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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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3 Presentation of the Classification

In this section we will lay out the evidence for the genetic classification that we will be using in the rest of this study. The evidence is in the form of regular sound changes that are attested across the core vocabulary of the languages concerned. This is taken to be a more reliable indicator of genetic relatedness than evidence from shared isoglosses or phonological typology. Morphological evidence is of limited value. Where there is good comparative data available, such as with verb morphology in the Mofu group (de Colombel 1991), or noun morphology in the Bata group (Gravina 2009), there is considerable variation on the forms used, and little can be deduced to inform the classification.

The classification is as follows:

Sub-branch	Major Group	Group	Subgroup	Language
South		Bata	Bata Proper	Bachama, Bata, Fali, Gude, Gudu, Holma, Jimi, Ngwaba, Nzanyi, Sharwa
			Tsuvan	Tsuvan, Zizilivakan
	Daba		Daba	Daba, Mazagway Hidi
			Mina	Mina, Mbudum
			Buwal	Buwal, Gavar
	Mafa			Mafa, Mefe, Cuvok
	Tera	East		Boga, Ga'anda, Hwana Jara, Tera
	Sukur			Sukur
Hurza		Hurza		Vame, Mbuko

North	Margi- Mandara-Mofu	Margi	Bura	Bura, Cibak, Kofa, Putai, Nggwahyi
			Margi	Kilba, Margi South, Margi
		Mandara	Wandala	Mandara, (Malgwa), Glavda
			Dghwede	Cineni, Dghwede, Guduf, Gava, Gvoko
			Podoko	Podoko, Matal
		Mofu	Tokombere	Ouldeme, Mada, Muyang, Moloko
			Meri	Zulgo, (Gemzek), Merey, Dugwor
			Mofu	Mofu North, Mofu- Gudur
		Maroua		Giziga North, Giziga South, Mbazla
		Lamang		Lamang, Hdi, Mabas
		Higi		Bana, Hya, Psikye, Kamwe
	Musgum-North Kotoko	Kotoko Island		Buduma
		Kotoko North		Mpade, Afade, Malgbe, Maltam
		Musgum		Musgum, Mbara, Muskum
		Kotoko Centre		Lagwan, Mser
		Kotoko South		Zina, Mazera
		Gidar		Gidar

Table 10 - The genetic classification of Central Chadic languages

3.1 Sound Changes at Sub-branch level

Here we will present a summary of the sound changes that operate at levels higher than the group, i.e. in the three sub-branches and in the major groups. More detailed data will be given in chapter 10, which will present the history of each Proto-Central Chadic consonant. Full data can also be found at <http://centralchadic.webonary.org/>.

- (1) *t→ɓ *ta→*ɓa 'cow'
 *ta→*ɓa 'to cut'
 *ɗimɪdʷ→*ɓimɪdʷ 'ear', 'name'
 *ɗɪɪj→*ɗɪɓj 'egg'
 *ɗiwɪdʷ→*ɓiwɪdʷ 'meat'
 *ɗin→*ɓin 'to send'
 *ɗɪɗinʷ→*ɓɪɗinʷ 'tooth'
 *ɗini→*ɓini 'to work'

3.1.2 North sub-branch

The North sub-branch of Central Chadic comprises the following groups: Higi, Lamang, Margi, Mandara, Mofu, Maroua, Gidar, Musgum, Kotoko South, Kotoko Centre, Kotoko North and Kotoko Island (Gravina 2011). The Margi, Mandara and Mofu groups form a major group, as do the Musgum, Kotoko North and Kotoko Island groups.

There are two sound changes that identify the North sub-branch, a general *r→l change, and a word-medial *d→r change. The *d→r change was subsequent to the *r→l change. The examples given in (2) below show the Proto-Central Chadic form and the resulting forms reconstructed for the proto-language of the North sub-branch.

- (2) *r→l *ɣ^wirɪp→*ɣ^wilɪp 'blind'
 *rɪgɪdʷ→*lɪgɪdʷ 'bow'
 *pɪrɪ→*pɪlɪ 'butterfly'
 *ra→*la 'to dig'
 *kɪrɪpʷ→*kɪlɪpʷ 'fish'
 *sɪwra→*sɪwla 'to fry'
 *gɪr→*gɪl 'to grow'
 *rɪwɪtsʷ→*lɪwɪtsʷ 'hearth'
 *pɪrɪsʷ→*pɪlɪsʷ 'horse'
 *sɪrɪkʷ→*sɪlɪkʷ 'jealousy'
 *sɪraj→*sɪlaj 'leg'
 *tira→*tila 'moon'
 *mar→*mal 'oil'
 *wɪrɪdʷ→*wɪlɪdʷ 'pus'
 *kɪr→*kɪl 'to steal'
 ^mɓiwrɪn→^mɓiwlɪn 'tamarind tree'
 *pɪra→*pɪla 'to untie'

The medial *d→r change is less clear. This innovation was proposed for Musgu (Tourneux 1990) and for all the Musgum and Kotoko groups (Shryock 2010).

Evidence comes from three roots: ‘eye’, ‘monkey’ and hare. We must discount the root **kidim* ‘crocodile’ as the variation between *d and *r in the medial consonant is due to the word entering Central Chadic in two different cognate forms (Stolbova 2006). A similar situation occurred with the root **kiri* ‘dog’.

The root **hadaj* ‘eye’ has support for the internal *d from across Chadic. There is good support for the retention of *d in Central Chadic South, the only exceptions being some languages of the Daba group. In Central Chadic North there is also good support for intervocalic *d→r, with the only exceptions being in some Mandara group languages and Mofu-Gudur (Mofu group).

The root **vidij* ‘monkey’ is absent from the Central Chadic South languages except for the Tera group. Support for the reconstruction of *d comes from other branches of Chadic. The Central Chadic South data provides good evidence for intervocalic *d→r.

The root **vida* ‘hare’ has a number of reflexes within Central Chadic. The limited data supports intervocalic *d→r in Proto-Central Chadic North.

- (3) *d→r word-medial **hadaj*→**haraj* ‘eye’
 vidij*→virij* ‘monkey’
 vida*→vira* ‘hare’

3.1.3 Hurza sub-branch

The Hurza sub-branch comprises only one group, namely the Hurza group, which in turn comprises just two languages. The Hurza sub-branch does not exhibit the sound changes that would place it within either the North or South sub-branches of Central Chadic, and so it must be considered to be a separate sub-branch in its own right.

3.2 Sound Changes at Major Group Level

In this section we will present the evidence for the existence of three possible major groups. In two cases, we give evidence to support the existence of the major group, but in the case of Mafa, Sukur and Daba we are unable to do so.

The sound changes are described in terms of the change from Proto-Central Chadic to the proto-language of the major group. Full data giving evidence for the reconstructions can be found at <http://centralchadic.webonary.org/>.

3.2.1 *Mafa, Sukur and Daba*

In an earlier publication (Gravina 2007a), it was proposed that the Mafa, Sukur and Daba groups shared a common ancestor on the basis of a shared sound change $*t \rightarrow ts$ word-finally. However, wider analysis of the data makes it more likely that the change was in fact $*ts \rightarrow t$, in which case there is now no evidence for linking these three groups.

In the lexicon, these three groups are more similar to each other than they are to the Tera and Bata groups, the other groups within the South sub-branch. It is still possible that these groups share a common ancestor, but for the time being this cannot be deduced from sound changes.

3.2.2 *Margi-Mandara-Mofu Major Group*

Within the North sub-branch, the Margi, Mandara and Mofu groups share a common ancestor. The proto-language of the Margi-Mandara-Mofu major group underwent a change $*n \rightarrow r$ in word-final position.

(4) $*n \rightarrow r$ word-final	$*y^w i v i n \rightarrow *y^w i v i r^y$	'charcoal'
	$*g i w i n \rightarrow *g i w i r$	'fear'
	$*k^w i z i n \rightarrow *k^w i z i r^y$	'grass'
	$*w i v i n \rightarrow *w i v i r$	'grinding stone'
	$*d z a v i n \rightarrow *d z a v i r$	'guinea fowl'
	$*y i n \rightarrow *y i r$	'head'
	$*v i n \rightarrow *v i r^y$	'hut'
	$*s i n \rightarrow *s i r$	'to know'
	$*h^w i t s i n \rightarrow *h^w i t s i r^y$	'nose'
	$*v i n \rightarrow *v i r$	'rain'
	$*l i n \rightarrow *l i r$	'to send'
	$*m b i w l a n \rightarrow *m b i w l a r$	'tamarind'
	$*h i k i n \rightarrow *h i k i r$	'three'
	$*l i d i n \rightarrow *l i d i r^y$	'tooth'
	$*l i n \rightarrow *l i r$	'to work'

3.2.3 *North Kotoko-Musgum Major Group*

The North Kotoko-Musgum major group within the North sub-branch comprises the Kotoko Island, Kotoko North and Musgum groups. It is identified by two sound changes, $*v \rightarrow f$ and $*z \rightarrow s$. In the data presented here and in the following sections, we will give the proto-form for the immediately preceding level (e.g. Proto-North sub-branch) and the reconstructed form for the proto-language in question (e.g. Proto-North Kotoko-Musgum).

- (5) *v→f *wivɪn→*wifɪn 'grinding stone'
 *dzavɪn→*dzafɪn 'guinea fowl'
 *vɪn^y→*fɪn 'hut'
 *vɪnah→*fɪnah 'to vomit'

- (6) *z→s *zɪm→*sɪm 'to eat'
 *zi→*si 'body'

There is some evidence for a regular change *ɣ→h in these same groups. The data is consistent with this, but the number of examples is quite small (eight roots), with data coming from just a few languages, and is mostly comprised of less widely-attested roots. However it is significant to note that /ɣ/ exists in Kotoko Centre and Kotoko South, but not in any of the languages of the North Kotoko-Musgum major group.

If this change is valid, then we can generalise the changes in this major group as the devoicing of fricatives, though there is only one root to support the devoicing of voiced lateral fricatives.

3.3 Sound Changes at Group Level and Below

In the following sections we will list the sound changes that took place for the proto-language of each group, and those changes known for each sub-group and each language in the group. The sound changes will be given from the proto-form at the immediately preceding level. The group-level sound changes serve as evidence of relatedness of the members of the group. The language-level sound changes are useful for interpreting the data. Full data can be found at <http://centralchadic.webonary.org/>.

3.3.1 Bata Group

The Bata group consists of twelve languages: Bata, Bachama, Fali (of Muchella), Gude, Gudu, Holma, Jimi, Ngwaba, Nzanyi, Sharwa, Tsuvan and Zizilivakan. The Bata group is part of the Central Chadic South sub-branch of Central Chadic.

There is one change so far found for Proto-Bata, namely a general change *ts→t.

- (7) *ts→t *pitsɪ→fitɪ 'sun'
 *tsɪwi→tɪwi 'to cry'
 *mits→mit 'to die'

Within the Bata group, almost all of the languages for which data is available have undergone *ɟ→l. Note that the Proto-Bata *ɟ comes from Proto-Central

Chadic *ɫ. The only language known not to have undergone this change is Tsuvan, with wordlist data (Kraft 1981) indicating that the same may be true for Zizilivakan and Fali of Muchella, though [ɫ] is not always well transcribed in these wordlists. These three languages are found in the north-east of the Bata group area. Zizilivakan and Fali of Muchella are contiguous, whilst Tsuvan is separated by a distance of 15-20km. The rest of the languages share the *ɫ→l innovation, and can be considered to be a subgroup – denoted the Bata Proper subgroup – with a common ancestor. They are spread over a comparatively large geographical area (see Map 21).

- (8) *ɫ→l *ilɫi→ili 'bone'
 *ɫimi^y→limi^y 'ear'
 *ɫa→la 'cow'
 *ɫiwi^y→liwi^y 'meat'

In **Tsuva**n (which is not a part of the Bata Proper subgroup), there has been a consistent change *r→l, possibly influenced by the same change in the neighbouring Daba group.

- (9) *r→l *gir→gəl 'to grow'
 *wirifi→wəlfə 'blind'
 *wira→wəla 'neck'

3.3.2 *Daba Group*

The Daba group consists of six languages: Buwal, Gavar, Mbudum, Mina, Daba and Mazagway Hidi. It is part of the Central Chadic South sub-branch of Central Chadic.

There is a general change *r→l.

- (10) *r→l *kirip^y→*kilif^y 'fish'
 *pira→pɪl 'to untie'
 *kir→hɪl 'to steal'

In **Mbudum** there is a change *n→ŋ word finally.

- (11) *n→ŋ *ban→baŋ 'to wash'
 *van→vaŋ 'rain'
 *sin→saŋ 'to know'

3.3.3 Mafa Group

The Mafa group consists of three languages: Mafa, Cuvok and Mefe. It is part of the Central Chadic South sub-branch of Central Chadic. Proto-Mafa is probably most closely related to Proto-Sukur and Proto-Daba.

No sound changes have been found for Proto-Mafa.

In **Cuvok**, there are two sound changes. The first is a general change $*r \rightarrow l$.

- (12) $*r \rightarrow l$ $*^n\text{dar} \rightarrow ^n\text{dala}$ 'to burn'
 $*^m\text{biram}^w \rightarrow ^m\text{b}^w\text{elam}$ 'tamarind'
 $*\text{riwats}^y \rightarrow \text{l}^y\text{ewats}^y$ 'hearth'

The second is a word-final change $*n \rightarrow \eta$.

- (13) $*n \rightarrow \eta$ $*\text{madiwan} \rightarrow \text{madwan}\eta$ 'rat'
 $*\text{ɣan}^y \rightarrow \text{ɣan}\eta^y$ 'tooth'
 $*\text{zapan} \rightarrow \text{zapan}\eta$ 'guinea fowl'

Although these sound changes are also found in the Daba group (see section 3.3.2), we cannot infer that Cuvok should be classified as part of the Daba group. There are differences in the lexical items where the $*r \rightarrow l$ change occurred, implying that there may have been particular environments involved in the change that were not the same in both cases. Also, the lexicostatistics (Barreteau, Breton, and Dieu 1984) show a degree of similarity of 76% with Mafa, compared with 54% with the closest members of the Daba group. This would argue against classifying Cuvok within the Mafa group, unless stronger evidence is found.

In Mafa, compensatory prefixation is used when an initial consonant has been lost. In this case the consonant is replaced by /v/.

- (14) Compensatory prefixation $*\text{hitak} \rightarrow \text{vatak}$ 'thorn'
 $*\text{haradz} \rightarrow \text{varadza}$ 'scorpion'
 $*\text{hak}^w\text{a} \rightarrow \text{vag}^w\text{a} / [\text{vog}^w\text{a}]$ 'fire'

3.3.4 Tera Group

The Tera group consists of five languages, divided into two subgroups (Newman 1977a):

- West Tera: Tera, Jara
- East Tera: Boga, Ga'anda, Hwana

The Tera group is part of the Central Chadic South sub-branch of Central Chadic. The group appears to be quite distantly related to the rest of Central Chadic South.

In Proto-Tera, *d was deleted in word-final position.

- (15) *d→∅ word-final *yanad^y→yina 'tongue'
 *ɣimɪd^y→ɣim 'ear'

In the East Tera subgroup, there has been a general devoicing of obstruents (Newman 1977a).

- (16) Devoicing of obstruents *vid→fid 'night'
 *zim→sim 'to eat'
 *dziwan^y→tsiwan^y 'elephant'

In the West Tera subgroup there was a general voicing of word-initial fricatives (Newman 1977a).

- (17) Voicing of word-initial fricatives *sin→zini 'to know'
 *foda→vat 'four'

3.3.5 *Sukur Group*

The Sukur group consists of the single language Sukur. It is part of the Central Chadic South sub-branch of Central Chadic. Within this sub-branch, it is probably most closely related to Proto-Mafa and Proto-Daba.

The only sound change that can be ascribed to Sukur is *ts→s.

- (18) *ts→s *vats→vus 'to blow'
 *pitsi→pis 'sun'
 *h^witsin^y→sin^y 'nose'

3.3.6 *Hurza Group*

The Hurza group consists of two languages, Mbuko and Vame. No consistent sound changes have been identified that are distinctive for this group. The Hurza group is the only group within the Hurza sub-branch.

3.3.7 *Margi Group*

The Margi group consists of eight languages, subdivided into two subgroups (Hoffmann 1988). Hoffmann referred to these as West Margi and East Margi, but here we shall refer to them as the Bura and Margi sub-groups respectively.

The Bura sub-group contains Bura, Cibak, Kofa, Nggwahyi and Putai; the Margi sub-group comprises Margi, South Margi and Kilba. The Margi group is part of the Margi-Mandara-Mofu major group, which in turn is part of the Central Chadic North sub-branch.

There are two sound changes that apply to Proto-Margi.

- (19) *d→t word-initial *d̩l̩im→t̩l̩im ‘horn’
 *d→ta ‘to cook’

- (20) *z→s *zim→sim ‘to eat’
 *k^wizir^y→k^wisar ‘grass’

In addition, there is a widespread change in individual languages *ɬ→h^j, triggered by palatalization of *ɬ. This phenomenon is also found in the Wandala subgroup of the Mandara group.

- (21) *ɬ→h^j *ɬir→ɬ̪ir→h^jir (Margi) ‘tooth’
 *ɬimi^y→ɬ̪imi→h^jimi (Kilba) ‘ear’

In **Bura** there is a regular change *ɗ→r.

- (22) *ɗ→r *f^wadu→nf^war ‘four’
 *v^widi→viri ‘night’

No other regular changes for languages within the group, or for the two subgroups, have been identified.

3.3.8 Mandara Group

The Mandara group consists of eight languages divided into three subgroups as follows:

- Wandala subgroup – Mandara, including the Malgwa dialect, Glavda
- Dghwede subgroup – Dghwede, Cineni, Guduf, Gvoko
- Podoko subgroup – Podoko, Matal

The Wandala and Dghwede subgroups share a common ancestor at the same level as the ancestor of the Podoko subgroup.

The Mandara group is part of the Margi-Mandara-Mofu major group, which is in turn part of the Central Chadic North sub-branch of Central Chadic.

In the proto-language of the Margi-Mandara-Mofu major group there was a regular change *n→r word-finally (see section 3.2.2). In Proto-Mandara there was a further change *n→r in word-medial position.

- (23) *n→r word-medial *k^winij→k^wirij ‘urine’
 *vinah→viraha ‘to vomit’

There was also a change *m→w in word-final position.

- (24) *m→w word-final *ɗijim→jiwi ‘water’
 *kirim→kirwi^y ‘crocodile’

In the ancestor of the Wandala and Dghwede subgroups, this change also took place in word-initial position. The environment was probably restricted to those words where the *m preceded a vowel.

- (25) *m→w word-initial *mali→wali ‘oil’
 *maji→waja ‘hunger’

Compensatory prefixation is also a common feature in Mandara (language), Malgwa and Podoko. This is a phenomenon that is widely-attested in Central Chadic (see section 3.4.5). The loss of an initial consonant is compensated for by the addition of a dummy consonant. This consonant is /n/ in Mandara and Malgwa, and /m/ in Podoko. The addition of a consonant may be motivated by the constraint that words cannot begin with a vowel.

Gloss	Proto-Mandara	Word	Language	
tree	h ^w ifa	nafa	Mandara	cf. Glavda uufa
honey	ɗama	nama	Malgwa	cf. Glavda mam
blood	mizi ^y →wizi ^y	muzə	Podoko	cf. Mandara uze
grindstone	uvira	mavarə	Podoko	cf. Glavda vaara

Table 11 - Compensatory prefixation in the Mandara group

Another unusual feature, affecting the Wandala subgroup, is the sporadic shift of palatalized alveolar consonants to become palatalized palatal or velar consonants. Note that this only affects the alveolar consonants, and not the laminal consonants.

Gloss	Proto-Mandara	Intermediate	Word	Language
moon	tila	tʰila	kʰla	Glavda
to cry	tiwa ^y	tʰiwa	kʰuwa	Malgwa
to cook	da ^y	dʰa	gʰa	Malgwa
girl	dahili ^y	dʰahili	gʰa:le	Mandara
three	hikiri→kidɪ	kidʰi	kigʰi	Malgwa
ear	ɪimi ^y	ɪimi	hʰimi	Glavda
meat	ɪiwid ^y	ɪiwi	hʰuwa	Mandara

Table 12 - Velarisation of palatalized alveolars in the Mandara group

The phonemes *ɣ and *ɣ^w have been lost in much of the Mandara group, but not in Glavda. In Dghwede both phonemes have merged with *g. In Mandara and Malgwa, in most cases *ɣ has merged with *h or been lost, and *ɣ^w has merged with *w, though there are exceptions. In Podoko there is a variety of reflexes for the two phonemes.

In **Matal**, there is a consistent change *r→l. Note that *r in Proto-Mandara has come only from Proto-Central Chadic word-final *n, since Proto-Central Chadic *r→l in the North sub-branch.

- (26) *r→l *ɣ^wiviri→aval ‘charcoal’
 *uvira→vəl ‘grinding stone’
 *ɣira→gəl ‘head’
 *sir→səl ‘to know’

3.3.9 Mofu Group

The Mofu group consists of nine languages, divided into three subgroups as follows:

- Mofu subgroup: Mofu-Gudur, Mofu North
- Meri subgroup: Dugwor, Merey, Zulgo (and Gemzek, considered a dialect of Zulgo)
- Tokombere subgroup: Moloko, Mada, Muyang, Ouldeme

The Mofu group is part of the Margi-Mandara-Mofu major group, which is in turn part of the Central Chadic North sub-branch of Central Chadic.

There are no specific sound changes found for Proto-Mofu which can justify the unity of the group. All the Mofu group languages exhibit the *n→r word-final change from Proto-Margi-Mandara-Mofu, and do not exhibit the changes particular to either the Mandara or Margi groups. The classification of these

languages as a single group is based on the high degree of lexical similarity between them, though the low degree of morphological similarity allows a degree of doubt about the unity of the group.

For Proto-Meri, the ancestor language of the Meri subgroup, there are two distinctive sound changes. Firstly, there is a regular change $*v \rightarrow b$. This is the reverse of a change $*b \rightarrow v$ that took place in Proto-Central Chadic. The same change took place separately in the Gidar group (see section 3.3.18).

- (27) $*v \rightarrow b$ $*vita^y \rightarrow b\acute{e}ta^y$ 'ashes'
 $*vaw \rightarrow ba$ 'body'

The second change is $*l \rightarrow \text{ɟ}$. This change only affects certain roots. The data is limited, but implies that the change took place in roots that were palatalized in Proto-Meri.

- (28) $*l \rightarrow \text{ɟ}$ $*l\acute{e}maj \rightarrow *l\acute{e}m^y \rightarrow \text{ɟ}\acute{e}m$ 'ear'
 $*l\acute{e}r^y \rightarrow \text{ɟ}\acute{e}r^y$ 'tooth'

The voiced velar fricatives have been lost in all languages of the Mofu group except for Ouldeme in the Tokombere subgroup.

In the Mofu subgroup, $*\gamma$ is deleted and $*\gamma^w \rightarrow w$.

- (29) $*\gamma \rightarrow \emptyset$ $*\gamma aj \rightarrow aj$ 'house'
 $*\gamma ir \rightarrow ar$ 'head'
 $*\gamma^w \rightarrow w$ $*\gamma^w ilif \rightarrow w\acute{e}l\acute{e}f$ 'blind'

In the Meri subgroup, $*\gamma \rightarrow g$ and $*\gamma^w \rightarrow g^w$.

- (30) $*\gamma \rightarrow g$ $*\gamma aj \rightarrow gaj$ 'house'
 $*\gamma ir \rightarrow g\acute{e}r$ 'head'
 $*\gamma^w \rightarrow g^w$ $*\gamma^w ilif \rightarrow g^w ilif \rightarrow g\acute{e}l\acute{e}f^w$ 'blind'

Within the Tokombere subgroup, for Muyang and Moloko, the change is towards /h/.

- (31) $*\gamma \rightarrow h$ $*\gamma aj \rightarrow haj$ (Moloko) 'house'
 $*\gamma ir \rightarrow ahar$ (Muyang) 'head'
 $*\gamma^w \rightarrow h^w$ $*\gamma^w ilif \rightarrow h\acute{e}l\acute{e}f^w$ (Moloko) 'blind'

It is possible to analyse the changes within the Mofu subgroup as being developments of the changes in the Tokombere subgroup, i.e. $*\gamma \rightarrow *h \rightarrow \emptyset$ and

*y^w→*h^w→w. If this is the case then the Mofu subgroup should be considered as a subdivision within the Tokombere subgroup.

There are two other regular changes within the Tokombere subgroup. Firstly, Mada has undergone a change *r→l word-finally. There was a much earlier change *r→l in Proto-Central Chadic North. However in Proto-Margi-Mandara-Mofu there was a change *n→r word-finally, and it is the resultant *r that is affected by the rule.

- (32) *r→l word-final *sir→masəla ‘to know’
 *ɟiwir^y→maɟawal ‘fear’

Secondly, Moloko has undergone *l→r word-finally, reversing the Proto-Central Chadic North change.

- (33) *l→r word-final *ha^mbil→ha^mbar ‘skin’
 *h^witil^y→h^wetal^y ‘tail’

One of the unusual features of the Mofu group is the widespread use of reduplication to compensate for a lost consonant (see also section 3.4.5). This is analogous to the process of compensatory prefixation described for the Mandara group (section 3.3.8) and for Mafa (section 3.3.1).

Gloss	Proto-Mofu	Word	Language
to belch	*gɪdɪɟ	ɟaɟa ^y	Zulgo
blood	*ha ^m biz ^y	ba ^m baz	Gemzek
to cough	*h ^w ɪdɪɟ ^y	ɟəɟah ^y	Merey
egg	*dɪɪj	ɪaɪaj	Ouldeme
shoulder	*hipaɪ ^y	papaɪ ^y	Mofu-Gudur
to suck	*siwiɓ	sasəɓ	Mofu North
wind	*hiɪɪd ^y	mamaɪ ^y	Mofu-Gudur

Table 13 - Compensatory reduplication in the Mofu group

3.3.10 Maroua Group

The Maroua group consists of two languages, Giziga and Mbazla. Giziga is divided into two main dialects, North (or Marva) and South (or Moutourwa).

The Maroua group is part of the Central Chadic North sub-branch of Central Chadic.

The group is defined on the basis of lexical similarity (Seignobos and Tourneux 1984), though Mbazla is quite distinct from the Giziga dialects. There are no

sound changes so far identified that are innovations in Proto-Maroua, so the unity of the group cannot be firmly established. All the other nearby groups within Central Chadic have defining sound changes, so it is clear that the Maroua group languages are distinct from these other groups.

One noticeable feature of the group is the word-final change $*n \rightarrow \eta$ which occurs consistently in Mbazla and sporadically in the Giziga dialects.

- (34) $*n \rightarrow \eta$ word-final $*wiv\dot{a}n \rightarrow va\eta$ 'grinding stone' (Mbazla)
 $*v\dot{a}n \rightarrow ve\eta$ 'hut' (Giziga Marva)

This change is also found in the Tera, Hurza and Mafa groups.

3.3.11 Lamang Group

The Lamang group consists of three languages: Lamang, Hdi and Mabas. The Lamang group is classified within the Central Chadic North sub-branch of Central Chadic. Proto-Lamang is probably most closely related to Proto-Higi.

In Proto-Lamang there was a general change $*ts \rightarrow t$.

- (35) $*ts \rightarrow t$ $*pitsi \rightarrow fiti$ 'sun'
 $*mits \rightarrow mita$ 'to die'
 $*tsiv\dot{a}d \rightarrow tivij$ 'path'

There was also a general change $*n \rightarrow \eta$ word-finally. The environment excludes those words that have been revocalised in the time immediately prior to the time of the change in Proto-Lamang such that they have gained a final vowel.

- (36) $*n \rightarrow \eta$ word-final $*\dot{h}id\dot{a}n \rightarrow \dot{h}id\dot{a}\eta$ 'tooth'
 $*\dot{g}iw\dot{a}n \rightarrow \dot{g}iw\dot{a}\eta$ 'fear'
 $*v\dot{a}n \rightarrow iv\dot{a}\eta$ 'hut'
 but $*\dot{h}ikin \rightarrow \dot{h}ikina$ 'three'

In Hdi, many of the nouns carry a frozen suffix $*-k$ (Wolff 2006).

- (37) Suffix petrification $*\dot{h}i\dot{a}i \rightarrow \dot{h}i\dot{a}ik$ 'egg'
 $*fiti \rightarrow fitik$ 'sun'
 $*\dot{y}anij \rightarrow \dot{y}anik$ 'tongue'
 $*liti \rightarrow litik$ 'hearth'
 $*had\dot{a}i \rightarrow had\dot{a}ik$ 'earth'
 $*rividi \rightarrow rividik$ 'night'
 $*ziwd\dot{a}i \rightarrow zid\dot{a}ik^w$ 'fly (insect)' (with reanalysis of
 $*w$ as labialization of $*k$)

3.3.12 Higi Group

The Higi group consists of five languages: Bana, Psikye, Kamwe, Kirya-Konzel and Hya. Kamwe has several dialects, including Kamwe Futu and Kamwe Nkafa, and is also known as Higi.

The Higi group is part of the Central Chadic North sub-branch of Central Chadic. Based on lexical similarity and shared isoglosses, Proto-Higi is probably most closely related to Proto-Lamang, though there is no evidence from sound changes that supports this.

There are two changes which may have been innovations in Proto-Higi, though in neither case is the evidence entirely consistent. The first is a change $*d \rightarrow t$ word-initially.

- (38) $*d \rightarrow t$ $*d\dot{a}l\dot{a}m \rightarrow t\dot{a}l\dot{a}m^w$ 'horn'
 $*hadik \rightarrow *dik \rightarrow tiki$ 'thorn'
 $*d \rightarrow ta$ 'to cook'

In the second example, it must be assumed that the initial $*h$ was lost prior to this change.

The second change is a general $*k^w \rightarrow g^w$, possibly confined to Bana and Psikye.

- (39) $*k^w \rightarrow g^w$ $*k^w\dot{a}zin \rightarrow g^w\dot{a}zin$ 'grass'
 $*d\dot{a}j\dot{a}k^w\dot{a} \rightarrow \dot{a}^w\dot{a}g^w\dot{a}$ 'bird' (Bana)

Within the Higi group there is a consistent change $*d \rightarrow r$ word-finally in **Kamwe** (Nkafa), **Kirya** and **Bana**.

- (40) $*d \rightarrow r$ word-final $*h^w\dot{a}d \rightarrow x^w\dot{a}r$ (Bana) 'belly'
 $*w\dot{a}f\dot{a}d\dot{a} \rightarrow f^w\dot{a}r$ (Kirya) 'four'
 $*v\dot{a}d \rightarrow v\dot{a}r\dot{a}$ (Nkafa) 'night'

There is also a reasonably consistent change $*l \rightarrow r$ in the same three languages.

- (41) $*l \rightarrow r$ $*l\dot{a}g\dot{a}j \rightarrow r\dot{a}g\dot{a}$ (Bana) 'bow'
 $*k\dot{a}l\dot{a}p\dot{a} \rightarrow k\dot{a}r\dot{a}p\dot{a}$ (Kirya) 'fish'
 $*l\dot{a}t\dot{a}w\dot{a} \rightarrow r\dot{a}t\dot{a}w\dot{a}$ (Nkafa) 'hearth'
 $*y\dot{a}l\dot{a} \rightarrow y\dot{a}r\dot{a}$ (Futu) 'to steal'

These two changes give evidence for considering Kamwe, Kirya and Bana to share a common ancestor, distinct from Psikye and Hya.

A feature of the Higi group languages is the frequent, but not consistent, loss of final consonants.

- | | | | | |
|------|----------------------|---|----------|------------|
| (42) | Final consonant loss | *pɪdɪk ^w →piri | (Bana) | 'razor' |
| | | *s ⁱ iwin→fiwu | (Kirya) | 'dream' |
| | | *ɣ ^w ɪlɪfi→yuli | (Nkafa) | 'blind' |
| | | *ts ⁱ iwin→tʃiwe | (Futu) | 'elephant' |
| | | *g ^w izɪn→g ^w əzə | (Psikye) | 'grass' |

3.3.13 Kotoko Island Group

The Kotoko Island group – named following Tourneux (2001) – is part of the North Kotoko-Musgum major group, which in turn is part of the Central Chadic North sub-branch. It consists of the single language Buduma. Besides the sound changes inherited from its ancestors, the following sound changes are well-attested for Buduma.

- | | | | |
|------|------|-------------|------------|
| (43) | *s→h | *sɪn→hən | 'to know' |
| | | *sa→hi→[xi] | 'to drink' |
| (44) | *ɬ→h | *ɬa→ha | 'cow' |
| | | *ɬimɪj→həmu | 'ear' |

3.3.14 Kotoko North Group

The Kotoko North group is also part of the North Kotoko-Musgum major group, which in turn is part of the Central Chadic North sub-branch. It consists of the four languages Afade, Mpade, Malgbe and Maltam.

There are no sound changes unique to Proto-Kotoko North. Its status as a group follows Tourneux (2001). There are sound changes to distinguish Kotoko Island and Musgum, the other two groups in this major group, and there are sufficient similarities between the remaining languages for it to be safer to treat them as a single group rather than to propose that they are not a single group.

Malgbe has undergone three regular sound changes: $*s \rightarrow j$, $*ts \rightarrow s$ (subsequent to $*s \rightarrow j$) and $*g^w / *k^w \rightarrow gb$.

- (45) $*s \rightarrow j$ $*saware \rightarrow jaware$ 'dream'
 $*sire \rightarrow jire$ 'string'

- (46) $*ts \rightarrow s$ $*tsi \rightarrow si$ 'eye'
 $*tsafan \rightarrow safan$ 'guinea fowl'

- (47) $*g^w / *k^w \rightarrow gb$ $*e^ng^wi \rightarrow e^mgbi$ 'faeces'
 $*k^wisim \rightarrow gbim$ 'mouse'

Note that the change $*s \rightarrow j$ also applies in this last example, i.e. $*k^wisim \rightarrow gbijim \rightarrow gbim$.

For **Maltam** there is the change $*ts \rightarrow s$.

- (48) $*ts \rightarrow s$ $*tsihin \rightarrow sin$ 'nose'
 $*tsimtsim \rightarrow simsim$ 'navel'

For **Mpade** there are two changes, $*ts \rightarrow s$ and $*t \rightarrow f$.

- (49) $*ts \rightarrow s$ $*tsiwe \rightarrow swe$ 'to cry'
 $*tsafan \rightarrow safan$ 'guinea fowl'

- (50) $*t \rightarrow f$ $*tim \rightarrow fimu$ 'ear'
 $*ta \rightarrow fa$ 'cow'

There are no well-attested sound changes for **Afade**.

The change $*ts \rightarrow s$ applies in three of the four languages of the group. However it is not possible to use this as evidence for a genetic relationship between these languages. In Malgbe the change has to have occurred after $*s \rightarrow j$, and since this change is not shared by the other languages, the $*ts \rightarrow s$ change must have taken place independently in Malgbe.

There is no a priori reason why the change could not have applied to a putative ancestor of Maltam and Mpade, the other two languages affected by $*ts \rightarrow s$. However, the languages are not neighbours, and Tourneux classifies them in different subgroups of Kotoko North (Tourneux 2001), so a close relationship appears unlikely.

We therefore assume that the change happened in the languages individually, perhaps as part of an areal process.

In general, the sound changes involving *ts are difficult to interpret, and need to be examined in the light of any other evidence. There is some question about the status of *ts as a Proto-Central Chadic phoneme, and further insights may lead to better interpretations of the data. See section 10.4.1 for further discussion.

3.3.15 *Musgum Group*

The Musgum group is also part of the North Kotoko-Musgum major group, which in turn is part of the Central Chadic North sub-branch. It consists of the three languages Musgum, Mbara and Muskum (now extinct).

There are two changes that apply to Proto-Musgum.

- (51) *dz→d *dziwid^y→diwaj ‘fly (insect)’
 *hiridz^y→hiridiw ‘scorpion’

- (52) *ts→t *tsiwi→tiwa ‘to cry’
 *liwits^y→liwit^y ‘hearth’

3.3.16 *Kotoko Centre Group*

The Kotoko Centre group consists of the two languages, Lagwan and Mser. The Kotoko Centre group is part of the Central Chadic North sub-branch. It is not known how the group relates to other groups within Central Chadic North. However its lexicon is most similar to those of the North Kotoko-Musgum major group.

There are two related sound changes that apply to the group as a whole, where the affricates are reduced to fricatives.

- (53) *dz→z *dzavin→zavan ‘guinea fowl’
 *dziwid^y→ziwij ‘fly (insect)’

- (54) *ts→s *h^witsin^y→hisini ‘nose’
 *tsiwi→siwe ‘to cry’

In **Mser**, there are two changes, a consistent change $*\text{ɬ} \rightarrow \text{s}$, and a widespread change $*\text{n} \rightarrow \text{r}$.

- (55) $*\text{ɬ} \rightarrow \text{s}$ $*\text{ɬin} \rightarrow \text{sin}$ ‘to send’
 $*\text{ɬa} \rightarrow \text{sa}$ ‘cow’

- (56) $*\text{n} \rightarrow \text{r}$ $*\text{k}^{\text{w}}\text{ine} \rightarrow \text{kure}$ ‘urine’
 $*\text{siwane} \rightarrow \text{sware}$ ‘dream’

There are no sound changes so far identified unique to **Lagwan**.

3.3.17 Kotoko South Group

The Kotoko South group consists of the two languages Zina and Mazera. The Kotoko South group is part of the Central Chadic North sub-branch, but it is not known how this group relates to the other groups within Central Chadic North. Although it has often been assumed that it is most closely related to the other Kotoko groups, it is quite distinct from them in its lexicon, and shares some isoglosses with the Mofu, Maroua and Hurza groups. In terms of lexico-statistics, it is as close to the Mofu and Maroua groups as it is to the other Kotoko groups (Barreteau 1987a).

There is one consistent change applying to the Kotoko South group, $*\text{ɬ} \rightarrow \text{s}$. The same change was noted for Mser in the Kotoko Centre group. These must be independent changes, since the Kotoko South languages do not exhibit the changes found for Proto-Kotoko Centre.

- (57) $*\text{ɬ} \rightarrow \text{s}$ $*\text{ɬa} \rightarrow \text{sa}$ ‘cow’
 $*\text{naɬij} \rightarrow \text{nisa}$ ‘tongue’

There is a consistent change $*\text{k} \rightarrow \text{h}$ in **Zina**.

- (58) $*\text{k} \rightarrow \text{h}$ $*\text{kilfi} \rightarrow \text{həlfə}$ ‘fish’
 $*\text{kija} \rightarrow \text{hija}$ ‘moon’

No changes have been identified for **Mazera**.

3.3.18 Gidar Group

The Gidar group consists of the single language Gidar. The Gidar group is part of the Central Chadic North sub-branch.

There are four sound changes identified for Gidar.

- (59) *v→b word-initial *vɪn^y→bi:na ‘hut’
 *wivɪn→*viwin→bwən ‘grinding stone’
- (60) *dz→z *dzaraj→zaraj ‘locust’
 *dzavɪn→zamvɪna ‘guinea fowl’
- (61) *ɟ→ɗ *ɟidɪm→ɗe? ‘five’
 *ɟig^wami^y→ɗagama^w ‘camel’
- (62) *ts→t *tsivɪd^y→tɪva^y ‘path’
 *mits→ɪmta ‘to die’

3.4 General and Non-systematic Sound Changes

In this section we will take a brief look at some of the most common general sound changes that are found in the history of Central Chadic languages. These sound changes are not innovations confined to a particular genetic unit or to a particular area, but rather they are sporadic changes that have taken place in more than one language. Full data can be found at <http://centralchadic.webonary.org/>.

3.4.1 *ts→t

There is alternation between /ts/ and /t/ in the reflexes of roots containing *ts across the different groups. The groups in which *ts→t are not genetically related, and do not correspond to any particular geographical location. The groups concerned are the Bata, Lamang, Mofu and Musgum groups.

	Proto-Central Chadic	Proto-Bata	Proto-Lamang	Proto-Mofu	Proto-Musgum
to die	mits	mit	mita	mit	midɪ ^y
hearth	riwits ^y	riti ^y	liti	liwit ^y	liwit ^y
ashes	pitsid ^y	fitid ^y	-	vita ^y	-
path	tsivɪd ^y	tivi	tivij	tivi ^y	tifij
to cry	tsiwi	tiwi	tawa	tiwi	tiwa
sun	pitsi	fiti	fiti	pat	futij

Table 14 - Groups with the change *ts→t

3.4.2 *n→ŋ word-finally

The change *n→ŋ word-finally is found very widely in Central Chadic. In some languages, such as Mbuko of the Hurza group (T. Smith and Gravina 2010), this change is part of the phonology of the language, with [ŋ] being the realisation of

/n/ in word-final position. At the group level, the change is especially common in Proto-Maroua and Proto-Lamang.

3.4.3 *d→j

There are very widespread changes from *d→j. This is the result of the effect of palatalization on the *d (to be discussed fully in section 11.2), i.e. the change is more precisely *d^ɹ→j.

- (63)
- | | | |
|-----------------------------|--------------|----------------|
| *ɬimid ^y →ɬimaj | Proto-Mofu | ‘ear’ |
| *ɣanad ^y →ɣanaj | Sukur | ‘tongue’ |
| *dziwid ^y →diwaj | Proto-Musgum | ‘fly (insect)’ |
| *ziwid ^y →zawaj | Proto-Hurza | ‘string’ |

3.4.4 Velar consonants

There are numerous instances of velar consonants changing their voicing, or of moving from plosive to fricative or vice versa. However these changes are not systematic, and can’t be taken as evidence of any generalised innovation.

3.4.5 Compensatory reduplication

There is a widely-attested process of compensatory reduplication within Central Chadic (see (Alan 2005) for an overview of this unusual phenomenon). Compensatory reduplication occurs when one of the consonants of a root is lost, typically *h or *d in initial position. When this consonant is followed by *i, the result may be the loss of a syllable. In some languages, the loss of this syllable is compensated for by the reduplication of the initial consonant of the following syllable along with a vowel. This vowel is in many cases not copied from the following syllable, but *a is used.

Compensatory reduplication of the following consonant can also occur when the vowel of the first syllable is *a.

The following examples show data where the initial consonant of the root has been retained, where it has been lost and compensatory reduplication has occurred, and where it has been lost without compensation.

- (64) *h^wipid ‘eat’

Retain		Reduplicate		Delete	
Merey	həpəd	Zulgo	papəd	Ouldeme	pad
Muyang	həpəd			Mbukko	pa
Gemzek	həpəd				

(65) *dɪɪj 'egg'

Retain		Reduplicate		Delete	
Merey	dəɪa ^y	Zulgo	ɪaɪa ^y	Mbuko	ɪaj
Gemzek	dəɪa ^y	Mafa	ɪaɪaj	Mandara	ɪaja
		Mofu-Gudur	ɪaɪad ^y	Margi	ih ^h i
		Bana	ɪɪɪ		

(66) *ha^mbɪz 'blood'

Retain		Reduplicate		Delete	
Mbazla	ha ^m bus	Mofu-Gudur	ma ^m baz	Podoko	muza
		Sukur	mu ^m bus	Mbuko	maz ^y
		Merey	ba ^m baz		

(67) *himid^y 'wind'

Retain		Reduplicate		Delete	
Moloko	həmad ^f	Cuvok	mamad ^y	Mada	amad ^f
Zulgo	hə ^m bəd ^y	Mofu North	mamad ^y	Gude	meda

(68) *hadzak 'smoke'

Retain		Reduplicate		Delete	
Gemzek	hədzak	Cuvok	tsatsak	Muyang	azak ^y
Moloko	hazak	Giziga	tsəndza ^w		
		Mbuko	dzə ⁿ dzak ^y		

In Mofu-Gudur (Barreteau 1988, 333–334) there is, in some circumstances, free variation between compensatory reduplication and compensatory vowel lengthening. This applies to all verbs with a reduplicated stem, and a large proportion of nouns with a reduplicated stem.

- (69) ya bebedey ~ yaa bedey 'I speak'
mebebedey ~ meebedey 'to speak'

- (70) háalay ~ hálálay 'holy place'
máadəban ~ madádəban 'apprentice'
maag^waf ~ mag^wag^waf 'flea'
méeced ~ mécéced 'flea'

In these examples the roots contain an extra timing unit (i.e. a syllable or mora) with no phonological material attached. The timing unit is expressed either by lengthening the preceding vowel, or else by reduplicating the following syllable. The existence of this extra timing unit can be accounted for by the historical

loss of phonological material, which is then compensated for by either the lengthening or the reduplication strategy.

This can be seen in the Mofu-Gudur root *-lál-* ‘to steal’, which has the cognate *-hul-* in Mofu North. Both are reflexes of Proto-Central Chadic **kir*, which became **kil* in the proto-language of the Mofu group and **hil* in the immediate ancestor of the two Mofu subgroup languages. Here the initial **h* has been lost in Mofu-Gudur, triggering the compensatory processes.

- (71) *meléley* ~ *méeley* ‘to steal’
 ya léley ~ *yáa ley* ‘I steal’

When reconstructing forms for the proto-languages of groups or for Proto-Central Chadic, the existence of reduplication in a root can be an indication of a lost initial consonant. In cases where, for example, an initial **h* is present in just a few languages, but there is reduplication in several more, the reduplicated data can be used to justify the reconstruction of **h*.

3.4.6 *Compensatory prefixation*

Compensatory prefixation is a similar process to compensatory reduplication. It also occurs to compensate for the loss of an initial consonant. In this case, the lost consonant is typically followed by a vowel other than **i*. A consonant is added to the root replacing the lost consonant in order to avoid a root commencing with a vowel. This process takes place primarily in languages where word-initial vowels are not permitted.

The consonant chosen to replace the lost consonant is fixed for an individual language, but it is difficult to find motivation for the choice. In Mafa the consonant is /v/, in Mandara it is /n/, and other languages may use /m/ or another consonant.

- | | | | |
|------|--|--------------|------------|
| (72) | <i>*haradz</i> → <i>varadza</i> | Mafa | ‘scorpion’ |
| | <i>*hitak</i> → <i>vatak</i> | Mafa | ‘thorn’ |
| | <i>*hak^wa</i> → <i>vok^wa</i> | Mafa | ‘fire’ |
| | <i>*h^witsin^y</i> → <i>mitsin^y</i> | Proto-Daba | ‘nose’ |
| | <i>*h^waⁿdav</i> → <i>maⁿdaf</i> | Proto-Maroua | ‘hare’ |
| | <i>*h^wifa</i> → <i>nafa</i> | Mandara | ‘tree’ |
| | cf. <i>nafrika</i> | Malgwa | ‘Africa’ |

This last example illustrates the application of the process to a vowel-initial borrowed word, where it takes place to satisfy the constraint forbidding initial vowels.

The following data shows examples from Mafa (Mafa group), Dugwor (Mofu group) and Podoko (Mandara group), giving cognates from other languages.

In Mafa, the compensatory consonant is /v/. The reason for the choice of /v/ is unknown.

(73)	varadza	'scorpion'	cf. Moloko	harats
	vajak ^w	'grasshopper'	cf. Moloko	hajaw ^y
	vatsak ^w	'smoke'	cf. Moloko	hazak
	vatak	'thorn'	cf. Moloko	hadak

For Dugwor the compensatory consonant is /m/.

(74)	mətar ^y	'nose'	cf. Merey	hətar ^y
	mətal ^y	'tail'	cf. Merey	h ^w ətal ^y

For Podoko the compensatory consonant is /n/.

(75)	nabəga	'rain'	cf. Glavda	ɣabaga
	nafa	'tree'	cf. Muyang	haf

3.4.7 Fusion

There are cases where two consonants fuse to form a new consonant with features taken from the original consonants. The most widespread examples are $*d+*w \rightarrow \beta$, $*d+*w \rightarrow \text{ʔ}^w$ and the fusion of an implosive with another consonant to form an ejective. This last situation is confined to the Kotoko Centre and Kotoko North groups. This is a sporadic process and cannot be predicted.

For the fusion of $*d$ with $*w$, the plosive and glottal components of $*d$ combine with the labial component of $*w$ to give the labial glottalised plosive (implosive) / β / in some languages, or the labialized glottal plosive / ʔ^w / in others.

(76)	*dɪwah → dɪwa → uba	Lamang	'breast'
	*ziwid ^y → zibi ^y	Sukur	'string'
	*ɪwid ^y → ɪi ^w i	Proto-Lamang	'meat'
	*ziwid ^y → zaɪ ^w i	Proto-Bata	'string'
	*dziwid ^y → ts'iwi	Proto-Kotoko North	'fly (insect)'
	*dikin ^y → nk'in	Proto-Kotoko Centre	'claw'

3.5 Language Contact and Language Separation

In this section we will take a somewhat speculative look at the history of the Central Chadic languages and peoples. The history must take into account both the genetic structure of the Central Chadic branch and also the areal influences amongst the languages.

On the genetic side, we are looking at the reasons for a proto-language to divide into different languages. In order for a division to occur, there needs to be a separation of the people speaking the proto-language into two or more distinct geographic areas. With areal influences, the opposite is true. The languages influencing each other need to be in close and sustained contact.

We have proposed that Proto-Central Chadic split into three sub-branches, North, South and Hurza. At the time of the split, the speakers of Central Chadic North and Central Chadic South would have been in locations where they were in contact with members of their own group, but separate from the members of the other group. Although little is known about the pre-history of the Central Chadic peoples, we can speculate, based on the current location of the languages, that perhaps the Central Chadic South people were located south of Lake Chad, and the Central Chadic North people were located to the east of Lake Chad. Certainly, these two groups were not in their current locations at that time (Seignobos 2000).

The Central Chadic South peoples may have moved to inhabit the mountainous areas, and so become split between the two massifs. The Proto-Mafa and Proto-Sukur peoples would have occupied the main massif within the Maroua, Mora, Mokolo triangle, and the Proto-Daba peoples would have occupied the mountains to the south of the present Maroua-Mokolo road. The Proto-Bata peoples would have settled in the mountains around Mubi in Adamawa state, Nigeria, and the Proto-Tera speakers would have been located possibly in the hills near Biu in Borno state, Nigeria.

Within Central Chadic South, the Tera and Bata group languages are linguistically quite dissimilar from each other and from the Mafa, Daba and Sukur group languages. This indicates a high degree of time-depth for this separation. The separation of the Mafa, Daba and Sukur groups looks to be less ancient.

The Central Chadic North peoples would have moved south or south-east, probably in several waves (Seignobos 2000). The Proto-Higi and Proto-Lamang peoples would have been early to arrive on the Nigerian side, occupying the western edge of the Northern Mandara Mountains. On the eastern side, the Proto-Gidar and Proto-Maroua peoples travelled furthest south. They would have come into contact with the Proto-Daba people, forming an area of linguistic influence.

The people speaking the daughter languages of the proto-language of the Margi-Mandara-Mofu major group now occupy a large area covering the eastern and northern edges of the Northern Mandara Mountains, and the plains to the west of the mountains, over to the hills around Biu. We can speculate that their homeland was in the centre of this area, perhaps around the northern edge of the Northern Mandara Mountains. At some point the Proto-Margi people moved westward and the Proto-Mofu people moved southward, causing a separation and resultant split.

The arrival of the Proto-Margi people around Biu may have caused the displacement of the Proto-Tera peoples, with one part moving westwards towards Gombe, forming what was to become the West Tera subgroup of languages. The other part moved eastwards across the Hawal river, becoming the ancestors of the East Tera subgroup. Another consequence of the arrival of the Proto-Margi speaking peoples was the creation of an area of linguistic influence, involving speakers of Margi group, Higi group and Bata group languages.

The Proto-Mofu peoples eventually settled on the eastern fringes of the Northern Mandara Mountains, coming into contact with speakers of Mafa or its ancestor. This resulted in another area of linguistic influence, which also encompassed the Maroua and Hurza group languages.

The peoples of the various Proto-Kotoko languages and Proto-Musgum either occupied or remained in the area from Lake Chad southwards along the Logone and Chari rivers.

At some point in this history, or possibly at more than one time, the development and changes within the Kanem and Borno empires caused migrations and separations amongst the Central Chadic peoples. One result of this is the separation of the four Kotoko groups and the Musgum group from the rest of Central Chadic. This separation was reinforced by the arrival of the Fulani from the south to Maroua in 1800. The five groups remained in contact with each other, allowing areal influences between the languages to create similarities even where the genetic relationship was not close.

It should be stressed again that this scenario is based almost entirely on linguistic evidence and the current locations of the various languages. It is to be hoped that further research from archaeologists, ethnographers and geneticists will shed more light on these histories (MacEachern 1991; MacEachern 2001; MacEachern 2002; Cerný et al. 2006; MacEachern 2012a; MacEachern 2012b; MacEachern 2012c; MacEachern and David 2012; Blench 2012; Seignobos 2000; Barreteau and Tourneux 1988).

