang	kilipi	Musgum	hilif ^y
Hurza	kilaf ^y	Higi	kilipi	Gidar	kilfi ^y

(131) *tip^y 'to spit'

Group	Root	Group	Root	Group	Root
Bata	tif	Margi	tifa	Kotoko Island	
Daba	tif ^y	Mandara	tifa	Kotoko North	tafi
Mafa	ⁿ dzif ^y	Mofu	tif	Kotoko Centre	tif
Tera		Maroua	tif ^w	Kotoko South	
Sukur	tifa	Lamang	tif	Musgum	tif ^w
Hurza	tifa	Higi	tifi	Gidar	

(132) *ɣ^wirip 'blind'

Group	Root	Group	Root	Group	Root
Bata	wirifi	Margi	wilifu	Kotoko Island	
Daba	wilif	Mandara	ɣ ^w ilifi	Kotoko North	
Mafa		Mofu	ɣ ^w ilif	Kotoko Centre	ny ^w if
Tera		Maroua	hilif ^w	Kotoko South	ɣ ^w ajra
Sukur		Lamang	ɣ ^w ilpa	Musgum	
Hurza	ɣ ^w iraf	Higi	ɣ ^w ilifi	Gidar	

10.2.2 *b

Newman gives good evidence for Proto-Central Chadic having undergone a change from Proto-Chadic *b→v (Newman 1977a, 16). This being the case, we would not expect to find any roots reconstructed with *b in Proto-Central Chadic, and indeed this is very nearly the case. However there is just one widely-attested root where it appears that *b should be reconstructed.

(133) *bana 'to wash'

Group	Root	Group	Root	Group	Root
Bata	bini	Margi		Kotoko Island	benu
Daba	ban	Mandara	bara	Kotoko North	^m ban
Mafa	pana	Mofu	bara	Kotoko Centre	ban
Tera		Maroua	buna	Kotoko South	bana
Sukur	ban	Lamang		Musgum	
Hurza	bana	Higi	pi	Gidar	

This root is reconstructed by Newman for Proto-Chadic (as *bāna), with data from West Chadic as well as Central Chadic. The presence of *b in this root appears therefore to be a simple exception where the sound change did not take place. For this reason, *b is included in the consonantal inventory for Proto-Central Chadic, but with marginal status.

10.2.3 *v

The phoneme *v is found in initial, medial and final positions. In most groups it has retained its original phonetic form. However it has the reflex /f/ in Proto-Musgum, Proto-Kotoko Centre and Proto-Kotoko Island, and /b/ in Gidar and in the Meri subgroup of the Mofu group.

Only two examples of the phoneme have been found in final position, and these roots are not widely attested across Central Chadic.

10.2.3.1 Word-initial

(134) *vin^y 'hut'

Group	Root	Group	Root	Group	Root
Bata	vini	Margi	vi	Kotoko Island	
Daba	biŋ	Mandara	biri, vij	Kotoko North	fin
Mafa	van ^y	Mofu	vir ^y	Kotoko Centre	vini
Tera		Maroua	vin ^y	Kotoko South	
Sukur	va	Lamang	iviŋ	Musgum	funij
Hurza		Higi	vi	Gidar	biina

(135) *vinah 'to vomit'

Group	Root	Group	Root	Group	Root
Bata	vina	Margi		Kotoko Island	
Daba	vina	Mandara	viraha	Kotoko North	
Mafa	vinaha ^y	Mofu	vinaha	Kotoko Centre	vinahi
Tera	vinah	Maroua		Kotoko South	vinaha
Sukur	vinah	Lamang	vinah	Musgum	fi ^y na
Hurza	vinah ^y	Higi	vinih ^{wi}	Gidar	

(136) *vija 'rainy season'

Group	Root	Group	Root	Group	Root
Bata	va ^y	Margi	vija	Kotoko Island	
Daba	vija	Mandara	vija	Kotoko North	
Mafa	vija	Mofu	vija	Kotoko Centre	
Tera		Maroua	vija	Kotoko South	
Sukur	vi	Lamang	vija	Musgum	pija
Hurza	vija	Higi	vija	Gidar	

10.2.3.2 Word-medial

(137) *dzavin 'guinea fowl'

Group	Root	Group	Root	Group	Root
Bata	zav ^{wi} n	Margi	tsivir	Kotoko Island	
Daba	zavin	Mandara	zabira ^y	Kotoko North	tsafan
Mafa	zapan	Mofu	dzavir	Kotoko Centre	zavan
Tera	tsivan	Maroua	tsivin ^w	Kotoko South	dzavaŋ
Sukur	zabin	Lamang	zivin	Musgum	tsaavan ^y
Hurza	zavin	Higi	zivin	Gidar	zamvina

(138) * $\gamma^w i v i n^y$ 'charcoal'

Group	Root	Group	Root	Group	Root
Bata	$i v i n^y$	Margi	$v^w i n i$	Kotoko Island	
Daba	$\eta g^w i v a n^w$	Mandara	$\gamma^w i v i r i$	Kotoko North	$f a n^f a n$
Mafa	$v a \eta$	Mofu	$\gamma^w a v a r^y$	Kotoko Centre	$w i v a n$
Tera		Maroua	$a v i n^w$	Kotoko South	
Sukur	$v i n$	Lamang	$\gamma^w i v a n i$	Musgum	$a v a \eta^y$
Hurza	$h^w i v a n$	Higi	$v i \eta^? i n$	Gidar	

10.2.3.3 Word-final

(139) * $h^w a^n d a v$ 'hare'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	$m a^n d a v a n$	Mandara		Kotoko North	
Mafa	$w a^n d a v$	Mofu	$h^w a^n d a v$	Kotoko Centre	
Tera		Maroua	$m a^n d a f$	Kotoko South	
Sukur		Lamang		Musgum	$m u d i v a j$
Hurza	$^n d i v a n^y$	Higi		Gidar	$m a^n d a v a$

(140) * $h i r i g^w i v$ 'baboon'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	$l a h a v^w$	Mandara	$l i k^w i v a$	Kotoko North	
Mafa		Mofu	$h i l i g^w i v$	Kotoko Centre	
Tera	$r u f$	Maroua	$l i \eta^? i f^w$	Kotoko South	
Sukur		Lamang		Musgum	
Hurza	$h i r g a v^w$	Higi		Gidar	$l a v a^w$

10.2.4 * δ

* δ is rare in Proto-Central Chadic, with only two widely-attested roots in the data.

(141) * $\gamma^w i \delta i s$ 'to laugh'

Group	Root	Group	Root	Group	Root
Bata	$m^w i s$	Margi	$m^w i s a$	Kotoko Island	
Daba	$\delta a s$	Mandara	$\gamma^w i \delta a s a$	Kotoko North	
Mafa	$\eta g^w a s$	Mofu	$\gamma^w i^m b a s a$	Kotoko Centre	
Tera	$m i s$	Maroua		Kotoko South	
Sukur	$\delta i s$	Lamang	$\gamma^w i \delta a s$	Musgum	
Hurza	$^m b i s i j$	Higi	$\delta^w i s i$	Gidar	$i m a s a$

(142) *siwiḃ^y 'to suck'

Group	Root	Group	Root	Group	Root
Bata	siḃ ^y	Margi	siḃi ^y	Kotoko Island	tsetsabu
Daba	saḃ ^y	Mandara	ḃusa ^y	Kotoko North	s'afu
Mafa	sasiḃ ^w	Mofu	siwiḃ	Kotoko Centre	s'afi
Tera		Maroua	suḃi	Kotoko South	
Sukur		Lamang	ḃisaj	Musgum	susubi ^y
Hurza	susaḃ ^y	Higi	ḃisi, s'iḃi	Gidar	issiḃa ^w

10.2.5 *m

*m is one of the most common phonemes in Proto-Central Chadic. It has remained very stable through time, with the only exception being the regular change to /w/ in word-final position in the Mandara group, with a similar change in word-initial position in the Wandala and Dghwede subgroups of the Mandara group. This change has spread into some words of neighbouring groups.

10.2.5.1 Word-initial

(143) *mits 'to die'

Group	Root	Group	Root	Group	Root
Bata	mit	Margi	mita	Kotoko Island	mati
Daba	mits	Mandara	mitsa	Kotoko North	madi
Mafa	mitsa	Mofu	mit	Kotoko Centre	mit
Tera	mit	Maroua	muta	Kotoko South	mara
Sukur	ḡ ^w is	Lamang	mita	Musgum	midḡ ^y
Hurza	mits	Higi	miti	Gidar	imta

(144) *maj 'mouth'

Group	Root	Group	Root	Group	Root
Bata	ma	Margi	mja	Kotoko Island	
Daba	ma	Mandara	wa	Kotoko North	
Mafa	ma	Mofu	maj	Kotoko Centre	
Tera	me	Maroua	ma ^y	Kotoko South	me
Sukur	ḡ ^w i	Lamang	waj	Musgum	maj
Hurza	ma ^y , ʔam	Higi	mi	Gidar	ma

(145) *mar 'oil'

Group	Root	Group	Root	Group	Root
Bata	mari	Margi	mal	Kotoko Island	
Daba	mal ^y	Mandara	malɪ	Kotoko North	
Mafa	mar	Mofu	amal	Kotoko Centre	
Tera	mar	Maroua	mal	Kotoko South	amɪl
Sukur	mir	Lamang		Musgum	mal
Hurza	amar	Higi		Gidar	malɪ ^y

10.2.5.2 Word-medial

(146) *ɬimiɗ^y 'ear'

Group	Root	Group	Root	Group	Root
Bata	ɬimi ^y	Margi	ɬimi ^y	Kotoko Island	hɪmu
Daba	ɬimiɗ ^y	Mandara	ɬimi ^y	Kotoko North	ɬim
Mafa	ɬimadɗ	Mofu	ɬimaj	Kotoko Centre	ɬimi
Tera	ɬim	Maroua	ɬimiɗ ^y	Kotoko South	sime
Sukur	ɬimaj	Lamang	ɬimɪŋ	Musgum	ɬima ^w
Hurza	ɬimaj	Higi	ɬimi	Gidar	ɬima

(147) *himid^y 'wind'

Group	Root	Group	Root	Group	Root
Bata	midɪ	Margi	samad ^y	Kotoko Island	ha ^m badɪ
Daba	mid ^y	Mandara		Kotoko North	samade
Mafa	mamad ^y	Mofu	himid ^y	Kotoko Centre	sɪmadɪ
Tera		Maroua	himid ^y	Kotoko South	sɪmade
Sukur	mid ^y	Lamang		Musgum	sɪmad ^y
Hurza	himade	Higi		Gidar	sɪmja

In this root, and in the root *k^wi^him 'mouse', there are instances of /s/ where we would expect /h/. There was no regular change *s→h or *h→s in these groups (except Kotoko Island which has *s→h). These cases may be due to the borrowing of a cognate, possibly from the Masa group.

10.2.5.3 Word-final

(148) *ɗijim 'water'

Group	Root	Group	Root	Group	Root
Bata	maʔi	Margi	jimi	Kotoko Island	amaj
Daba	jɪm	Mandara	jɪwi	Kotoko North	ame
Mafa	jam	Mofu	jam	Kotoko Centre	am
Tera	ɗɪm	Maroua	jam	Kotoko South	aʔɪm
Sukur	jam	Lamang	imi	Musgum	ʔijam
Hurza	aʔam	Higi	jame	Gidar	

(149) *dawim 'honey'

Group	Root	Group	Root	Group	Root
Bata		Margi	wimi	Kotoko Island	
Daba	ḡaḡam ^w	Mandara	ḡama	Kotoko North	mam
Mafa	^m ḡbam	Mofu	awim	Kotoko Centre	imam
Tera		Maroua	amam	Kotoko South	amama
Sukur	mam	Lamang	omo	Musgum	wamaj
Hurza	wimam	Higi		Gidar	amima

(150) *zim 'to eat'

Group	Root	Group	Root	Group	Root
Bata	zim	Margi	sim	Kotoko Island	him
Daba	zim	Mandara	ziwa	Kotoko North	sim
Mafa		Mofu	zim	Kotoko Centre	zim
Tera	zim	Maroua	zuma, zimi	Kotoko South	h ^w ima
Sukur		Lamang	za	Musgum	simi, zum
Hurza		Higi	zimi	Gidar	izima

10.2.6 *^mb

*^mb appears in a number of well-attested roots. It occurs in initial and medial position, but not in final position. It is stable, with no known consistent changes. It is by far the best-attested pre-nasalized phoneme.

In the root for 'navel', *^mb^w is reconstructed, even though no other labialized labials are reconstructed for Proto-Central Chadic (see section 11.3.3). It may be that this root was borrowed from outside of Central Chadic and originally had a form like e.g. *zi^mbud^ɗ, which was reanalysed with either a back-rounded vowel or a labialized labial consonant according to the preferences of the language. It may also be that there was a *^w somewhere in the root which transferred to the *^mb (see section 11.3). Or the root could be a reduced form of a compound such as *zi^mbⁱ h^wid^ɗ, where *h^wid^ɗ is the reconstructed root for 'belly'. Until there is an answer, *^mb^w will be retained in the reconstruction.

10.2.6.1 Word-initial

(151) *^mbiwran ‘tamarind’

Group	Root	Group	Root	Group	Root
Bata	^m biwran	Margi	^m biwla	Kotoko Island	
Daba		Mandara	amiri	Kotoko North	
Mafa	^m biwram	Mofu	^m biwlar	Kotoko Centre	
Tera	^m birin	Maroua	^m biwlam	Kotoko South	
Sukur	^m bilim	Lamang	^m bilam	Musgum	
Hurza		Higi	^m biwlan	Gidar	

(152) *^mbiɖa ‘to change’

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	^m baɖ	Mandara	^m biɖa	Kotoko North	
Mafa		Mofu	^m biɖ	Kotoko Centre	
Tera		Maroua	^m biɖa ^y	Kotoko South	
Sukur	^m biɖa	Lamang	^m biɖa	Musgum	
Hurza	^m biɖa	Higi	^m biɖi	Gidar	

(153) *^mba ‘to be able’

Group	Root	Group	Root	Group	Root
Bata	^m ba	Margi		Kotoko Island	
Daba	^m baj	Mandara	^m ba	Kotoko North	
Mafa		Mofu	^m ba	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur		Lamang		Musgum	
Hurza	^m ba	Higi	^m ba	Gidar	^m ba

10.2.6.2 Word-medial

(154) *^ha^mbiz^y ‘blood’

Group	Root	Group	Root	Group	Root
Bata	za ^m be	Margi	masi ^y	Kotoko Island	
Daba	ha ^m biz	Mandara	mizi ^y	Kotoko North	
Mafa	ba ^m baz ^y	Mofu	ha ^m biz ^y	Kotoko Centre	
Tera		Maroua	hi ^m bis ^w	Kotoko South	
Sukur	mu ^m bus	Lamang		Musgum	
Hurza	miza ^y	Higi	mimi	Gidar	

(155) *zi^mb^wid^f 'navel'

Group	Root	Group	Root	Group	Root
Bata	zi ^m b ^w id ^f ^y	Margi	si ^m b ^w id ^f w ^y	Kotoko Island	
Daba		Mandara	zi ^m bi ^y	Kotoko North	sa ^m bu
Mafa	zimal ^y	Mofu	zi ^m bal ^y	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur		Lamang	zi ^m bid ^f	Musgum	
Hurza		Higi	zi ^m b ^w id ^f	Gidar	

(156) *hi^mbiw 'armpit'

Group	Root	Group	Root	Group	Root
Bata	m ^w am ^w a	Margi	h ^w i ^m bi	Kotoko Island	
Daba	ha ^m biwa	Mandara		Kotoko North	
Mafa	^m bihaw	Mofu	h ^w i ^m bajak ^y , hi ^m bid ^f ^y , ^m biwa	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur		Lamang		Musgum	
Hurza	a ^m bajak ^w ^y	Higi	ha ^m biwi	Gidar	

10.3 Alveolar Consonants

10.3.1 *t

*t is found in word-initial, word-medial and word-final position, though there are only two roots reconstructed with *t in medial position, and only one in word-final position.

*t is stable, with its reflexes being /t/ consistently through its history in Central Chadic, with only a few sporadic variations.

10.3.1.1 Word-initial

(157) *tip 'to spit'

Group	Root	Group	Root	Group	Root
Bata	tif	Margi	tifa	Kotoko Island	
Daba	tif ^y	Mandara	tifa	Kotoko North	tafi
Mafa	ⁿ dzif ^y	Mofu	tif	Kotoko Centre	tif
Tera		Maroua	tif ^w	Kotoko South	
Sukur	tifa	Lamang	tif	Musgum	tif ^w
Hurza	tifa	Higi	tifi	Gidar	

(158) *tira ‘moon’

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	tira	Mandara	tila	Kotoko North	tedi
Mafa		Mofu		Kotoko Centre	tedi
Tera	tera	Maroua		Kotoko South	
Sukur	tja	Lamang	tila	Musgum	tila ^y
Hurza		Higi	tiri	Gidar	tila

(159) *tima ‘sheep’

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	timik	Mandara	tiwa	Kotoko North	
Mafa	tamak	Mofu	tima	Kotoko Centre	
Tera	ⁿ diɓaŋ	Maroua	tima	Kotoko South	
Sukur		Lamang	tiwak	Musgum	tima
Hurza	tima	Higi	timi	Gidar	tima ^y

10.3.1.2 Word-medial

(160) *k^witir^y ‘tail’

Group	Root	Group	Root	Group	Root
Bata	h ^w itiri	Margi		Kotoko Island	
Daba	k ^w ital ^y	Mandara	k ^w itili ^y	Kotoko North	
Mafa	h ^w adar, fitar ^w	Mofu	h ^w itil ^y	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur	tur	Lamang	h ^w itil	Musgum	
Hurza	k ^w itar ^y	Higi		Gidar	kitir ^w

10.3.1.3 Word-final

There is only one root with *t in word-final position, and that root is not reconstructed with a high degree of confidence.

(161) *simit^y ‘broom’

Group	Root	Group	Root	Group	Root
Bata	simiti ^y	Margi	simtu ^y	Kotoko Island	
Daba		Mandara	samati	Kotoko North	
Mafa	sa ^m bak	Mofu		Kotoko Centre	msisi
Tera	siseeti	Maroua		Kotoko South	
Sukur	sibik	Lamang	si ^ɔ wit	Musgum	
Hurza		Higi	s ^ɔ imi	Gidar	

10.3.2 *d

*d is found in word-initial and word-medial positions. There is a change *d→t in initial position in the Higi and Margi groups.

10.3.2.1 Word-initial

(162) *d 'to cook'

Group	Root	Group	Root	Group	Root
Bata		Margi	ta	Kotoko Island	
Daba	da	Mandara	da	Kotoko North	da
Mafa		Mofu	da	Kotoko Centre	
Tera		Maroua	di	Kotoko South	udo
Sukur	di	Lamang	da	Musgum	di
Hurza	da	Higi	ta	Gidar	ida

(163) *dayilij 'girl'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	dahalaj	Mandara	dahili ^y	Kotoko North	
Mafa	dahla	Mofu	dahilaj	Kotoko Centre	
Tera		Maroua	dili ^y	Kotoko South	
Sukur	digili	Lamang	dayali	Musgum	
Hurza	dalaj	Higi	diyili	Gidar	

(164) *dirim 'horn'

Group	Root	Group	Root	Group	Root
Bata		Margi	tilim	Kotoko Island	
Daba		Mandara	dirima	Kotoko North	
Mafa	diram ^w	Mofu	diram	Kotoko Centre	
Tera		Maroua	dirim ^w	Kotoko South	
Sukur	twam	Lamang	duli	Musgum	
Hurza		Higi	tilim ^{wi}	Gidar	

10.3.2.2 Word-medial

(165) *hadik 'thorn'

Group	Root	Group	Root	Group	Root
Bata	dihɪ	Margi		Kotoko Island	
Daba		Mandara	adaki	Kotoko North	
Mafa	hitak	Mofu	hadak	Kotoko Centre	
Tera	ⁿ deki	Maroua		Kotoko South	
Sukur	dzik ^y	Lamang	tiki	Musgum	hadak ^y
Hurza	adak	Higi	tiki	Gidar	

(166) *madiwan 'rat'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	ma ⁿ diwan	Mandara	madiwani	Kotoko North	
Mafa	madiwan	Mofu	madiwan	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur	midwan	Lamang		Musgum	
Hurza	mididiwan	Higi		Gidar	

10.3.3 *ɬ

*ɬ is a very well-attested phoneme in Proto-Central Chadic. It has the reflex /ɬ/ in the Mafa, Daba and Sukur groups. It also has the reflex /ɬ/ in a few languages of the Bata group, with its reflex in the rest of the Bata group being /l/. In Kotoko South it has the reflex /s/, as it is in many of the languages of the Kotoko Centre and North groups. In Kotoko Island it has the reflex /h/.

10.3.3.1 Word-initial

(167) *ɬidɪn^y 'tooth'

Group	Root	Group	Root	Group	Root
Bata	ɬini ^y	Margi	ɬir ^y	Kotoko Island	hinaj
Daba	ɬidɪn ^y	Mandara	ɬiri ^y	Kotoko North	ɬir
Mafa	ɬan ^y	Mofu	ɬir ^y	Kotoko Centre	ɬini
Tera	ɬin	Maroua	ɬin ^y	Kotoko South	sin
Sukur	ɬin ^y	Lamang	ɬidɪn	Musgum	ɬin
Hurza	ɬahan	Higi	ɬini	Gidar	ɬaja

(168) *ɬimɪd^y 'ear'

Group	Root	Group	Root	Group	Root
Bata	ɬimi ^y	Margi	ɬimi ^y	Kotoko Island	himu
Daba	ɬimi ^y	Mandara	ɬimi ^y	Kotoko North	ɬim
Mafa	ɬimad ^f	Mofu	ɬimaj	Kotoko Centre	ɬimi
Tera	ɬim	Maroua	ɬimɪd ^y	Kotoko South	sime
Sukur	ɬimaj	Lamang	ɬimiŋ	Musgum	ɬima ^w
Hurza	ɬimaj	Higi	ɬimi	Gidar	ɬima

(169) *la 'cow'

Group	Root	Group	Root	Group	Root
Bata	ʒa	Margi	la	Kotoko Island	ha
Daba	ʒa	Mandara	ila	Kotoko North	la
Mafa	ʒa	Mofu	la	Kotoko Centre	la
Tera	ʒa	Maroua	la	Kotoko South	sa
Sukur	ʒi	Lamang	la	Musgum	ʒaj
Hurza	la	Higi	la	Gidar	waɬja

10.3.3.2 Word-medial

(170) *dɪj 'egg'

Group	Root	Group	Root	Group	Root
Bata	daɟi	Margi	h ⁱ h ⁱ i	Kotoko Island	
Daba	naɟid ^y	Mandara	ɬija	Kotoko North	enɬi
Mafa	laɬaj	Mofu	dɪj	Kotoko Centre	enɬi
Tera		Maroua	ataɬ ^y	Kotoko South	nsi
Sukur	da ^ŋ gaɟaj	Lamang	ɬiti	Musgum	ɟat ^y
Hurza	ɟaj	Higi	jiɬi	Gidar	da ^ŋ gɟa ^y

(171) *dɪ 'bone'

Group	Root	Group	Root	Group	Root
Bata	ilɟi	Margi	daɬi ^y	Kotoko Island	ahaj
Daba		Mandara	laɬi	Kotoko North	enɬi
Mafa	taɬ	Mofu	itaɬ	Kotoko Centre	eɬi
Tera	gɪti	Maroua	ataɬ	Kotoko South	asis'i
Sukur	taɬ	Lamang		Musgum	
Hurza		Higi	ɟiti	Gidar	laŋlaŋ ^y

(172) *h^widɪ^y 'cough'

Group	Root	Group	Root	Group	Root
Bata		Margi	widɪla	Kotoko Island	
Daba		Mandara	h ^w idɪh ^y	Kotoko North	h ^w idɪla
Mafa	wila	Mofu	h ^w idɪ ^y	Kotoko Centre	widɪla
Tera	k ^w ila	Maroua	hirɪa ^y	Kotoko South	wasja
Sukur	ɟar ^y	Lamang		Musgum	h ^w at
Hurza	ɟilɟah ^y	Higi	ɟila	Gidar	wirɪa

10.3.3.3 Word-final

(173) *tsiɬ^y ‘to hatch’

Group	Root	Group	Root	Group	Root
Bata	tsatsaɬi ^y	Margi		Kotoko Island	
Daba		Mandara	tsiɬa ^y	Kotoko North	
Mafa		Mofu	tsaɬ ^y	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur	tsiɬ ^y	Lamang	tsiɬ	Musgum	
Hurza	tsaɬ ^y	Higi		Gidar	

(174) *taɬ ‘cold’

Group	Root	Group	Root	Group	Root
Bata		Margi	mitaɬ	Kotoko Island	
Daba		Mandara	mitaɬi	Kotoko North	
Mafa	mitaɬ	Mofu	taɬ	Kotoko Centre	taɬi
Tera		Maroua	mutelaɲ	Kotoko South	
Sukur		Lamang	mitaɬ	Musgum	
Hurza		Higi	taɬi	Gidar	

(175) *hipaɬ^y ‘shoulder’

Group	Root	Group	Root	Group	Root
Bata		Margi	apaɬa	Kotoko Island	
Daba		Mandara	aɬapi ^y	Kotoko North	
Mafa	paɬpaɬ ^y	Mofu	hipaɬ ^y	Kotoko Centre	
Tera		Maroua	papaɬ ^y	Kotoko South	
Sukur	tapaɬ	Lamang		Musgum	
Hurza	paɬpaɬ ^y	Higi	baɬa	Gidar	

10.3.4 *ɓ

There are only eight roots reconstructed containing *ɓ. However the roots are reasonably well-attested, and provide sufficient evidence for reconstructing *ɓ for Proto-Central Chadic. Interestingly, in the root for camel, which comes from Berber alɣ^wəm (Skinner 1977), the [l] was adapted to become a voiced lateral fricative. This would be natural if the root was introduced at a very early stage, since there was no *l in Proto-Central Chadic. However, wider evidence suggests a later time for the introduction of the root (Kossmann 2005), in which case we must look elsewhere for a motivation for this change. There was a regular change *ɓ→ɓ̥ in Proto-Gidar.

10.3.4.1 Word-initial

(176) *ʒig^wami^y 'camel'

Group	Root	Group	Root	Group	Root
Bata	ʒig ^w ami ^y	Margi	ʒig ^w am	Kotoko Island	log ^w ime
Daba	ʒakama ^w	Mandara	ʒig ^w ami	Kotoko North	logome
Mafa		Mofu	ʒig ^w ama ^y	Kotoko Centre	
Tera	ʒimox	Maroua		Kotoko South	
Sukur	ʒig ^w am	Lamang		Musgum	lukma
Hurza	ʒig ^w ama ^y	Higi	ʒig ^w ami	Gidar	ʒagama ^w

(177) *ʒidɪm 'five'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara	ʒidɪm	Kotoko North	
Mafa	ʒam	Mofu	ʒim	Kotoko Centre	
Tera		Maroua	ʒi ⁿ dam	Kotoko South	
Sukur	ʒam	Lamang		Musgum	ʒiɪm ^y
Hurza		Higi		Gidar	ʒaɪ ^y

(178) *ʒiwin 'fear'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara	ʒiʒiwi	Kotoko North	
Mafa	ʒaw	Mofu	ʒiwir ^y	Kotoko Centre	
Tera		Maroua	ʒiwin	Kotoko South	
Sukur		Lamang	ʒiwiŋ	Musgum	
Hurza	ʒiwan	Higi		Gidar	

10.3.4.2 Word-medial

(179) *^mbaʒa 'beer'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	^m baʒa	Mandara	^m baʒa	Kotoko North	
Mafa		Mofu	^m baʒa	Kotoko Centre	
Tera		Maroua	^m baʒa	Kotoko South	
Sukur	mi ^p aʒi	Lamang		Musgum	
Hurza		Higi	^m baʒi	Gidar	^m baʒa

10.3.4.3 Word-final

(180) *g^widɪɪʒ 'to belch'

Group	Root	Group	Root	Group	Root
Bata		Margi	ɪʒag ^w i	Kotoko Island	
Daba	gidɪɪʒ	Mandara	giɪʒa	Kotoko North	ɬ'a
Mafa	g ^w idɪɪʒa	Mofu	gidɪɪʒ	Kotoko Centre	iti
Tera		Maroua	ʔirɪʒiʔi ^y	Kotoko South	
Sukur		Lamang	ɲiɪʒu	Musgum	
Hurza	dɪʒla	Higi	ɪʒi	Gidar	

10.3.5 *d

*d is widely attested in the Proto-Central Chadic reconstructions, being by far the most common of the implosive phonemes. It is frequently reduced to /ʔ/ or lost altogether in present-day languages, particularly in palatalized words where it often has the reflex /j/. In certain cases the glottal component fuses with *w and creates the reflex /b/. In some languages it has the reflex /r/.

10.3.5.1 Word-initial

(181) *dɪwah 'breast, milk'

Group	Root	Group	Root	Group	Root
Bata	ɪ ^w a	Margi	ʔiwa	Kotoko Island	
Daba	ɪ ^w a	Mandara	wiɪba	Kotoko North	eɪ ^w i
Mafa	wa	Mofu	dɪwah	Kotoko Centre	iwi
Tera	biɪbi	Maroua	dɪwa	Kotoko South	
Sukur	ɪ ^w a	Lamang	dɪwa	Musgum	
Hurza		Higi	ɪ ^w a	Gidar	

(182) *dap 'food (millet boule)'

Group	Root	Group	Root	Group	Root
Bata	dafa	Margi	dɪfi	Kotoko Island	
Daba		Mandara	dafi	Kotoko North	
Mafa	daf	Mofu	daf	Kotoko Centre	
Tera		Maroua	daf	Kotoko South	
Sukur	daf	Lamang	dafa	Musgum	
Hurza	daf	Higi	dafa	Gidar	

(183) *dijik^w 'bird'

Group	Root	Group	Root	Group	Root
Bata		Margi	dijak ^w	Kotoko Island	
Daba		Mandara	dijak	Kotoko North	
Mafa	dijak	Mofu	dijinj ^w	Kotoko Centre	
Tera	diki	Maroua	dijiw	Kotoko South	
Sukur	ʔak	Lamang	dijak	Musgum	
Hurza		Higi	dijik ^w ɪ	Gidar	

10.3.5.2 Word-medial

(184) *pidak^w ^y 'razor'

Group	Root	Group	Root	Group	Root
Bata	pidik ^w a ^y	Margi	park ^w ɪ ^y	Kotoko Island	
Daba	pidak ^w ^y	Mandara	pidak ^w ^y	Kotoko North	
Mafa	pidak ^w ^y	Mofu	pidak ^w ^y	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur	pidak ^w ^y	Lamang		Musgum	
Hurza		Higi	pidik ^w	Gidar	

(185) *k^wadāh 'to boil'

Group	Root	Group	Root	Group	Root
Bata	k ^w adasa ^y	Margi	k ^w ɪdu	Kotoko Island	
Daba	k ^w ɪdāh ^y	Mandara	k ^w adāh	Kotoko North	
Mafa	k ^w ɪdāh	Mofu	k ^w adāh	Kotoko Centre	
Tera	k ^w ɪdāh	Maroua		Kotoko South	
Sukur		Lamang	k ^w adāh	Musgum	
Hurza	k ^w adāh	Higi		Gidar	

(186) *ɣidɪm 'five'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara	ɣidɪm	Kotoko North	
Mafa	ɣam	Mofu	ɣim	Kotoko Centre	
Tera		Maroua	ɣi ⁿ dam	Kotoko South	
Sukur	ɣam	Lamang		Musgum	ʔiɪm ^y
Hurza		Higi		Gidar	ɬaɪ ^y

10.3.5.3 Word-final

(187) *ɬiwɪɗʸ 'meat'

Group	Root	Group	Root	Group	Root
Bata	ɬɪwɪʸ	Margi		Kotoko Island	hu
Daba	ɬɪjʸ	Mandara	ɬiwɪɗʸ	Kotoko North	ɬiw
Mafa	ɬɪwɪɗʸ	Mofu	ɬiw	Kotoko Centre	ɬiw
Tera	ɬu	Maroua		Kotoko South	asu
Sukur	ɬiwɪɗʸ	Lamang	ɬiʷi	Musgum	ɬiwɪt
Hurza	ɬiwɪɗʸ	Higi	ɬij	Gidar	ɬiwi

(188) *wɪpɪɗʸ 'four'

Group	Root	Group	Root	Group	Root
Bata	fʷɪɗʸ	Margi	fʷɪɗʸ	Kotoko Island	
Daba	fɪɗʷ	Mandara	ufɪɗɪ	Kotoko North	
Mafa	fɪɗʸ	Mofu	wɪfɪɗʸ	Kotoko Centre	
Tera	fɪɗɪ	Maroua	mufɪɗʸ	Kotoko South	fɪɗɪ
Sukur	fɪɗʸ	Lamang	wɪfɪɗʸ	Musgum	pɪɗɪʷ
Hurza	fɪɗɪw	Higi	wɪfɪɗɪ	Gidar	pɪɗɪʷ

(189) *dziwɪɗʸ 'fly (insect)'

Group	Root	Group	Root	Group	Root
Bata	dziʔiʸ	Margi	tsɪɗɪʸ	Kotoko Island	hadzu
Daba	dziwɪɗʸ	Mandara	ⁿ dziwɪɗʸ	Kotoko North	ts'iwi
Mafa	dziwaj	Mofu	dziwaj	Kotoko Centre	ziwɪɗʸ
Tera		Maroua	dziɗdziwɪɗʸ	Kotoko South	dzadzwi
Sukur	dziwɪɗʸ	Lamang	ziwɪɗɪ	Musgum	dɪwaj
Hurza	dziwaj	Higi	zɪwɪɗʸ	Gidar	zɪkɪɗɪʸ

10.3.6 *n

*n is found in initial, medial and final positions, though it is surprisingly rare in initial position. It is the most common phoneme in final position. Word-finally, *n→r in the Mofu, Mandara and Margi groups. In many other groups *n has the reflex [ŋ] word-finally, and in some cases this has led to the phonemicisation of /ŋ/. In the Mandara group there was also a change *n→r word-medially.

10.3.6.1 Word-initial

Only two roots have been reconstructed with initial *n.

(190) *niy ‘to see’

Group	Root	Group	Root	Group	Root
Bata	niy	Margi		Kotoko Island	
Daba		Mandara	niya	Kotoko North	
Mafa		Mofu	nik	Kotoko Centre	
Tera	na	Maroua	nahi	Kotoko South	
Sukur		Lamang	niya	Musgum	
Hurza		Higi	niyi	Gidar	

(191) *nih ‘to ripen’

Group	Root	Group	Root	Group	Root
Bata	na	Margi	niya	Kotoko Island	
Daba	na	Mandara	na	Kotoko North	na
Mafa	nih	Mofu	nih ^w	Kotoko Centre	naha
Tera		Maroua	nih ^y	Kotoko South	winha
Sukur		Lamang		Musgum	niyi
Hurza	nah	Higi	naka	Gidar	

10.3.6.2 Word-medial

(192) *vinah ‘to vomit’

Group	Root	Group	Root	Group	Root
Bata	vina	Margi		Kotoko Island	
Daba	vina	Mandara	viraha	Kotoko North	
Mafa	vinaha ^y	Mofu	vinaha	Kotoko Centre	vinahi
Tera	vinah	Maroua		Kotoko South	vinaha
Sukur	vinah	Lamang	vinih	Musgum	fina ^y
Hurza	vinah ^y	Higi	vinih ^{wi}	Gidar	

(193) *bana ‘to wash’

Group	Root	Group	Root	Group	Root
Bata	bini	Margi		Kotoko Island	benu
Daba	ban	Mandara	bara	Kotoko North	^m ban
Mafa	pana	Mofu	bara	Kotoko Centre	ban
Tera		Maroua	buna	Kotoko South	bana
Sukur	ban	Lamang		Musgum	
Hurza	bana	Higi	pi	Gidar	

(194) *k^winij 'urine'

Group	Root	Group	Root	Group	Root
Bata		Margi	k ^w ini	Kotoko Island	k ^w araj
Daba		Mandara	k ^w irij	Kotoko North	k ^w ire
Mafa	k ^w iraj	Mofu	k ^w inaj	Kotoko Centre	k ^w ine
Tera		Maroua	k ^w inaj	Kotoko South	kimade
Sukur	k ^w ir ^y	Lamang	k ^w ani	Musgum	
Hurza	mikadaj	Higi		Gidar	kina ^y

10.3.6.3 Word-final

(195) *ɬidɪn^y 'tooth'

Group	Root	Group	Root	Group	Root
Bata	ɬini ^y	Margi	ɬir ^y	Kotoko Island	hɪnaj
Daba	ɬidɪn ^y	Mandara	ɬiri ^y	Kotoko North	ɬir
Mafa	ɬan ^y	Mofu	ɬir ^y	Kotoko Centre	ɬini
Tera	ɬin	Maroua	ɬin ^y	Kotoko South	sin
Sukur	ɬin ^y	Lamang	ɬidɪŋ	Musgum	ɬiŋ
Hurza	ɬahan	Higi	ɬini	Gidar	ɬaja

(196) *sin 'to know'

Group	Root	Group	Root	Group	Root
Bata	sina	Margi	sin	Kotoko Island	hɪn
Daba	sin	Mandara	sir	Kotoko North	sɪn
Mafa	sina	Mofu	sir	Kotoko Centre	sɪn
Tera	zini	Maroua	sɪn	Kotoko South	sɪŋ
Sukur	sɪ	Lamang	sina	Musgum	
Hurza	sina	Higi	sina	Gidar	isina

(197) *dzavɪn 'guinea-fowl'

Group	Root	Group	Root	Group	Root
Bata	zav ^w ɪn	Margi	tsivir	Kotoko Island	
Daba	zavɪn	Mandara	zabira ^y	Kotoko North	tsafan
Mafa	zapan	Mofu	dzavir	Kotoko Centre	zavan
Tera	tsivan	Maroua	tsivɪn ^w	Kotoko South	dzavaŋ
Sukur	zabɪn	Lamang	zivɪn	Musgum	tsaavan ^y
Hurza	zavɪn	Higi	zivɪn	Gidar	zamvɪna

10.3.7 *ⁿd

The phoneme *ⁿd is found in initial and medial positions. Only three roots have been constructed for this phoneme.

10.3.7.1 Word-initial

(198) *ⁿdiw ‘person’

Group	Root	Group	Root	Group	Root
Bata	i ⁿ diw	Margi	ⁿ du	Kotoko Island	
Daba		Mandara	wi ⁿ di	Kotoko North	
Mafa	ⁿ da ^w	Mofu	ⁿ daw	Kotoko Centre	
Tera	ⁿ dik ^{wi}	Maroua		Kotoko South	
Sukur	ⁿ diw	Lamang	mi ⁿ du	Musgum	
Hurza		Higi	wi ⁿ di	Gidar	

(199) *ⁿda ‘to swallow’

Group	Root	Group	Root	Group	Root
Bata	ⁿ da	Margi		Kotoko Island	
Daba		Mandara	ⁿ di	Kotoko North	
Mafa		Mofu	ⁿ da	Kotoko Centre	
Tera		Maroua	ⁿ di	Kotoko South	
Sukur	ⁿ dam	Lamang	ⁿ da	Musgum	
Hurza		Higi	ⁿ da	Gidar	

10.3.7.2 Word-medial

(200) *h^waⁿdav ‘hare’

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	ma ⁿ davan	Mandara		Kotoko North	
Mafa	wa ⁿ dav	Mofu	h ^w a ⁿ dav	Kotoko Centre	
Tera		Maroua	ma ⁿ daf	Kotoko South	
Sukur		Lamang		Musgum	mudivaj
Hurza	ⁿ divan ^y	Higi		Gidar	ma ⁿ dava

This root may be cognate with *vida ‘hare’, in which case the root given here does not contribute evidence for Proto-Central Chadic *ⁿd, but shows a later prenasalization of *d.

10.3.8 *r

The phoneme *r is extremely well-attested, and occurs in all positions. In many of the groups it has undergone *r→l, with only the Bata, Sukur, Mafa, Hurza, Tera and Daba groups retaining *r.

There was no *l phoneme in Proto-Central Chadic.

10.3.8.1 Word-initial

(201) *rigidʸ ‘bow (weapon)’

Group	Root	Group	Root	Group	Root
Bata	ragi	Margi	laga	Kotoko Island	
Daba		Mandara	lika	Kotoko North	
Mafa	lakadʸ, lalan	Mofu	hiligidʸ	Kotoko Centre	
Tera	ri	Maroua	halakʸ	Kotoko South	
Sukur	raj	Lamang	liyed	Musgum	gi ⁿ diliŋʸ
Hurza	ligaʸ	Higi	ligij	Gidar	

(202) *ra ‘to dig’

Group	Root	Group	Root	Group	Root
Bata	ra	Margi	la	Kotoko Island	la
Daba	ra	Mandara	la	Kotoko North	
Mafa		Mofu	la	Kotoko Centre	
Tera	ra	Maroua	li	Kotoko South	
Sukur	ri	Lamang	la	Musgum	
Hurza	ra	Higi	la	Gidar	

(203) *riwitsʸ ‘hearth’

Group	Root	Group	Root	Group	Root
Bata	ritiʸ	Margi		Kotoko Island	
Daba	liwitsʸ	Mandara	liwtsiʸ	Kotoko North	
Mafa	riwatsʸ	Mofu	liwitʸ	Kotoko Centre	
Tera		Maroua	liwitsʸ	Kotoko South	
Sukur	ruts	Lamang	liti	Musgum	liwitʸ
Hurza	riwatsʸ	Higi	litwi	Gidar	

10.3.8.2 Word-medial

(204) *siwra 'to fry'

Group	Root	Group	Root	Group	Root
Bata	siri	Margi	sula	Kotoko Island	
Daba	sar	Mandara	sula	Kotoko North	sil
Mafa	sara	Mofu	sawla	Kotoko Centre	
Tera	zur	Maroua	sula	Kotoko South	
Sukur	siwra	Lamang	sula	Musgum	sisal
Hurza	siwla	Higi	sili	Gidar	

(205) *kirip^y 'fish'

Group	Root	Group	Root	Group	Root
Bata	kirifi ^y	Margi	kilfi ^y	Kotoko Island	
Daba	kilif ^y	Mandara	kilifi ^y	Kotoko North	
Mafa	kilaf ^y	Mofu	kilif ^y	Kotoko Centre	
Tera	yirvi ^w	Maroua	kilif ^y	Kotoko South	kilfi
Sukur	kirif ^y	Lamang	kilipi	Musgum	hilif ^y
Hurza	kilaf ^y	Higi	kilipi	Gidar	kilfi ^y

(206) *siraj 'leg'

Group	Root	Group	Root	Group	Root
Bata	sidi	Margi	sil	Kotoko Island	
Daba	sasalaj	Mandara	sira	Kotoko North	sali
Mafa	sasalaj	Mofu	salaj	Kotoko Centre	
Tera	sara	Maroua	sir, sar	Kotoko South	
Sukur		Lamang	sila	Musgum	
Hurza	siraj	Higi	sira	Gidar	

10.3.8.3 Word-final

(207) *pir 'to untie'

Group	Root	Group	Root	Group	Root
Bata	piri	Margi	pili	Kotoko Island	felu
Daba	pil	Mandara	pila	Kotoko North	fal
Mafa	pir	Mofu	pil	Kotoko Centre	vil
Tera	piri	Maroua		Kotoko South	
Sukur	pir	Lamang	pil	Musgum	
Hurza	para	Higi	pil	Gidar	ippila

(208) *mar 'oil'

Group	Root	Group	Root	Group	Root
Bata	mari	Margi	mal	Kotoko Island	
Daba	mal ^y	Mandara	malɪ	Kotoko North	
Mafa	mar	Mofu	amal	Kotoko Centre	
Tera	mar	Maroua	mal	Kotoko South	amɪl
Sukur	mir	Lamang		Musgum	mal
Hurza	amar	Higi		Gidar	malɪ ^y

(209) *kir 'to steal'

Group	Root	Group	Root	Group	Root
Bata	hir	Margi	hila	Kotoko Island	
Daba	hɪl	Mandara	ɣɪl	Kotoko North	hir
Mafa	kir	Mofu	kɪl	Kotoko Centre	ɣ ^w ɪj
Tera		Maroua	h ^w ɪl	Kotoko South	hɪla
Sukur	kir	Lamang	ɣila	Musgum	hɪl
Hurza	kira	Higi	ɣili	Gidar	ɪhala

10.4 Laminal Consonants

The laminal consonants have, in many present-day languages, two realisations, one alveolar and one post-alveolar. The post-alveolar realisation is conditioned by the presence of the palatalization prosody, or sometimes by the presence of a front vowel.

10.4.1 *ts

The phoneme *ts is found in initial, medial and final positions. In many cases there has been a change from *ts→t, but this change does not fit nicely within a particular genetic grouping or geographical area, and the changes are not predictable.

The irregular overlapping of the reflexes of *t and *ts may be evidence for these two proto-phonemes sharing a common origin. It is possible that there was a conditioning environment that determined which form was present, but that the conditioning environment has now been lost. Further research outside of Central Chadic is needed to establish this. Newman (1977a) does not reconstruct a separate *ts phoneme for Proto-Chadic. In favour of the inclusion of *ts is the pattern of the consonantal system, where *ts functions as the voiceless laminal stop. There is also a clear distinction between *t and *ts in many of the languages and groups within Central Chadic. Against distinguishing the two is the lack of support from other branches of Chadic, and the absence of

a corresponding phoneme in reconstructions for other branches of Afroasiatic (Kossmann 1999; Weninger 2011). However, Ehret (1995) includes *ts in the inventory for Proto-Afroasiatic.

Here we are treating *ts and *t as distinct phonemes at the level of Proto-Central Chadic and for its descendants.

10.4.1.1 Word-initial

(210) *tsivɪɸ^y ‘path’

Group	Root	Group	Root	Group	Root
Bata	tiɪ	Margi		Kotoko Island	
Daba	tɪɸ	Mandara	tiɪ	Kotoko North	
Mafa	tsivɪɸ ^y	Mofu	tiɪ ^y , tsivɪɸ ^y	Kotoko Centre	
Tera	ⁿ dzɪɪ	Maroua	dzivɪɸ ^y	Kotoko South	
Sukur	tsɪɪ	Lamang	tiɪj	Musgum	tiɪj
Hurza	tsivɪɸ ^y	Higi		Gidar	tiɪ ^y

(211) *tsiwi ‘to cry’

Group	Root	Group	Root	Group	Root
Bata	tiwi	Margi	tiwi, tiwa	Kotoko Island	tsuj
Daba		Mandara	tiwa ^y	Kotoko North	tsiwe
Mafa		Mofu	tiwi	Kotoko Centre	siwe
Tera		Maroua	tiwa	Kotoko South	tsiwja
Sukur		Lamang	tawa	Musgum	tiwa
Hurza		Higi		Gidar	

(212) *tsik^wir ‘chicken’

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara	g ^w itsiki	Kotoko North	
Mafa	watsak	Mofu	witsikar ^y , ma ⁿ dzik ^w ir ^y	Kotoko Centre	
Tera		Maroua	tsik ^w ar	Kotoko South	tsakar
Sukur	tak ^w ir	Lamang	yatak ^w ala	Musgum	miskir
Hurza	ⁿ dzik ^w ir	Higi		Gidar	

10.4.1.2 Word-medial

(213) *h^witsin^y 'nose'

Group	Root	Group	Root	Group	Root
Bata	tsini ^y	Margi	h ^w itsir ^y	Kotoko Island	tsinaj
Daba	mitsin ^y	Mandara	hitiri ^y	Kotoko North	tsihin
Mafa	hitsan	Mofu	h ^w itir ^y	Kotoko Centre	hisini
Tera		Maroua	hitin ^w , kitin ^y	Kotoko South	hitsine
Sukur	sin ^y	Lamang	hitsin	Musgum	
Hurza	h ^w itsan ^y	Higi	hitsin	Gidar	

(214) *pitsi 'sun'

Group	Root	Group	Root	Group	Root
Bata	fiti	Margi	pitsi	Kotoko Island	
Daba	pits ^y	Mandara	fatsi ^y	Kotoko North	
Mafa	pats	Mofu	pats	Kotoko Centre	
Tera	fida	Maroua	pas	Kotoko South	fatsa
Sukur	pis	Lamang	fiti	Musgum	futij
Hurza	pats	Higi	vitsi	Gidar	

10.4.1.3 Word-final

(215) *mits 'to die'

Group	Root	Group	Root	Group	Root
Bata	mit	Margi	mita	Kotoko Island	mati
Daba	mits	Mandara	mitsa	Kotoko North	madi
Mafa	mitsa	Mofu	mit	Kotoko Centre	mit
Tera	mit	Maroua	muta	Kotoko South	mara
Sukur	η ^w is	Lamang	mita	Musgum	mid ⁱ ^y
Hurza	mits	Higi	miti	Gidar	imta

(216) *riwits^y 'hearth'

Group	Root	Group	Root	Group	Root
Bata	riti ^y	Margi		Kotoko Island	
Daba	liwits ^y	Mandara	liwtsi ^y	Kotoko North	
Mafa	riwats ^y	Mofu	liwit ^y	Kotoko Centre	
Tera		Maroua	liwits ^y	Kotoko South	
Sukur	ruts	Lamang	liti	Musgum	liwit ^y
Hurza	riwats ^y	Higi	litwi	Gidar	

10.4.2 *dz

The phoneme *dz is found in initial and medial positions. Reflexes of *dz include /z/, /ts/ and occasionally /d/. The behaviour of *dz does not parallel the behaviour of *ts with respect to its reflexes. There were regular changes *dz→d in Proto-Musgum and *dz→z in Proto-Kotoko Centre and Proto-Gidar. No rules have been established for the other changes affecting *dz.

10.4.2.1 Word-initial

(217) *dzavɪn 'guinea-fowl'

Group	Root	Group	Root	Group	Root
Bata	zav ^w ɪn	Margi	tsivɪr	Kotoko Island	
Daba	zavɪn	Mandara	zabiri ^y	Kotoko North	tsafan
Mafa	zapan	Mofu	dzavɪr	Kotoko Centre	zavan
Tera	tsivan	Maroua	tsivɪn ^w	Kotoko South	dzavaŋ
Sukur	zabɪn	Lamang	zivɪn	Musgum	tsaavan ^y
Hurza	zavɪn	Higi	zivɪn	Gidar	zamvɪna

(218) *dziwid^y 'fly (insect)'

Group	Root	Group	Root	Group	Root
Bata	dziʔi ^y	Margi	tsidɪ ^y	Kotoko Island	hadzu
Daba	dziwid ^y	Mandara	ⁿ dziwid ^y	Kotoko North	ts'iwi
Mafa	dziwaj	Mofu	dziwaj	Kotoko Centre	ziwid
Tera		Maroua	dzidziwid ^y	Kotoko South	dzadzwi
Sukur	dziwid ^y	Lamang	ziwdi	Musgum	diwaj
Hurza	dziwaj	Higi	ziwid	Gidar	zikda ^y

(219) *dzaraj 'locust'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	dzara ^y	Mandara		Kotoko North	
Mafa	dzaraj	Mofu	dzaraj	Kotoko Centre	
Tera	ⁿ dzere	Maroua	dzaraj	Kotoko South	
Sukur	dzalaj	Lamang		Musgum	
Hurza	dzaraj	Higi	dzalaj	Gidar	zaraj

10.4.2.2 Word-medial

(220) *hiridz^y 'scorpion'

Group	Root	Group	Root	Group	Root
Bata	hiradzi ^y	Margi	hida ^y	Kotoko Island	
Daba	ridzi ^y	Mandara	radzi ^y	Kotoko North	
Mafa	haradz	Mofu	hirida ^y	Kotoko Centre	
Tera		Maroua	arats ^y	Kotoko South	
Sukur	^m birdaj	Lamang	rida	Musgum	hiridiw
Hurza	ridza ^y	Higi		Gidar	hirzija

(221) *hidzin^y 'mortar'

Group	Root	Group	Root	Group	Root
Bata	ⁿ dziri ^y	Margi	ⁿ dzir ^y	Kotoko Island	adzin
Daba	ⁿ dzar ^y , dzidzaŋ ^y	Mandara	dziri	Kotoko North	
Mafa		Mofu	dzira, dzidzaŋ ^y	Kotoko Centre	zin
Tera		Maroua	dzidziŋ ^y	Kotoko South	
Sukur	dzimdzi ^y	Lamang		Musgum	din
Hurza	dzira ^y , dzi ⁿ dzan ^y	Higi	ⁿ dzir	Gidar	

(222) *ɣ^wadzi 'quiver'

Group	Root	Group	Root	Group	Root
Bata	k ^w adza	Margi	k ^w adza ^y	Kotoko Island	
Daba		Mandara		Kotoko North	
Mafa		Mofu		Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur	wadzi	Lamang	ɣ ^w adzi	Musgum	
Hurza		Higi	g ^w ɛtsi	Gidar	

10.4.3 *s

The phoneme *s is attested in all positions, though it is very rare in word-medial position.

10.4.3.1 Word-initial

In initial position *s has changed to /h/ in Kotoko Island and to /z/ in Tera.

(223) *sa ‘to drink’

Group	Root	Group	Root	Group	Root
Bata	sa	Margi	sa	Kotoko Island	hi
Daba	sa	Mandara	sa	Kotoko North	se
Mafa	si	Mofu	sa	Kotoko Centre	sa
Tera	za	Maroua	si	Kotoko South	sja
Sukur	si	Lamang	sa	Musgum	si
Hurza	sa	Higi	sa	Gidar	isa

(224) *sin ‘to know’

Group	Root	Group	Root	Group	Root
Bata	sina	Margi	sin	Kotoko Island	hin
Daba	sin	Mandara	sir	Kotoko North	sin
Mafa	sina	Mofu	sir	Kotoko Centre	sin
Tera	zini	Maroua	sin	Kotoko South	siŋ
Sukur	si	Lamang	sina	Musgum	
Hurza	sina	Higi	sina	Gidar	isina

(225) *siwra ‘to fry’

Group	Root	Group	Root	Group	Root
Bata	siri	Margi	sula	Kotoko Island	
Daba	sar	Mandara	sula	Kotoko North	sil
Mafa	sara	Mofu	sawla	Kotoko Centre	
Tera	zur	Maroua	sula	Kotoko South	
Sukur	siwra	Lamang	sula	Musgum	sisal
Hurza	siwla	Higi	sili	Gidar	

10.4.3.2 Word-medial

*s is almost unattested word-medially. In the data it is only reconstructed in this position for two roots, both of which have limited distribution. This might suggest that *s was in most cases lost in this position. For the root **k^wisim* we also have the more widely reconstructed root **k^wihim*, with the same sense (see item (253) or the online data). This implies that there may have been a change *s→h word-medially at a point early in the history of Central Chadic.

(226) *k^wisim 'mouse'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara		Kotoko North	k ^w isim
Mafa		Mofu	(?)g ^w amso	Kotoko Centre	k ^w isim
Tera		Maroua		Kotoko South	k ^w isim
Sukur		Lamang		Musgum	kisim ^w
Hurza		Higi		Gidar	

(227) *tasirad 'seven'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	tsasarad ^y	Mandara		Kotoko North	
Mafa	tsarad ^f	Mofu	tasila	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur		Lamang		Musgum	
Hurza		Higi		Gidar	

10.4.3.3 Word-final

(228) *ɣ^wibis 'to laugh'

Group	Root	Group	Root	Group	Root
Bata	m ^w is	Margi	m ^w isa	Kotoko Island	
Daba	bas	Mandara	ɣ ^w ibasa	Kotoko North	
Mafa	ɲg ^w as	Mofu	ɣ ^w im ^b asa	Kotoko Centre	
Tera	mis	Maroua		Kotoko South	
Sukur	bis	Lamang	ɣ ^w ibas	Musgum	
Hurza	^m bisij	Higi	b ^w isi	Gidar	imasa

(229) *ɣ^wiris 'kidney'

Group	Root	Group	Root	Group	Root
Bata		Margi	k ^w ilsi ^y	Kotoko Island	
Daba	wilis ^y	Mandara	k ^w ilisi ^y	Kotoko North	
Mafa		Mofu	wilas ^y	Kotoko Centre	h ^w idɪs
Tera		Maroua		Kotoko South	ɗig ^w ise
Sukur	ɣ ^w ilisisi	Lamang	ɣ ^w ilisisi	Musgum	
Hurza	h ^w ilasase	Higi	ɣ ^w ilis ^j i	Gidar	

(230) *h^wisis 'hedgehog'

Group	Root	Group	Root	Group	Root
Bata		Margi	h ^w isi	Kotoko Island	
Daba	h ^w asasaḅ	Mandara	ususa	Kotoko North	
Mafa		Mofu	h ^w asis	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur		Lamang		Musgum	
Hurza	wisa	Higi	hasisi	Gidar	

10.4.4 *z

The phoneme *z is found in all positions, though it is most commonly found in word-initial position. There has been a change *z→s in the Margi group (see section 3.3.7), and in the ancestor language of the Musgum, Kotoko North and Kotoko Island groups (see section 3.2.3). In Kotoko Island there was a subsequent change *s→h.

10.4.4.1 Word-initial

(231) *ziwid^y 'string'

Group	Root	Group	Root	Group	Root
Bata	zaŋ ^w i	Margi	siwid	Kotoko Island	
Daba		Mandara	zawad	Kotoko North	sire
Mafa		Mofu	ziwad ^y	Kotoko Centre	sadɪ
Tera	zoo	Maroua	ziwid ^y	Kotoko South	
Sukur	ziḅi ^y	Lamang	ziŋ ^w i	Musgum	
Hurza	zawaj	Higi	ziŋ ^w i	Gidar	

(232) *zi^mb^wid^y 'navel'

Group	Root	Group	Root	Group	Root
Bata	zi ^m b ^w idɪ ^y	Margi	si ^m b ^w idɪw ^y	Kotoko Island	
Daba		Mandara	zi ^m bi ^y	Kotoko North	sa ^m bu
Mafa	zimal ^y	Mofu	zi ^m bal ^y	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur		Lamang	zi ^m bid	Musgum	
Hurza		Higi	zi ^m b ^w id	Gidar	

(233) *zi^ɲg^wa ‘donkey’

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	za ^ɲ ga ^w	Mandara	zi ^ɲ g ^w a	Kotoko North	
Mafa	za ^ɲ g ^w a	Mofu	azi ^ɲ g ^w a	Kotoko Centre	
Tera		Maroua	zi ^ɲ gi ^w	Kotoko South	
Sukur	zi ^ɲ g ^w a	Lamang	zuɲa	Musgum	
Hurza	zi ^ɲ g ^w a	Higi		Gidar	

10.4.4.2 Word-medial

(234) *zim ‘to eat’

Group	Root	Group	Root	Group	Root
Bata	zim	Margi	sim	Kotoko Island	him
Daba	zim	Mandara	ziwa	Kotoko North	sim
Mafa		Mofu	zim	Kotoko Centre	zim
Tera	zim	Maroua	zuma, zimi	Kotoko South	h ^w ima
Sukur		Lamang	za	Musgum	simi, zum
Hurza		Higi	zimi	Gidar	izima

(235) *k^wizɪn^y ‘grass’

Group	Root	Group	Root	Group	Root
Bata	k ^w izini	Margi	k ^w isar	Kotoko Island	
Daba		Mandara	k ^w iziri ^y	Kotoko North	
Mafa	kizan ^y	Mofu	k ^w izir ^y	Kotoko Centre	
Tera	wizin	Maroua	gizɪɲ ^y	Kotoko South	
Sukur		Lamang	k ^w izɪɲ	Musgum	
Hurza	g ^w idzad ^y	Higi	g ^w izɪn	Gidar	

10.4.4.3 Word-final

(236) *ha^mbiz^y ‘blood’

Group	Root	Group	Root	Group	Root
Bata	za ^m be	Margi	masi ^y	Kotoko Island	
Daba	ha ^m biz	Mandara	mizi ^y	Kotoko North	
Mafa	ba ^m baz ^y	Mofu	ha ^m biz ^y	Kotoko Centre	
Tera		Maroua	hi ^m bis ^w	Kotoko South	
Sukur	mu ^m bus	Lamang		Musgum	
Hurza	miza ^y	Higi	mimi	Gidar	

10.4.5 *ⁿdz

There is only one root that has been reconstructed containing *ⁿdz, but it is well-attested. *ⁿdz is found in a few roots in the proto-languages of eleven of the eighteen groups within Central Chadic.

(237) *ⁿdzah ‘to sit’

Group	Root	Group	Root	Group	Root
Bata	ⁿ dza	Margi	ⁿ zi	Kotoko Island	
Daba	ⁿ dza	Mandara	ⁿ dza	Kotoko North	
Mafa	ⁿ dzaha	Mofu	ⁿ dza	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur	ⁿ za	Lamang	ⁿ zak ^w	Musgum	
Hurza	ⁿ dzahaj	Higi	ⁿ dza	Gidar	

10.4.6 *j

The phoneme *j is found in all positions, though there are no roots reconstructed with it in word-initial position. It is very common in word-final position, which may be due to it originating as a determiner which later petrified as /j/ (Wolff 2006).

It is common for *j to become desegmentalised, and to be reanalysed as either the palatalization of a consonant (as in the Proto-Sukur entry for ‘bird’ 0) or else as a word-level prosody (as in the Proto-Bata entry for ‘rainy season’ (238)). Even when it remains as a segment, *j can easily metathesize with other consonants in the root (e.g. Proto-Higi ‘egg’ (239)).

10.4.6.1 Word-initial

There are no roots reconstructed with initial *j.

10.4.6.2 Word-medial

(238) *vija ‘rainy season’

Group	Root	Group	Root	Group	Root
Bata	va ^y	Margi	vija	Kotoko Island	
Daba	vija	Mandara	vija	Kotoko North	
Mafa	vija	Mofu	vija	Kotoko Centre	
Tera		Maroua	vija	Kotoko South	
Sukur	vi	Lamang	vija	Musgum	pija
Hurza	vija	Higi	vija	Gidar	

*dijik^w 'bird'

Group	Root	Group	Root	Group	Root
Bata		Margi	dijak ^w	Kotoko Island	
Daba		Mandara	dijak	Kotoko North	
Mafa	dijak	Mofu	dijij ^w	Kotoko Centre	
Tera	diki	Maroua	dijiw	Kotoko South	
Sukur	ʔak	Lamang	dijak	Musgum	
Hurza		Higi	dijik ^w ɪ	Gidar	

10.4.6.3 Word-final

(239) *dijij 'egg'

Group	Root	Group	Root	Group	Root
Bata	daʒi	Margi	ɬij ^y	Kotoko Island	
Daba	naʒid ^y	Mandara	dijija	Kotoko North	enɬi
Mafa	ɬaɬaj	Mofu	dijij	Kotoko Centre	enɬi
Tera		Maroua	ataɬ ^y	Kotoko South	nsi
Sukur	da ^ɳ gaʒaj	Lamang	ɬiti	Musgum	ʒat ^y
Hurza	ɬaj	Higi	jij	Gidar	da ^ɳ glɜ ^y

(240) *maj 'mouth'

Group	Root	Group	Root	Group	Root
Bata	ma	Margi	mja	Kotoko Island	
Daba	ma	Mandara	wa	Kotoko North	
Mafa	ma	Mofu	maj	Kotoko Centre	
Tera	me	Maroua	ma ^y	Kotoko South	me
Sukur	ɲ ^w ɪ	Lamang	waj	Musgum	maj
Hurza	ma ^y , ʔam	Higi	mi	Gidar	ma

10.5 Velar Consonants

10.5.1 *k

The phoneme *k is found in all positions. It has undergone few regular sound changes, but there are widespread sporadic changes to *k→h.

10.5.1.1 Word-initial

(241) *kirip^y 'fish'

Group	Root	Group	Root	Group	Root
Bata	kirifi ^y	Margi	kilfi ^y	Kotoko Island	
Daba	kilif ^y	Mandara	kilifi ^y	Kotoko North	
Mafa	kilaf ^y	Mofu	kilif ^y	Kotoko Centre	
Tera	yirvi ^w	Maroua	kilif ^y	Kotoko South	kilfi
Sukur	kirif ^y	Lamang	kilipi	Musgum	hilif ^y
Hurza	kilaf ^y	Higi	kilipi	Gidar	kilfi ^y

(242) *kir 'to steal'

Group	Root	Group	Root	Group	Root
Bata	hir	Margi	hila	Kotoko Island	
Daba	hil	Mandara	ɣil	Kotoko North	hir
Mafa	kir	Mofu	kil	Kotoko Centre	ɣ ^w ij
Tera		Maroua	h ^w il	Kotoko South	hila
Sukur	kir	Lamang	ɣila	Musgum	hil
Hurza	kira	Higi	ɣili	Gidar	ihala

(243) *kidim 'crocodile'

Group	Root	Group	Root	Group	Root
Bata	kirim	Margi	karam, him	Kotoko Island	
Daba		Mandara	kirwi ^y	Kotoko North	
Mafa	kirdam, gidam	Mofu	kirim, gidam	Kotoko Centre	
Tera		Maroua	hirim ^w	Kotoko South	
Sukur	kilim	Lamang	kiram	Musgum	hirim ^w
Hurza	gidam	Higi	kilim	Gidar	

10.5.1.2 Word-medial

(244) *hikin 'three'

Group	Root	Group	Root	Group	Root
Bata	mahikin	Margi	maakir	Kotoko Island	
Daba	mahkad	Mandara	hikiri	Kotoko North	
Mafa	mahkar	Mofu	mahkir	Kotoko Centre	
Tera	mahkan	Maroua	maakan	Kotoko South	
Sukur	maakin	Lamang	hikina	Musgum	
Hurza	maakan	Higi	maxkin	Gidar	

In many of the proto-languages of the groups, there is a prefix ma- attached to this root. A similar prefix occurs with the reflexes of several other numerals. The origin of the prefix is not known.

10.5.1.3 Word-final

(245) *dawik 'goat'

Group	Root	Group	Root	Group	Root
Bata	ih ^w i	Margi	k ^w i	Kotoko Island	
Daba	qh ^w a	Mandara	dawak	Kotoko North	
Mafa	dawik	Mofu	dawak	Kotoko Centre	ny ^w a
Tera		Maroua	ʔawi	Kotoko South	awa
Sukur	ʔijik ^w	Lamang	ag ^w i	Musgum	jawak
Hurza	awak	Higi	k ^w i	Gidar	hawa

(246) *sirik^y 'jealousy'

Group	Root	Group	Root	Group	Root
Bata	sirih	Margi	silka	Kotoko Island	
Daba	sirah ^y	Mandara	sili	Kotoko North	
Mafa	sirak ^y	Mofu	silik ^y	Kotoko Centre	
Tera	ziri	Maroua	silan ^w	Kotoko South	
Sukur	sirih	Lamang		Musgum	
Hurza	sirak	Higi	silki	Gidar	

(247) *hadik 'thorn'

Group	Root	Group	Root	Group	Root
Bata	dih	Margi		Kotoko Island	
Daba		Mandara	adaki	Kotoko North	
Mafa	hitak	Mofu	hadak	Kotoko Centre	
Tera	ⁿ deki	Maroua		Kotoko South	
Sukur	dzik ^y	Lamang	tiki	Musgum	hadak ^y
Hurza	adak	Higi	tiki	Gidar	

10.5.2 *g

The phoneme *g is rare, with only five examples found amongst the reconstructions. It occurs in word-initial and word-medial positions. There are few regular changes, though it commonly has as reflexes *k or *ɣ.

10.5.2.1 Word-initial

(248) *gir 'to grow'

Group	Root	Group	Root	Group	Root
Bata	gir	Margi	kila	Kotoko Island	
Daba	gɪl	Mandara	gɪla	Kotoko North	
Mafa	gɪla	Mofu	gɪl	Kotoko Centre	
Tera	gor	Maroua	gɪl	Kotoko South	
Sukur	gir	Lamang	gɪla	Musgum	
Hurza	ɣira	Higi	kil	Gidar	

10.5.2.2 Word-medial

(249) *rigid^y 'bow (weapon)'

Group	Root	Group	Root	Group	Root
Bata	ragi	Margi	laga	Kotoko Island	
Daba		Mandara	lika	Kotoko North	
Mafa	lakad ^y , lalan	Mofu	hiligid ^y	Kotoko Centre	
Tera	ri	Maroua	halak ^y	Kotoko South	
Sukur	raj	Lamang	liyed	Musgum	gi ⁿ diliŋ ^y
Hurza	liga ^y	Higi	ligij	Gidar	

(250) *vigid^y 'hole'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara	vigi ^y	Kotoko North	
Mafa	vavad ^y	Mofu	vid ^y	Kotoko Centre	
Tera		Maroua	vigid ^y	Kotoko South	
Sukur	vud	Lamang		Musgum	
Hurza		Higi		Gidar	viva ^w

10.5.3 *h

The phoneme *h is one of the best-attested phonemes in Proto-Central Chadic, and is found in all positions.

It is very common for *h to be lost in present-day languages. When this happens, the loss may be compensated for using one of two strategies. The first is the reduplication of the first syllable, and the second is the replacement of *h

with another consonant, typically /m/, though Mafa, for example, uses /v/ and Mandara /n/ (see section 3.4.5).

The label *h is used, as this is the default realisation in most of the present-day languages. However the phoneme patterns as part of the velar series with respect to labialization, and so may have been realised as [x] in Proto-Central Chadic.

10.5.3.1 Word-initial

Where *h occurs in word-initial position before a full vowel, the *h has been lost in many languages (see for example *hadik ‘thorn’, given in section 10.3.2.2).

(251) *himidʸ ‘wind’

Group	Root	Group	Root	Group	Root
Bata	midɪ	Margi	samadʸ	Kotoko Island	ha ^m badɪ
Daba	midʸ	Mandara		Kotoko North	samade
Mafa	mamadʸ	Mofu	himidʸ	Kotoko Centre	sɪmadɪ
Tera		Maroua	himidʸ	Kotoko South	sɪmade
Sukur	midʸ	Lamang		Musgum	sɪmadʸ
Hurza	himade	Higi		Gidar	sɪmja

(252) *hiridzʸ ‘scorpion’

Group	Root	Group	Root	Group	Root
Bata	hiradziʸ	Margi	hidaʸ	Kotoko Island	
Daba	ridziʸ	Mandara	radziʸ	Kotoko North	
Mafa	haradz	Mofu	hiridaʸ	Kotoko Centre	
Tera		Maroua	aratsʸ	Kotoko South	
Sukur	^m birdaj	Lamang	rida	Musgum	hiridiw
Hurza	ridzaʸ	Higi		Gidar	hirzija

10.5.3.2 Word-medial

(253) *k^wihim ‘mouse’ (cf. (226) *k^wisim)

Group	Root	Group	Root	Group	Root
Bata	h ^l imi	Margi		Kotoko Island	
Daba		Mandara	k ^w ihim	Kotoko North	
Mafa	k ^w ama	Mofu	k ^w ihim	Kotoko Centre	
Tera	ɣ ^w im	Maroua		Kotoko South	
Sukur	k ^w im	Lamang		Musgum	
Hurza	k ^w iham	Higi	k ^w im	Gidar	

10.5.3.3 Word-final

(254) *nih 'to ripen'

Group	Root	Group	Root	Group	Root
Bata	na	Margi	niya	Kotoko Island	
Daba	na	Mandara	na	Kotoko North	na
Mafa	ni ^h	Mofu	ni ^h ^w	Kotoko Centre	naha
Tera		Maroua	ni ^h ^y	Kotoko South	winha
Sukur		Lamang		Musgum	niyi
Hurza	nah	Higi	naka	Gidar	

(255) *h^widɪt^y 'cough'

Group	Root	Group	Root	Group	Root
Bata		Margi	widɪtɪa	Kotoko Island	
Daba		Mandara	h ^w idɪtɪa ^y	Kotoko North	h ^w idɪtɪa
Mafa	wɪtɪa	Mofu	h ^w idɪtɪa ^y	Kotoko Centre	widɪtɪa
Tera	k ^w ɪɪɪa	Maroua	hɪtɪa ^y	Kotoko South	wasja
Sukur	ɪɪɪa ^y	Lamang		Musgum	h ^w aɪ
Hurza	ɪɪɪɪa ^y	Higi	ɪɪɪa	Gidar	wɪtɪa

(256) *vinah 'to vomit'

Group	Root	Group	Root	Group	Root
Bata	vina	Margi		Kotoko Island	
Daba	vina	Mandara	viraha	Kotoko North	
Mafa	vinaha ^y	Mofu	vinaha	Kotoko Centre	vinahi
Tera	vinah	Maroua		Kotoko South	vinaha
Sukur	vinah	Lamang	vinah	Musgum	fina ^y
Hurza	vinah ^y	Higi	vinih ^w i	Gidar	

10.5.4 *ɣ

The phoneme *ɣ is found in all positions. Only six instances have been reconstructed.

In many present-day languages this phoneme has been lost altogether, having merged with either *h or *g. Merger with *h has occurred in Mandara and Malgwa of the Mandara group, Muyang and Moloko of the Mofu group, and possibly in Proto-North Kotoko-Musgum. Merger with *g occurred in Dghwede in the Mandara group and Proto-Meri in the Mofu group. *ɣ was lost in Proto-Mofu subgroup within the Mofu group.

10.5.4.1 Word-initial

(257) *ɣaj 'hut'

Group	Root	Group	Root	Group	Root
Bata	haji	Margi		Kotoko Island	
Daba	ga ^y	Mandara	ɣaj	Kotoko North	ho
Mafa	gaj	Mofu	ɣaj	Kotoko Centre	ɣaa
Tera		Maroua	gaj	Kotoko South	ye
Sukur	ɣi	Lamang		Musgum	
Hurza	aga	Higi	ɣaj	Gidar	

(258) *ɣin 'head'

Group	Root	Group	Root	Group	Root
Bata	ɣini	Margi	kir	Kotoko Island	
Daba		Mandara	ɣira	Kotoko North	
Mafa	jaŋ, gid	Mofu	ɣir	Kotoko Centre	
Tera		Maroua	jiŋ, hir	Kotoko South	
Sukur		Lamang	ɣiŋ	Musgum	
Hurza		Higi	ɣin	Gidar	

(259) *ɣanad^y 'tongue'

Group	Root	Group	Root	Group	Root
Bata	gana ^y	Margi	gar ^y	Kotoko Island	
Daba	ganad	Mandara		Kotoko North	
Mafa		Mofu		Kotoko Centre	
Tera	ɣina	Maroua		Kotoko South	
Sukur	ɣanaɟ	Lamang	ɣaniɟ	Musgum	
Hurza		Higi	ɣaniɟ	Gidar	

10.5.4.2 Word-medial

(260) *dayilij 'girl'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	dahalaj	Mandara	dahili ^y	Kotoko North	
Mafa	dahla	Mofu	dahilaj	Kotoko Centre	
Tera		Maroua	dili ^y	Kotoko South	
Sukur	digili	Lamang	dayali	Musgum	
Hurza	dalaj	Higi	diyilji	Gidar	

10.5.4.3 Word-final

(261) *hajay 'squirrel'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara	ajay	Kotoko North	jaga
Mafa		Mofu	hajaŋ	Kotoko Centre	
Tera		Maroua	ajaw	Kotoko South	ajahe
Sukur		Lamang	jaye	Musgum	jaja
Hurza	ajah	Higi		Gidar	

(262) *niy 'to see'

Group	Root	Group	Root	Group	Root
Bata	niy	Margi		Kotoko Island	
Daba		Mandara	niya	Kotoko North	
Mafa		Mofu	nik	Kotoko Centre	
Tera	na	Maroua	nahi	Kotoko South	
Sukur		Lamang	niya	Musgum	
Hurza		Higi	niyi	Gidar	

10.5.5 *^hg

Although /^hg/ is a phoneme in many present-day Central Chadic languages, there are no reliable roots reconstructed for Proto-Central Chadic containing *^hg. Its status must be considered doubtful. The following example is illustrative of the problems in reconstructing this phoneme.

(263) *ra^hgaɬ^y 'brain'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara		Kotoko North	erɬ'i
Mafa		Mofu	a ^h diɬ ^y , araɬ ^y , ɖa ^h gaɬ ^y	Kotoko Centre	meres'i
Tera		Maroua	alaɬ ^y	Kotoko South	
Sukur		Lamang		Musgum	
Hurza	mikila ^h gaɬ ^y	Higi		Gidar	

10.6 Labialized Velar Consonants

The Proto-Central Chadic labialized velar consonants play an important role in Central Chadic, as, along with *w, they are the source of all the labialization and back-rounded vowels that occur in the present-day languages. In many of the reflexes in vowel prosody languages, the labialization component is realised as a word-level labialization prosody which backs and rounds the vowels. In the

consonant prosody languages, in some cases the labialization component has transferred from the velar onto a labial consonant.

In almost all cases, the labialized consonants are better attested than the equivalent non-labialized consonants.

Labialized velars have been lost completely in the Musgum group, with the labialization component being transferred to the vowels in the form of labialization prosody.

10.6.1 *k^w

The phoneme *k^w is well-attested in all positions. In some cases it may have the reflexes /g^w/ or /h^w/, and the labialization component is sometimes lost. These changes appear to be unsystematic, with the exceptions of the regular change *k^w→g^b in Malgbe (Kotoko North) and possibly *k^w→g^w in Proto-Higi.

10.6.1.1 Word-initial

(264) *k^wini 'urine'

Group	Root	Group	Root	Group	Root
Bata		Margi	k ^w ini	Kotoko Island	k ^w araj
Daba		Mandara	k ^w irij	Kotoko North	k ^w ire
Mafa	k ^w iraj	Mofu	k ^w inaj	Kotoko Centre	k ^w ine
Tera		Maroua	k ^w inaj	Kotoko South	kimadɛ
Sukur	k ^w ir ^y	Lamang	k ^w ani	Musgum	
Hurza	mikadaj	Higi		Gidar	kina ^y

(265) *k^wizin 'grass'

Group	Root	Group	Root	Group	Root
Bata	k ^w izini	Margi	k ^w isar	Kotoko Island	
Daba		Mandara	k ^w izir ^y	Kotoko North	
Mafa	kizan ^y	Mofu	k ^w izir ^y	Kotoko Centre	
Tera	wizin	Maroua	gizir ^y	Kotoko South	
Sukur		Lamang	k ^w izir	Musgum	
Hurza	g ^w idzad ^y	Higi	g ^w izin	Gidar	

The Proto-Hurza root results from a number of sound changes, including a word-final *n→r and a subsequent *r→d. However it should be noted that the word-final *n→r change did not include Proto-Hurza, so this root may have been transmitted via Proto-Mofu or Proto-Mandara.

(266) *k^witir^y 'tail'

Group	Root	Group	Root	Group	Root
Bata	h ^w itiri	Margi		Kotoko Island	
Daba	k ^w ital ^y	Mandara	k ^w itili ^y	Kotoko North	
Mafa	h ^w adar, fitar ^w	Mofu	h ^w itil ^y	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur	tur	Lamang	h ^w itil	Musgum	
Hurza	k ^w itar ^y	Higi		Gidar	kitir ^w

10.6.1.2 Word-medial

(267) *tsik^wir 'chicken'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara	g ^w itsiki	Kotoko North	
Mafa	watsak	Mofu	witsikar ^y , ma ⁿ dzik ^w ir ^y	Kotoko Centre	
Tera		Maroua	tsik ^w ar	Kotoko South	tsakar
Sukur	tak ^w ir	Lamang	yatak ^w ala	Musgum	miskir
Hurza	ⁿ dzik ^w ir	Higi		Gidar	

(268) *ɗak^wir 'grey hair'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	hihil ^w	Mandara	k ^w ili	Kotoko North	
Mafa	k ^w araj	Mofu	ɗak ^w il	Kotoko Centre	
Tera		Maroua	hal ^w	Kotoko South	
Sukur	k ^w ir	Lamang		Musgum	
Hurza	ɗak ^w ar	Higi		Gidar	

(269) *ɗak^wa^y 'white'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	k ^w ik ^w iɗak ^y	Mandara	maɗak ^w i	Kotoko North	
Mafa	k ^w aɗ ^y	Mofu	k ^w aɗak ^y	Kotoko Centre	
Tera		Maroua	k ^w aɗak ^y	Kotoko South	
Sukur		Lamang		Musgum	miɗik ^w ij
Hurza	k ^w aɗak ^y , maɗak ^w a ^y	Higi		Gidar	

10.6.1.3 Word-final

(270) *hak^w 'fire'

Group	Root	Group	Root	Group	Root
Bata	g ^w i	Margi	hiʔ ^w i	Kotoko Island	aw
Daba	k ^w ah ^w i	Mandara		Kotoko North	hiw
Mafa	hak ^w a	Mofu	ak ^w i	Kotoko Centre	awi
Tera		Maroua	awi	Kotoko South	ag ^w a
Sukur	k ^w i	Lamang		Musgum	huu, ak ^w i
Hurza	ak ^w a	Higi	ɣ ^w i	Gidar	

(271) *dijik^w 'bird'

Group	Root	Group	Root	Group	Root
Bata		Margi	dijak ^w	Kotoko Island	
Daba		Mandara	dijak	Kotoko North	
Mafa	dijak	Mofu	dijij ^w	Kotoko Centre	
Tera	diki	Maroua	dijiw	Kotoko South	
Sukur	ʔak	Lamang	dijak	Musgum	
Hurza		Higi	dijik ^w i	Gidar	

(272) *pidak^{w y} 'razor'

Group	Root	Group	Root	Group	Root
Bata	pidik ^{w a y}	Margi	park ^{w i y}	Kotoko Island	
Daba	pidak ^{w y}	Mandara	pidak ^{w y}	Kotoko North	
Mafa	pidak ^{w y}	Mofu	pidak ^{w y}	Kotoko Centre	
Tera		Maroua		Kotoko South	
Sukur	pidak ^{w y}	Lamang		Musgum	
Hurza		Higi	pidik ^w	Gidar	

10.6.2 *g^w

The phoneme *g^w is found in initial and medial positions. In Malgbe of the Kotoko North group it has the reflex /gb̃/.

10.6.2.1 Word-initial

(273) *g^wavan 'cobra'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	gavan ^w	Mandara		Kotoko North	
Mafa	g ^w ivan	Mofu	g ^w avan̩	Kotoko Centre	
Tera		Maroua	gavan ^w	Kotoko South	
Sukur		Lamang		Musgum	
Hurza	g ^w avan	Higi	g ^w avan̩	Gidar	

(274) *g^wila 'left'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	g ^w ila	Mandara		Kotoko North	geli
Mafa	g ^w ila	Mofu	g ^w ila	Kotoko Centre	yilan
Tera		Maroua	g ^w ila	Kotoko South	
Sukur		Lamang		Musgum	
Hurza	g ^w ila	Higi	g ^w ila	Gidar	

(275) *g^wivih 'field'

Group	Root	Group	Root	Group	Root
Bata	v ^w i	Margi	fak ^w	Kotoko Island	
Daba		Mandara	g ^w ivih	Kotoko North	
Mafa		Mofu	g ^w ivih	Kotoko Centre	
Tera		Maroua	g ^w iva	Kotoko South	
Sukur		Lamang	wivah	Musgum	
Hurza	g ^w ivih	Higi	wivih	Gidar	

10.6.2.2 Word-medial

(276) *ɓig^wami^y 'camel'

Group	Root	Group	Root	Group	Root
Bata	ɓig ^w ami ^y	Margi	ɓig ^w am	Kotoko Island	log ^w ime
Daba	ɓakama ^w	Mandara	ɓig ^w ami	Kotoko North	logome
Mafa		Mofu	ɓig ^w ama ^y	Kotoko Centre	
Tera	ɓimox	Maroua		Kotoko South	
Sukur	ɓig ^w am	Lamang		Musgum	lukma
Hurza	ɓig ^w ama ^y	Higi	ɓig ^w ami	Gidar	ɓagama ^w

(277) *dzag^wa 'hat'

Group	Root	Group	Root	Group	Root
Bata		Margi	dzak ^w a	Kotoko Island	ⁿ dzak ^w a
Daba		Mandara	dzak ^w i	Kotoko North	sag ^w a
Mafa		Mofu	dzag ^w i	Kotoko Centre	
Tera		Maroua	dzak ^w i	Kotoko South	dzak ^w i
Sukur		Lamang	dzig ^w a	Musgum	zagaw
Hurza	dzig ^w a	Higi		Gidar	

(278) *dzig^wir 'hump'

Group	Root	Group	Root	Group	Root
Bata		Margi	dzik ^w ir ^y , madagara	Kotoko Island	
Daba	dɪg ^w ir ^y	Mandara		Kotoko North	sig ^w ire
Mafa		Mofu	madzigir, mitak ^w ar	Kotoko Centre	zirk ^w a
Tera	dɪg ^w il	Maroua		Kotoko South	dzaŋk ^w ara
Sukur	dzig ^w id	Lamang		Musgum	zig ^w irij
Hurza	dzig ^w ar	Higi		Gidar	

10.6.3 *h^w

The phoneme *h^w occurs almost entirely in initial position. The fricative component is frequently lost, and the labialization component may then be reanalysed as /w/, a word-level prosody, or else appear on a different consonant. This is a widespread sporadic process, rather than a regular predictable process. The examples given are those where *h^w has been widely retained.

10.6.3.1 Word-initial

(279) *h^wirip 'seed'

Group	Root	Group	Root	Group	Root
Bata	h ^w irifi	Margi	h ^w ilfi	Kotoko Island	
Daba		Mandara	h ^w ilfidfi	Kotoko North	g ^w ilfan
Mafa	h ^w alfej	Mofu	h ^w ilfad ^y	Kotoko Centre	
Tera		Maroua	h ^w ilfa	Kotoko South	
Sukur		Lamang	h ^w ilfa	Musgum	
Hurza		Higi	h ^w ilifi	Gidar	

(280) *h^wid 'belly'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara	h ^w idfi	Kotoko North	
Mafa	h ^w ad	Mofu	h ^w id	Kotoko Centre	
Tera	h ^w ira	Maroua	wuru	Kotoko South	
Sukur	h ^w id	Lamang	hudfi	Musgum	war
Hurza		Higi	h ^w id	Gidar	

10.6.3.2 Word-medial

(281) *sih^wani^y ‘dream’

Group	Root	Group	Root	Group	Root
Bata	sini ^y	Margi	si ^ɾ wini ^y	Kotoko Island	
Daba	sini ^y	Mandara	sih ^w ani ^y	Kotoko North	saware
Mafa	siwina ^y	Mofu	siwna ^y	Kotoko Centre	siwane
Tera	zine	Maroua	misin ^y	Kotoko South	
Sukur		Lamang	siwani	Musgum	hijni ^y
Hurza	siwna ^y	Higi	s ^j iwin	Gidar	issina ^y

10.6.4 *ɣ^w

The phoneme *ɣ^w is found almost always in initial position. The phoneme no longer exists in many of the present-day languages. Its reflexes include /w/ in Mandara and Malgwa of the Mandara group and the Mofu subgroup of the Mofu group, /g/ in Dghwede of the Mandara group, /h^w/ in Muyang and Moloko of the Mofu group and /g^w/ in Proto-Meri of the Mofu group.

10.6.4.1 Word-initial

(282) *ɣ^wipa ‘flour’

Group	Root	Group	Root	Group	Root
Bata	h ^w ipɪ	Margi	ip ^w ɪ	Kotoko Island	
Daba	ɲfa	Mandara	k ^w ipɪ	Kotoko North	
Mafa	g ^w ifa	Mofu	g ^w ipa	Kotoko Centre	
Tera		Maroua	hapa	Kotoko South	
Sukur	p ^w a	Lamang	h ^w ipaw	Musgum	
Hurza	hi ^m bɪga	Higi	ɣ ^w ipɪ	Gidar	gipa

(283) *ɣ^wɪbis ‘to laugh’

Group	Root	Group	Root	Group	Root
Bata	m ^w is	Margi	m ^w isa	Kotoko Island	
Daba	ɓas	Mandara	ɣ ^w ɪɓasa	Kotoko North	
Mafa	ɲg ^w as	Mofu	ɣ ^w ɪ ^m ɓasa	Kotoko Centre	
Tera	mis	Maroua		Kotoko South	
Sukur	ɓis	Lamang	ɣ ^w ɪɓas	Musgum	
Hurza	^m ɓisij	Higi	ɓ ^w ɪsi	Gidar	ɪmasa

(284) *ɣ^wirip 'blind'

Group	Root	Group	Root	Group	Root
Bata	wirifi	Margi	wilifu	Kotoko Island	
Daba	wilif	Mandara	ɣ ^w ilifi	Kotoko North	
Mafa		Mofu	ɣ ^w ilif	Kotoko Centre	ny ^w if
Tera		Maroua	hilif ^w	Kotoko South	ɣ ^w ajra
Sukur		Lamang	ɣ ^w ilpa	Musgum	
Hurza	ɣ ^w iraf	Higi	ɣ ^w ilifi	Gidar	

10.6.4.2 Word-medial

(285) *diɣ^wivan 'leopard'

Group	Root	Group	Root	Group	Root
Bata	digiv ^w a	Margi		Kotoko Island	
Daba		Mandara		Kotoko North	
Mafa		Mofu	divar	Kotoko Centre	
Tera		Maroua	divaŋ	Kotoko South	
Sukur	dig ^w avak	Lamang		Musgum	
Hurza		Higi	diɣ ^w ava	Gidar	

10.6.5 *ŋ^w

The phoneme *ŋ^w is rare and cannot be reconstructed with full confidence. The following three items are ones where there is some support from the data.

10.6.5.1 Word-initial

(286) *ŋ^wis 'woman'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara	k ^w isi	Kotoko North	
Mafa	ŋ ^w az	Mofu	ŋ ^w as, mikis	Kotoko Centre	
Tera	nufu	Maroua	ŋ ^w as	Kotoko South	
Sukur		Lamang		Musgum	
Hurza		Higi		Gidar	

10.6.5.2 Word-medial

(287) *zi^ɲg^wa ‘donkey’

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba	za ^ɲ ga ^w	Mandara	zi ^ɲ g ^w a	Kotoko North	
Mafa	za ^ɲ g ^w a	Mofu	azi ^ɲ g ^w a	Kotoko Centre	
Tera		Maroua	zi ^ɲ gi ^w	Kotoko South	
Sukur	zi ^ɲ g ^w a	Lamang	zuŋa	Musgum	
Hurza	zi ^ɲ g ^w a	Higi		Gidar	

(288) *ɲg^wits ‘hair’

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara	g ^w ɪdzi ^y	Kotoko North	
Mafa	ɲg ^w atsɪ	Mofu	a ^ɲ g ^w its ^y	Kotoko Centre	
Tera	ɣ ^w asi	Maroua	ɲg ^w itsɪ ^y	Kotoko South	
Sukur		Lamang		Musgum	
Hurza		Higi		Gidar	

10.6.6 *w

The phoneme *w is very well-attested in all positions. *w may combine with another consonant to form a labialized consonant, or may be desegmentalised and be reanalysed as the labialization prosody (see section 11.3).

10.6.6.1 Word-initial

(289) *wɪpad ‘four’

Group	Root	Group	Root	Group	Root
Bata	f ^w ad	Margi	f ^w adu	Kotoko Island	
Daba	fad ^w	Mandara	ufadɪ	Kotoko North	
Mafa	fad	Mofu	wifad	Kotoko Centre	
Tera	foda	Maroua	mufad	Kotoko South	fodɪ
Sukur	fwad	Lamang	wifad	Musgum	pɪdɪ ^w
Hurza	fudaw	Higi	wifadɪ	Gidar	padɪ ^w

(290) *zim 'to eat'

Group	Root	Group	Root	Group	Root
Bata	zim	Margi	sim	Kotoko Island	him
Daba	zim	Mandara	ziwa	Kotoko North	sim
Mafa		Mofu	zim	Kotoko Centre	zim
Tera	zim	Maroua	zuma, zimi	Kotoko South	h ^w ima
Sukur		Lamang	za	Musgum	simi, zum
Hurza		Higi	zimi	Gidar	izima

(291) *wivɪn 'grinding stone'

Group	Root	Group	Root	Group	Root
Bata		Margi	bura	Kotoko Island	
Daba	ɲvin	Mandara	uvira	Kotoko North	
Mafa		Mofu	var ^y	Kotoko Centre	vin
Tera	vina	Maroua	van	Kotoko South	vuna
Sukur	ban	Lamang	buna	Musgum	funay
Hurza	van	Higi	vina	Gidar	bwin

10.6.6.2 Word-medial

(292) *ɬiwɪd^y 'meat'

Group	Root	Group	Root	Group	Root
Bata	ɬiwi ^y	Margi		Kotoko Island	hu
Daba	ɬij ^y	Mandara	ɬiwɪd ^y	Kotoko North	ɬiw
Mafa	ɬiwad ^y	Mofu	ɬiw	Kotoko Centre	ɬiw
Tera	ɬu	Maroua		Kotoko South	asu
Sukur	ɬiwɪd ^y	Lamang	ɬiʔ ^w i	Musgum	ɬiwit
Hurza	ɬiwad ^y	Higi	ɬij	Gidar	ɬiwi

(293) *siwra 'to fry'

Group	Root	Group	Root	Group	Root
Bata	siri	Margi	sula	Kotoko Island	
Daba	sar	Mandara	sula	Kotoko North	sɪl
Mafa	sara	Mofu	sawla	Kotoko Centre	
Tera	zur	Maroua	sula	Kotoko South	
Sukur	siwra	Lamang	sula	Musgum	sisal
Hurza	siwla	Higi	sɪli	Gidar	

(294) *dawim 'honey'

Group	Root	Group	Root	Group	Root
Bata		Margi	wimi	Kotoko Island	
Daba	ḡaḡam ^w	Mandara	ḡama	Kotoko North	mam
Mafa	^m gbam	Mofu	awim	Kotoko Centre	imam
Tera		Maroua	amam	Kotoko South	amama
Sukur	mam	Lamang	omo	Musgum	wamaj
Hurza	wimam	Higi		Gidar	amima

10.6.6.3 Word-final

(295) *kiriw 'ten'

Group	Root	Group	Root	Group	Root
Bata		Margi		Kotoko Island	
Daba		Mandara	kilawa	Kotoko North	
Mafa	k ^w iraw	Mofu	kiraw	Kotoko Centre	
Tera		Maroua	kiri ^w	Kotoko South	
Sukur		Lamang		Musgum	
Hurza	kira ^w	Higi		Gidar	

(296) *hadik^w 'grasshopper'

Group	Root	Group	Root	Group	Root
Bata	aḡik ^w	Margi	haḡiw	Kotoko Island	
Daba	wajak	Mandara	hijiwi	Kotoko North	hajaw
Mafa	jak ^w	Mofu	hajak ^w	Kotoko Centre	
Tera		Maroua	hajak ^w	Kotoko South	
Sukur		Lamang	hiʔi	Musgum	
Hurza		Higi	haḡik	Gidar	hajḡaŋ ^y

(297) *ⁿdiw 'person'

Group	Root	Group	Root	Group	Root
Bata	i ⁿ diw	Margi	ⁿ du	Kotoko Island	
Daba		Mandara	wi ⁿ ḡi	Kotoko North	
Mafa	ⁿ da ^w	Mofu	ⁿ daw	Kotoko Centre	
Tera	ⁿ ḡik ^w i	Maroua		Kotoko South	
Sukur	ⁿ diw	Lamang	mi ⁿ du	Musgum	
Hurza		Higi	wi ⁿ ḡi	Gidar	

10.7 A Comparison with Newman's Consonantal Inventory

Newman's reconstruction for the consonant inventory of Proto-Chadic was as follows (rearranged):

	Labial	Alveolar	Laminal	Velar	Palatalized Velar	Labialized-Velar
Plosive	p	t	ts	k	k ^j	k ^w
	b	d	dz	g	g ^j	g ^w
Implosive	ɓ	ɗ		ɠ		
Fricative	f	ɬ	s, ʂ (i.e. ʃ)	x	x ^j	x ^w
			z			
Nasal	m	n				
Liquid		r				
Approximant			j			w

Table 112 - Proto-Chadic consonants

The Proto-Central Chadic consonant inventory is repeated here. Phonemes in parentheses are considered marginal.

	Labial	Alveolar	Laminal	Velar	Labialized-Velar
Plosive	p	t	ts	k	k ^w
	b	d	dz	g	g ^w
Implosive	ɓ	ɗ			
Fricative		ɬ	s	h	h ^w
	v	ʙ	z	ɣ	ɣ ^w
Nasal	m	n			
	^m b	ⁿ d	ⁿ dz	(^ɲ g)	(^ɲ g ^w)
Liquid		r			
Approximant			j		w

Table 113 - Proto-Central Chadic consonants

There are a number of important differences. Firstly, Newman reconstructs a set of palatalized velar consonants for Proto-Chadic, though only *g^j appears in his reconstructed roots.

Secondly, Newman does not reconstruct any pre-nasalized phonemes, though he does bring out the issue. It is entirely possible that pre-nasalized consonants did not exist in Proto-Chadic, but developed in Proto-Central Chadic.

Thirdly, and most significantly, there are large differences in how the fricatives have been reconstructed. Newman includes a phoneme *ʒ, with unclear phonetic form, possibly [ʃ]. According to Newman, this phoneme developed into a voiceless lateral fricative in Proto-Central Chadic, merging with *ɬ. It is not possible to distinguish this phoneme from *ɬ in Central Chadic. A possibility that Newman does not give is that this phoneme was realised as a voiced lateral fricative in Proto-Chadic.

Newman only has one voiced fricative *z, whereas in Proto-Central Chadic there is a voiced/voiceless contrast at all places of articulation. For the velar fricatives, this may reflect an historical change where a voicing distinction came into existence early in the history of Central Chadic. This is a plausible scenario, given the variation in voicing between some of the reflexes of the velar fricatives, and the lack of clear patterning. For the alveolar fricatives, the voiced lateral fricative is fairly rare in Proto-Central Chadic, and could indeed be an innovation.

Newman includes a third glottalised consonant *ʔ, with a variety of reflexes and no clear point of articulation. For Proto-Central Chadic, no equivalent phoneme has been reconstructed. Where there is a glottalized palatal or velar consonant, this is shown to be the result of the fusion of two phonemes (see section 10.1.2).

Amongst the labial phonemes, Newman reconstructs *p and *f as separate phonemes, whereas for Proto-Central Chadic they are reconstructed as a single phoneme. In neither case is the situation clear (see section 10.2.1). The change from Proto-Chadic *b to Proto-Central Chadic *v accounts for the other difference amongst the labial phonemes.

10.8 Statistics

The following statistics are based on 171 reconstructed roots where there are reflexes in at least six of the groups within Central Chadic and data from more than ten languages. Figures are given for the occurrences of each phoneme in different positions in the word, ordered by place and point of articulation, and by overall frequency in the data. Summary statistics are given for each place of articulation, and each manner of articulation. If the same phoneme appears twice in a root, this is counted as two occurrences.

10.8.1 Phonemes ordered by place and point of articulation

	Initial	Medial	Final	Total	Overall percentage
p	7	4	7	18	4%
b	2	0	0	2	0%
v	11	11	2	24	6%
ɸ	0	1	1	2	0%
m	9	10	8	27	6%
^mb	5	4	0	9	2%
t	3	2	2	7	2%
d	3	3	0	6	1%
ɬ	10	3	3	16	4%
ɓ	3	1	1	5	1%
ɗ	12	7	18	37	9%
n	2	8	20	30	7%
^ɲd	2	1	0	3	1%
r	4	30	12	46	11%
ts	5	4	3	12	3%
dz	7	3	0	10	2%
s	9	2	4	15	4%
z	5	2	1	8	2%
^ɲdz	1	0	0	1	0%
j	1	6	13	20	5%
k	7	2	4	13	3%
g	2	3	0	5	1%
h	16	2	11	29	7%
ɣ	3	1	2	6	1%
^ɲg	1	1	0	2	0%
k^w	8	5	5	18	4%
g^w	3	6	0	9	2%
h^w	8	1	0	9	2%
ɣ^w	9	1	0	10	2%
^ɲg^w	0	1	0	1	0%
w	6	12	4	22	5%

10.8.2 Phonemes ordered by total number of instances

	Initial	Medial	Final	Total	Overall percentage
r	4	30	12	46	11%
ɗ	12	7	18	37	9%
n	2	8	20	30	7%
h	16	2	11	29	7%
m	9	10	8	27	7%
v	11	11	2	24	6%
w	6	12	4	22	9%
j	1	6	13	20	5%
k^w	8	5	5	18	4%
p	7	4	7	18	4%
ʈ	10	3	3	16	4%
s	9	2	4	15	4%
k	7	2	4	13	3%
ts	5	4	3	12	3%
dz	7	3	0	10	2%
ɣ^w	9	1	0	10	2%
^mb	5	4	0	9	2%
g^w	3	6	0	9	2%
h^w	8	1	0	9	2%
z	5	2	1	8	2%
t	3	2	2	7	2%
d	3	3	0	6	1%
ɣ	3	1	2	6	1%
ʎ	3	1	1	5	1%
g	2	3	0	5	1%
ⁿd	2	1	0	3	1%
b	2	0	0	2	0%
ɸ	0	1	1	2	0%
^ɳg	1	1	0	2	0%
ⁿdz	1	0	0	1	0%
^ɳg^w	0	1	0	1	0%

10.8.3 Statistics by place of articulation

The alveolar phonemes are the most common in the reconstructed roots. All the other points of articulation are more or less equally common. Labialized velars are uncommon in word-final position.

	Initial	Medial	Final	Total	Percentage
Labial	34	30	18	82	19%
Alveolar	39	55	56	150	35%
Laminal	28	17	21	66	15%
Velar	30	11	17	58	14%
Labialized velar	36	26	9	71	17%

10.8.4 Statistics by manner of articulation

Voiceless plosives and fricatives are more common than voiced plosives and fricatives. Implosives and nasals are also more common than voiced plosives. Overall, fricatives are much more common than plosives.

	Initial	Medial	Final	Total	Percentage
Voiceless plosive	29	15	14	58	14%
Voiced plosive	17	15	0	32	7%
Voiceless fricative	44	10	25	79	19%
Voiced fricative	31	16	6	53	12%
Implosive	15	10	19	44	10%
Nasal	11	18	28	57	13%
Pre-nasalized plosive	9	7	0	16	4%
Liquid/approximant	11	48	29	88	21%

