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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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6 Consonant Prosody

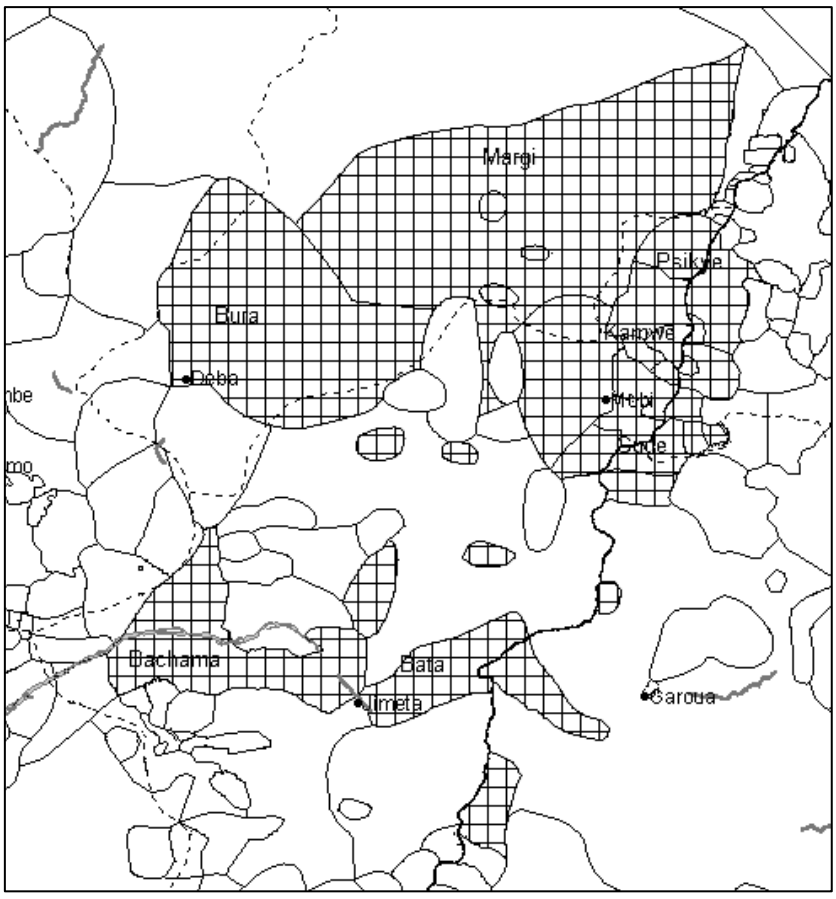
6.1 Introduction

This chapter describes a type of phonological system that we shall refer to as Consonant Prosody. The previous chapter described the Vowel Prosody system, where the languages were characterised by a system of vowel harmony caused by word-level prosodies of palatalization or labialization. With the Consonant Prosody languages, there is no vowel harmony. Instead, the languages are characterised by the palatalization and labialization of consonants. The relationship between these two types of prosody will be examined in chapter 11.

One feature of the Consonant Prosody languages is that the palatalization prosody can be analysed as acting at the level of the morpheme. When a morpheme carries this prosody, one of the consonants in the morpheme is palatalized, with the consonant being selected according to a hierarchy depending primarily on the place of articulation of the consonants in the morpheme. This process is exemplified in Jimi, a language of the Bata group (see section 6.2.5).

We saw with the Vowel Prosody languages that the palatalization prosody could be reconstructed for the proto-languages of each group, but that the labialization prosody was in most cases an innovation that took place within the groups. We will see a similar picture for the Consonant Prosody languages. It is possible to reconstruct a palatalization prosody for each group, though one with very different behaviour from the same prosody in Vowel Prosody languages. However labialization has a much shorter history. We will see that all labialized consonants other than labialized velars are the result of the historic reassignment of the labialization component from a labialized velar.

Only three of the eighteen groups that make up Central Chadic exhibit the Consonant Prosody system. These are the Bata, Margi and Higi groups. Newman (1977a) classified these groups together as one major group, possibly on the basis of the similarity of their phonological systems. However we have shown that these three groups are not directly related (see chapter 3). The Consonant Prosody system is best understood as an areal feature, as illustrated in the following map.



Map 20 - Consonant Prosody languages

The chapter begins with a case study of two languages of the Bata group, Jimi and Sharwa (section 6.2). Of particular interest is the behaviour of the consonant palatalization prosody in Jimi, where palatalization is a property of the morpheme, but is realised on one consonant chosen according to a priority ranking.

We will then take a more general look at the phonologies of other languages from these groups (sections 0, 0 and 6.5). For each of the groups we will establish which features can be reconstructed for the proto-language of the group.

Finally (section 6.6) we shall look at the issues raised by the consonant prosody system for the reconstruction of Proto-Central Chadic, though the actual reconstruction will appear in Section I.

6.2 Case Study – Jimi and Sharwa

In this section we will take a detailed look at the phonologies of two languages of the Bata group, Jimi and Sharwa. These languages exemplify some of the key features of Consonant Prosody languages, such as the consonant palatalization prosody, the extended set of labialized consonants, and the underlying three-vowel system. However, these three features affect the resulting surface vowels in very different ways.

6.2.1 Consonant phonemes

Both Jimi and Sharwa share the same basic consonantal inventory.

Labial	Alveolar	Laminal	Velar
p	t	ts	k
b	d	dz	g
ɓ	ɗ		ʔ
f	ɬ	s	h
v		z	ɣ
m	n		ŋ
ᵐb	ⁿd	ⁿdz	ᵑg
	l		
	r		
		j	w

Table 38 - Jimi and Sharwa basic consonants

The consonants /ɣ/ and /ŋ/ have only been so far attested in Jimi. The velar nasal is rare, being confined almost exclusively to root-final position.

The absence of a voiced alveolar lateral fricative in both languages is due to an historic change *ɮ→l within the Bata group, affecting almost all the languages in the group (see section 3.3.1).

The alveolar phonemes are divided into two sets, labelled 'alveolar' and 'laminal' following Roberts (2001). Each of the groupings forms a distinct phonological set in these languages.

6.2.2 Labialized and Palatalized Consonants

Besides the basic consonant phonemes (i.e. consonants which are neither palatalized nor labialized), both languages have large sets of labialized and palatalized consonants in their inventories.

6.2.2.1 Labialized consonants

In both Jimi and Sharwa, almost all the labial and velar consonants have labialized counterparts.

Labial	Velar
p^w	k^w
b^w	g^w
$ɓ^w$	$ʔ^w$
f^w	h^w
v^w	
m^w	
$^mb^w$	$^ŋg^w$

Table 39 - Jimi and Sharwa labialized consonants

The exceptions are /ɣ/, /ŋ/ and /w/. The phonemes /ɣ/ and /ŋ/ are absent from the Sharwa inventory, and rare in the Jimi inventory. It is possible that the labialized forms may exist in Jimi, but are not attested in the data available.

6.2.2.2 Palatalized consonants

In both languages, all basic phonemes except /w/and /j/ have palatalized counterparts.

Labial	Alveolar	Laminal	Velar
p^j	t^j	$tʃ$	k^j
b^j	d^j	$dʒ$	g^j
$ɓ^j$	$ɗ^j$		$ʔ^j$
f^j	$ɬ^j$	$ʃ$	h^j
v^j		$ʒ$	$ɣ^j$
m^j	n^j		
$^mb^j$	$^nd^j$	$^ndʒ$	$^ŋg^j$
	l^j		
	r^j		

Table 40 - Jimi and Sharwa palatalized consonants

The phoneme /$ɣ^j$/ is only possible in Jimi, as Sharwa does not have the corresponding unpalatalized phoneme. Jimi also has the rare phoneme /ŋ/, but /$ŋ^j$/ is not permitted. In Sharwa /$ɗ^j$/ and /ʒ/ are as yet unattested.

Note that the palatalized forms of the laminal consonants are formed by moving the place of articulation from alveolar to post-alveolar. Note also that consonants cannot be both labialized and palatalized.

6.2.3 Vowels in Sharwa

6.2.3.1 Underlying vowels

The vowel system of Sharwa is based on three underlying vowels, /a/, /ə/ and /ɨ/.

(91)

tɨvə	'path'
təɬ-kə[3]	'to sew'
tarsɨʔʷ-kə	'to move whilst sitting (baby)'

6.2.3.2 Allophony

The three underlying vowels give rise to seven phonetic surface vowels as follows:

Front	Centre	Back-Round
i	ɨ	u
e	ə	o
	a	

Table 41 - Sharwa vowels

The surface vowels occur in the following environments:

- Following a palatalized consonant and before word-final /j/, /ɨ/ is realised as [i] and /ə/ as [e].
- Following a labialized consonant and before word-final /w/, /ɨ/ is realised as [u] and /ə/ as [o].
- The vowel /ɨ/ is realised as [ə] word-finally, neutralising the contrast with /ə/.

The conditioning of the underlying vowels can be seen most clearly in the formation of plurals of nouns and verbs. (Here plural verbs are those where the action is distributed over several entities.) With roots containing /ɨ/, plurals are formed by lowering each /ɨ/ to /ə/. (In some cases, a consonant is

[3] -kə is the feminine noun suffix, and is used in the formation of infinitives.

palatalized, and with nouns a final /-j/ is added.) The vowel lowering can be seen in the following examples:

(92) ɗɨr 'to choose' ɗər 'to choose (many things)'
mɨtə 'to die' mətə 'to die (many people/animals)'

The following table gives examples of plurals of roots containing palatalized and labialized consonants, demonstrating the effect of these on the following vowel.

Gloss	Singular		Plural	
	UF	SF	UF	SF
skin	bʷɨgɨrɨ	bugɨrə	bʷəgərɨj	bogəri
rat	hʲɨmɨ	himə	hʲəmɨj	hʲemi
terrapin	kʷakʷɨrɨ	kʷakurə	kʷakʷərɨj	kʷakori

Table 42 - Sharwa plural formation

It is interesting to note that the plural is formed by the replacement of /ɨ/ with /ə/. This process of plural formation is well documented within Chadic and beyond (Newman 1990), but is generally referred to as an 'internal-a' plural. In Sharwa, however (and also Bata (Boyd 2002)), it is not /a/ that is inserted.

The vowel /ɨ/ is often unrealised between consonants. However, even when unrealised in the singular the vowel will be lowered and realised as /ə/ in the plural.

(93) /dɨgɨlɨ/ [dɨglə] 'bank'
/dʲəgəlɨ-j/ [dʲegəli] 'banks'

6.2.4 Vowels in Jimi

6.2.4.1 Underlying vowels

There are three basic underlying vowels in Jimi, /a/, /ə/, /i/.

(94) /maɗ-ən/[4] 'to get up' /miɗ-ən/ 'boa'
/tsak-ən/ 'to put on a shroud' /tsək-ən/ 'to collect'
/lim-ən/ 'ear' /ləm-ən/ 'border'

[4] -ən is the nominal suffix in Jimi, used with all nouns and in the formation of infinitives.

In addition, the vowels /i/ and /a/ also have lengthened forms /iː/ and /aː/. In many cases, these can be analysed as due to combinations of other phonemes such as /ji/, or due to the historic loss of a consonant.

(95)	Jimi	aav-ən	'arrow'	cf. Tsuvan	ahave
	Jimi	iik-ən	'chicken'	cf. Sharwa	ʔʲɨgə

However there are many cases where such an explanation is not available and it is best to consider these long vowels as phonemic in the language.

6.2.4.2 Allophony

Unlike Sharwa, in Jimi the vowels are not normally affected by adjacent consonants.

(96)	[pʷabʷ-ən]	/pʷabʷ-ən/	'baobab flower'
	[mʲəliŋ]	/mʲəliŋ/	'nine'
	[pətʲak-ən]	/pətʲak-ən/	'type of antelope'

The exceptions are when /ə/ occurs following /j/ or /w/, adjacent to /ʔʷ/ or /ʔʲ/, or when /a/ occurs following /rʲ/ or /lʲ/. In these cases /ə/ is realised as [i] and [u], and /a/ is realised as [e]. (These are the only environments where [u] and [e] occur.)

(97)	/jən-ən/	[jinən]	'head'
	/wənʲ-ən/	[wunʲən]	'to sleep'
	/bavəʔʷ-ən/	[bavuʔun]	'scar'
	/tsʲiᵑgəʔʲ-ən/	[tʃiᵑgiʔin]	'head (millet)'
	/lʲam-ən/	[lemən]	'to get into a state'
	/kərʲa-n/	[kəren]	'to bring'

6.2.4.3 Distribution

In a number of other Central Chadic languages – e.g. Mafa (Barreteau and le Bléis 1990), Mofu-Gudur (Barreteau 1988), Daba (Lienhard and Giger 1975) – there is a strong system of vowel harmony, and front and central vowels cannot co-occur in the same root. However, in Jimi there is no vowel harmony, and /a/ and /i/ can co-occur in the same root.

(98)	kabin-ən	'to throw'
	magiw-ən	'woman'
	ɬifa-n	'palm tree'
	giwa-n	'quarter (part of village)'
	kəsik-ən	'friend'
	wirəv-ən	'jujube'

Both /i/ and /ə/ can occur adjacent to both unpalatalized and palatalized consonants. Note that /ʃ/ is the palatalized counterpart of /s/.

(99) sik-ən 'to waste time'
ʃig^{w}-ən 'kitchen firewood'
səpa-n 'half of an object that has been cut in two'
ʃən-ən 'nose'

In summary, we have shown that /i/ is a distinct morpheme, and is not due to vowel harmony or conditioning of /ə/ by adjacent palatalized consonants.

6.2.5 Consonant Palatalization in Jimi

6.2.5.1 The consonant palatalization prosody in Jimi

In common with Gude (Hoskison 1983), also of the Bata group, completive aspect is marked on a verb root by the palatalization of the verb root, but this palatalization is only realised on specific consonants or vowels. The rules for its application (which differ slightly from Gude, cf. section 6.3.1) are as follows:

1. If the verb root ends in /-a/ then this final /-a/ becomes /-i/.
2. If the verb root does not end in /-a/, then the rightmost laminal consonant is palatalized, where present.
3. If no laminal consonant is present, then the placement of the palatalization is less determined. Alveolar consonants are always preferred over labial consonants, but there is no clear preference between alveolar consonants and velar consonants or between velar consonants and labial consonants.
4. If there is no unmodified consonant (i.e. ones which are not palatalized or labialized) in the root, or if the root ends with /j/, the palatalization is unrealised.

Note that palatalization is a property of the root, but is realised by the modification of a single consonant phoneme. It should also be noted that /ŋ/ does not permit palatalization.

1. Roots ending in /a/

With roots ending in /-a/, the final vowel is replaced by /-i/. The consonants are unaffected. So, for example, the completive form of *sa* 'drink' is *si* and not *ʃi or *ʃa.

Infinitive	Completive	Gloss
dza-n	dzi	to strike (lightning)
ɗa-n	ɗi	to do
sa-n	si	to drink
fətsa-n	fətsi	to grill
gam^{w}a-n	gam^{w}i	to tell off
gəla-n	gəli	to measure
haaɗa-n	haaɗi	to repair
p^{w}aa-n	p^{w}aj	to give birth

Table 43 - Jimi verbs ending with /–a/

2. Roots containing laminal consonants

When a root does not end in /-a/, a laminal consonant in the root will be palatalized.

Infinitive	Completive	Gloss
dzal-ən	dʒal	to educate
dzəgəl-ən	dʒəgəl	to place
b^{w}ədzək-ən	b^{w}ədʒək	to fall
ɓats-ən	ɓatʃ	to break
ɓəz-ən	ɓəʒ	to stop
ɓəwəs-ən	ɓəwəʃ	to push

Table 44 - Jimi verbs containing a laminal consonant

3. Roots not containing laminal consonants

In roots that do not end in /-a/ and do not contain laminal consonants, alveolar consonants are palatalized in preference to labial consonants.

Infinitive	Completive	Gloss
baan-ən	baan^{j}	to lie down
baɬ-ən	baɬ^{j}	to plait
daɓ-ən	d^{j}aɓ	to gather together
dəv-ən	d^{j}əv	to sprout
bəwəɗ-ən	bəwəɗ^{j}	to work (field)
ɓəlam-ən	ɓəl^{j}am	to stammer

Table 45 - Jimi verbs with alveolar and labial consonants

However, palatalization does not show a clear preference between alveolar and velar consonants.

Infinitive	Completive	Gloss
ɗəh-ən	ɗəhʲ	to ask
haɗ-ən	haɗʲ	to bury (body)
gər-ən	gərʲ	to grow
ɣərəv-ən	ɣərʲəv	to confiscate
həbʷər-ən	həbʷərʲ	to be full (food)
ɬəkər-ən	ɬəkʲər	to spike
dʒərak-ən	dʒərakʲ	to lie
pərak-ən	pərʲak ~ pərakʲ	to split

Table 46 - Jimi verbs with alveolar and velar consonants

In the final example, two alternative realisations were given. This is the only verb where alternatives have been recorded.

Likewise, there is no clear preference between velar and labial consonants.

Infinitive	Completive	Gloss
pak-ən	pʲak	to lift up
gap-ən	gapʲ	to fold
ᵑgaf-ən	ᵑgʲaf	to eat too quickly
bəwək-ən	bəwəkʲ	to carry out initiation

Table 47 - Jimi verbs with velar and labial consonants

4. More than one consonant at the same place of articulation

In the cases where there are two or more candidate consonants at the same place of articulation, palatalization targets the one nearest the end of the word.

Infinitive	Completive	Gloss
dədəʔʷ-ən	dədʲəʔʷ	to coerce
ɗaar-ən	ɗaarʲ	to extract
ɗəbəl-ən	ɗəbəlʲ	to heal (scar)
lərət-ən	lərətʲ	to go out

Table 48 - Jimi verbs with two consonants at the same place of articulation

5. Modified consonants

Palatalization cannot be realised on consonants that are already palatalized or labialized. If there are no unmodified consonants then the palatalization is unrealised.

Infinitive	Completive	Gloss
tʃakʷəl-ən	tʃakʷəlʲ	to stir with a stick
tʃ-ən	tʃə	to carry fire
tʃəʔʲ-ən	tʃəʔʲ	to pay back
tʃiːkʷ-ən	tʃiːkʷ	to peck

Table 49 - Jimi verbs with modified consonants

6. Words with final /j/

The presence of /j/ in root-final position blocks the action of the consonant palatalization prosody.

Infinitive	Completive	Gloss
ɗərəbəj-ən	ɗərəbəj	to sell
həʤəbəj-ən	həʤəbəj	to pour

Table 50 - Jimi verbs containing /j/

7. Words containing /i/

In words containing /i/, the consonant palatalization prosody applies according to the rules outlined earlier. The presence of /i/ makes no difference to the application of the prosody, though when /i/ follows a palatalized consonant, the palatalization is not always discernible.

Infinitive	Completive	Gloss
ɣin-ən	[ɣinʲ]	to build (house)
dʒiːɗ-ən	[dʒiːɗʲ]	to swear (oath)
tʃîːɬ-ən	[tʃîːɬʲ]	to hatch
miːz-ən	[miːʒ]	to make balls of millet
dîːk-ən	[dîːk] (/dʲiːk/)	to not listen
fikʷ-ən	[fikʷ] (/fʲikʷ/)	to whistle

Table 51 - Jimi verbs containing /i/

6.2.5.2 Consonant palatalization in the lexicon

Uninflected roots may also include palatalized consonants, and in these roots the pattern of consonant palatalization is consistent with the rules outlined above. So, for example, we do not find roots containing a palatalized labial consonant and also an unpalatalized laminal consonant.

This being the case, it is possible to analyse all palatalized consonants in Jimi as being due to the action of a morpheme-level palatalization prosody. For example, the first morpheme in

(100) [gʲaŋ-ən] 'type of grass'

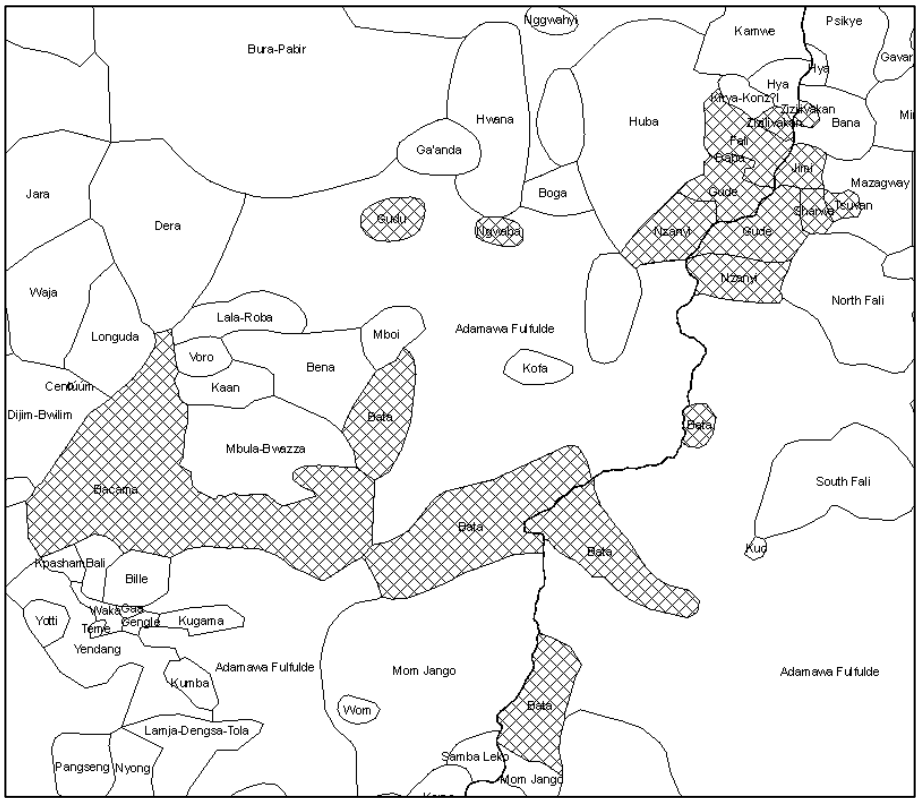
could be analysed as /gʲaŋ/ or as /gaŋ ʸ/, where the second option represents the morpheme /gaŋ/ being acted upon by a morpheme-level consonant palatalization prosody.

For Jimi as an individual language, there is little to be gained by analysing palatalization in the lexicon in terms of a morpheme-level prosody. However this analysis is highly relevant when reconstructing the ancestral languages Proto-Bata and Proto-Central Chadic.

6.3 Bata group

In this and the following sections we shall take a look at the broad phonological features of the languages in each of the three groups that exhibit the Consonant Prosody system, i.e. the Bata, Margi and Higi groups. For each group we shall then determine which features can be reconstructed for the proto-language of that group.

The Ethnologue (Lewis 2009) lists twelve languages for the Bata group, of which one (Holma) is extinct. Many of the languages have not been studied, and there is no consensus about the internal classification of the group. The present-day locations of the Bata group languages are shown in the following map.



Map 21 - Bata group

Here we shall look at how the characteristic features of Jimi and Sharwa relate to other languages in the Bata group. In particular we shall look at the three-vowel system and labialized and palatalized consonants. The data is compared with that of Gude (Hoskison 1974; Hoskison 1975; Hoskison 1983), Bata (Boyd 2002) and Tsuvan (Johnston n.d.). We will find that Proto-Bata had three underlying vowel phonemes, and possessed labialized velar and labialized labial consonants. It also had a word-level consonant palatalization prosody.

6.3.1 Gude

The following description of Gude phonology is a short summary of Hoskison (1974).

Gude has labialized labial and velar consonants. All consonants may be palatalized, with the palatalized laminals being realised at the post-alveolar place of articulation and palatalized velars realised as palatal consonants. Unlike Jimi, Gude permits labialized consonants to be palatalized.

Hoskison also describes a consonant palatalization prosody in Gude that is similar to that described for Jimi (see section 6.2.5). He divides the consonants into four grades, as follows:

Grade I: sibilants, coronal implosives and coronal nasals.
Grade II: all coronal consonants not in Grade I.
Grade III: all non-coronal consonants not in Grade IV.
Grade IV: voiced velar continuants.

The application of the prosody follows the following rules:

1. Obligatory for all grade I consonants everywhere in the root
2. If no grade I consonant in the root, then obligatory for one grade II consonant (final consonant is preferred)
3. If no grade I or grade II consonants in the root, then obligatory for one grade III consonant (final consonant is preferred)
4. Optional for a second grade II or grade III consonant (final consonant is preferred)
5. Never applies to grade IV consonants. There are no polysyllabic roots containing only grade IV consonants.

Gude has two vowel phonemes /ə/ and /a/. In unmarked environments /ə/ is realised as [ɨ] and /a/ as [ɜ]. When preceded and followed by palatalized

consonants the vowels are realised as [i] and [e], and when preceded and followed by labialized consonants they are realised as [u] and [o]. In mixed environments the vowels are realised at some point between these limits.

Each vowel phoneme also has a long equivalent /əː/ and /aː/. /əː/ is influenced by preceding consonants only, being realised as [iː] following a palatalized consonant and [uː] following a labialized consonant. /aː/ is realised as an open central vowel in unmarked environments, and is fronted or back-rounded when preceded and followed by palatalized or labialized consonants respectively.

6.3.2 Tsuvan

From the data available (Johnston n.d.), it can be seen that Tsuvan has labialized labial and labialized velar consonant phonemes. Whilst the data is limited, it appears that consonants from any place of articulation may be palatalized.

From inspection of the data, it appears that Tsuvan has a three vowel system consisting of /ə/, /a/ and /e/, with the presence of [i] and [u] being due to conditioning of /ə/ by adjacent palatalized or labialized consonants. No firm conclusions can be reached about the vowel system without access to a detailed phonological analysis.

6.3.3 Bata and Bachama

In Bata (Boyd 2002) and Bachama (Pweddon and Skinner 2001; Seibert n.d.), consonants from any place of articulation may be palatalized. The languages also have an extended system of labialized consonants which includes consonants from any place of articulation, and even allows the existence of a few consonants that are both labialized and palatalized, with [pᶣ], [gᶣ], [ᵑgᶣ] and [qᶣ] attested in the data. These are not phonemic, but are the result of the palatalization prosody acting on a phonemic labialized consonant.

Bata has three contrastive central vowels, but no underlying front or back-rounded vowels.

6.3.4 Reconstructing Proto-Bata phonology

In the following sections we shall propose a reconstruction of the phonological system of Proto-Bata. The data cited in the tables is taken from the following sources: Bata (Boyd 2005); Gude (Hoskison 1983); Jimi (Djibi n.d.); Sharwa (Gravina n.d.); Tsuvan (Johnston n.d.). Data is given in broad phonetic form,

with phonemic forms given for some entries when clarification is necessary. In several languages in the Bata group, there are nominal suffixes. In some languages these are only present on feminine nouns, but in others the suffixes are present on all nouns and on verb infinitives. These suffixes are given in the data, preceded by a hyphen.

6.3.4.1 Vowels

Among the languages studied in this section, Jimi, Sharwa, Tsuvan and Bata all have three underlying vowels. In Sharwa and Bata the vowels are all central vowels, whilst in Jimi and Tsuvan two are central and the third is a front vowel. Gude has just the two central vowels.

These vowels correspond in a reasonably regular and systematic way as follows:

Proto-vowel	Tsuvan	Sharwa	Jimi	Gude	Bata
*ɨ	/ə/	/ɨ/	/ə/	/ə/	/ɨ/
*i	/e/	/ə/	/i/	/ə/	/ə/
*a	/a/	/a/	/a/	/a/	/a/

Table 52 - Proto-Bata vowels

It is not known whether the proto-vowel *i was realised as a front vowel or as [ə] in its unmarked form, or indeed whether *ɨ was realised as [ɨ] or [ə]. Since both proto-vowels have the reflex /ə/ in certain languages, the label *ə has been avoided as being a potential cause of confusion.

We shall now look at the data for evidence of these correspondences.

*6.3.4.1.1 *a*

The evidence for this correspondence is very clear and consistent.

Gloss	Jimi	Sharwa	Tsuvan	Gude	Bata
leaf	ba-n	ba		ba	
sheep	baga-n	baga		baga	^{m}baga-to
bachelor	gamza-n	gamdza			^{ŋ}gamsa
tongue	g^{j}ana-n	gana	agana		
guinea fowl	zav^{w}ən-ən	zavunə (/zav^{w}ɨnə/)	zavən-kən	zoovəna	
arrow/bow	aav-ən	havə	ahave	avə	
cow	la-n	la	ɣa	la	

Table 53 - Reconstructing *a for Proto-Bata

*6.3.4.1.2 *ɨ*

The majority of the evidence supports the correspondence given in Table 52. In particular, in all cognates where Sharwa has /ɨ/, Jimi has /ə/.

Gloss	Jimi /ə/	Sharwa /ɨ/	Tsuvan /ə/	Gude /ə/	Bata /ɨ/
mortar	a^{n}dzər-ən	/^{n}dʒɨrə/ ^{n}dʒirə			
to sprout	dəv	dɨv		dəvə	
to find	gəm^{w}an-ən	gɨm^{w}an			
to wait	gəra-n	gɨra			/k^{w}ɨla/ kula
to jump	ləɗ-ən	lɨɗ		ləɗə	/lɨj/ lii
to spike	~~ɬ~~əkər-ən	~~ɬ~~ɨk~~ɬ~~ɨr			
nose	ʃən-ən	/tʃɨnə/ tʃinə	/mətʃəne/ mətʃine	/ʃənə/ ʃinə	/ʃɨne/ ʃine
to grow	gər-ən		gəl-kən	gərə	kɨl
blind	wərəf-ən		awəlfe	wərəfə	wel

Table 54 - Reconstructing Proto-Bata *ɨ

However there are some cases where the correspondences are not apparent.

Gloss	Jimi /ə/	Sharwa /ɨ/	Tsuvan /ə/	Gude /ə/	Bata /ɨ/
to learn	dzəg^{w}ən-ən	/dzəg^{w}ən/ dzəgon		/dzəg^{w}ənə/ dzəgonə	ɗegən
fish	hər^{j}əf-ən	/k^{w}ɨr^{j}əfi/ kurefi	/wəlfi/ wulfi	/hərəf^{j}ə-nə/ hərəfi-nə	qərf^{j}ee
grass	k^{w}əzən-ən	/h^{w}ɨzənə/ huzəne	/h^{w}əzene/ huzene	/k^{w}əzəna/ kuzəna	
rain	v^{w}ən-ən	/v^{w}ənə/ vonə	v^{w}enə	vənə	

Table 55 - Difficult correspondences for *ɨ in the Bata group

In the entries for 'grass' and 'rain' the presence of /e/ in the Tsuvan entries implies that the proto-vowel should be *i, but for some reason its reflex in Jimi is not /i/. The same may be true for the entry for 'learn'. In the entry for 'fish' it appears that the Sharwa data is out of step (or possibly incorrectly transcribed).

*6.3.4.1.3 *i*

The evidence for this correspondence is also clear.

Gloss	Jimi /i/	Sharwa /ə/	Tsuvan /e/	Gude /ə/	Bata /ə/
sun	fit-ən	fətə	fete		fəre
year	fiz-ən	fəz-kə		fəzə	
to build	ɣin-ən	ᵑgən	hen	ɣənə	
work	ɬin-ən	ɬən	ɬini-kən	ɬənə	len-to
to sew	tiɬ-ən	təɬ		təɬə	
blood	idin-ən	adənə	ədene	idənə	

Table 56 - Reconstructing *i in Proto-Bata

In all the available data, Tsuvan has a corresponding /e/, except for the entry for 'work' where there is [i]. Gude has /ə/, except for the initial /i/ in 'blood'. The limited Bata data implies that /ə/ is the corresponding vowel (the entry for 'work' would have to be analysed as /lʲən/).

6.3.4.2 Labialized Consonants

We saw that almost all of the Vowel Prosody languages possess a set of labialized velar phonemes, but other labialized phonemes are absent. All languages presented here have labialized velar phonemes. In addition they also have labialized labial consonant phonemes. The existence of these labialized phonemes in cognates across the group implies that they were also part of the phonemic inventory of the group's proto-language. Within Central Chadic it is only the Consonant Prosody languages and some Mixed Prosody languages that have labialized labial consonant phonemes.

The following table gives evidence for reconstructing the labialized phonemes for Proto-Bata.

	Gloss	Tsuvan	Sharwa	Jimi	Gude	Bata
pʷ	flour	/ahpʷe/ ahpʷe	/pʷə/ po	/pʷ-ən/ pʷən	/əmpʷə-nə/ əmpunə	
bʷ	elbow			/bʷir-ən/ bʷirən	/bʷəːrə/ buurə	/ɠbərəᵑg-to/ ɠbərəᵑgto
ɓʷ	hide		/ɓʷah/ ɓʷah	/ɓʷəɣ-ən/ ɓʷəɣən		/ɓʷəː/ ɓoo
mʷ	bee/ honey		/maᵑgəz/ maᵑgəz	/mʷazəŋa/ mʷazəŋa	/mʷaːzəŋa/ moozəŋa	/nzəmʷa-to/ nzumʷa-to
ᵐbʷ	navel		/zɨᵐbʷɨɗə/ zuᵐbuɗə	/zʲəᵐbʷəɗ-ən/ ʒəᵐbʷəɗ-ən		/səᵐbʷəɗə/ suᵐbuɗə
fʷ	tree		/fʷəgə/ fogə	/fʷ-ən/ fʷən	/ənfʷə/ ənfu	
vʷ	guinea-fowl	/zavən-kən/ zavənkən	/zavʷɨnə/ zavunə	/zavʷən-ən/ zavʷənən	/zaːvʷəna/ zoovəna	
kʷ	grass	/hʷəzene/ huzene	/hʷɨzənə/ huzənə	/kʷəzən-ən/ kʷəzənən	/kʷəzənə/ kuzənə	
gʷ	fire	/gʷəlkʷe/ gulkʷe	/rɨgʷə/ rugo	/gʷ-ən/ gʷən	/gʷə-nə/ gunə	
ʔʷ	milk	/ʔʷa-kən/ ʔʷakən	/ʔʷa/ ʔʷa	/wa-n/ wan	/ʔʷa-nə/ ʔʷanə	/wa-to/ wato
hʷ	goat	/ahʷe/ ahʷe	/hʷə/ ho		/əhʷə/ uhu	/waː-to/ wooto

Table 57 - Labialized consonants in the Bata group

6.3.4.3 Palatalized Consonants

Whilst labialized consonants can be easily reconstructed for the Bata group, the same cannot be said for the palatalized consonants. All the languages under study include palatalized consonants in their inventories. However these consonants are not consistently attested in the cognates. For this reason it seems most likely that Proto-Bata did not possess palatalized consonants as

such. However we shall see in chapter 11 that a palatalization prosody can be reconstructed to account for the presence of these palatalized consonants.

There are a few roots where palatalized consonants appear consistently across the languages and so may be reconstructable for Proto-Bata.

Gloss	Proto-Bata (segmental)	Tsuvan	Sharwa	Jimi	Gude	Bata
fingernail, claw	gʲɨɬɨ	/gʲɨɬe/ giɬe	/gʲɨgʲəɬə/ gigʲəɬə	/gʲiɬ-ən/ giɬən	/gʲəɬə/ giɬə	/gʲəl-to/ geto
fish	kʷɨrʲɨfɨ	/wəlʲfən/ wulfin	/kʷɨrʲəfi/ kurefi	/hərʲəf-ən/ hərʲəfən	/hərəfʲə-nə/ hərəfinə	/qərfʲee/ qərfʲee
tooth	ɟinʲɨ	/ɟʲəne/ ɟine	/lʲɨnʲə/ line	/linʲ-ən/ linʲən	/lənʲə-nə/ linʲinə	/lʲən-to/ linto
nose	tsʲɨnɨ	/mətsʲəne/ mətʃine	/tsʲɨnə/ tʃinə	/sʲən-ən/ ʃənən	/sʲənə/ ʃinə	/sʲəne/ ʃine
fly (insect)	dzʲɨʔʲ		/dzʲɨʔɨj/ dʒiʔi	/dzʲəʔʲ-ən/ dʒiʔin	/dzʲəʔʲə/ dʒiʔi	/dzʲət-to/ dʒit-to

Table 58 - Palatalized consonants in the Bata group

However, there are also many roots where palatalized consonants appear sporadically.

Gloss	Proto-Bata	Tsuvan	Sharwa	Jimi	Gude	Bata
leg	sɨɗɨ	/səɗe/ səɗe	/sʲɨɗə/ ʃiɗə	/səɗ-ən/ səɗən	/səɗə/ səɗə	
navel	zɨᵐbʷɨɗɨ ʸ		/zɨᵐbʷɨɗə/ zuᵐbuɗə	/zʲəᵐbʷəɗ-ən/ ʒəᵐbʷəɗən		/səᵐbʷəɗə/ suᵐbuɗə
rock	fara		/fʲarɨj/ fʲari	/fara-n/ faran	/faara/ faara	/fara/ fara
tongue	gana ʸ	/agana/ agana	/gana/ gana	/gʲana/ gʲana		

Table 59 - Sporadic palatalization in the Bata group

We saw earlier that Jimi and Gude possess a consonant palatalization prosody which operates on particular consonants according to a priority ordering based on the place of articulation of the consonants. It was also noted earlier that this priority ordering appears to apply also to the Jimi lexicon. So, for example, we do not find words in Jimi where an unpalatalized laminal consonant appears in the same word as a palatalized consonant from a different place of articulation. The upshot of this is that it is possible to express palatalization in the Jimi lexicon by marking morphemes as palatalized, rather than by marking the individual consonants as palatalized.

The same distribution appears to apply generally in the other languages of the group. In other words, in words in any language in the group, if there is a palatalized consonant in the word, then it would be a laminal if there are any present, or if not, then it would belong to the next highest priority group according to the rules of that language. There are certain exceptions, such as ideophones in Gude ending in /s/, but overall the rule appears to hold. So for all the languages of the Bata group, palatalization can be expressed as a word-level feature and not just as a purely segmental feature.

The implication of this is that consonant palatalization in Proto-Bata was a word-level feature, and that we should look for its origin away from the individual consonant segments. Rather than trying to decide which consonants were palatalized in Proto-Bata, we should reconstruct the palatalization prosody for certain words in Proto-Bata. This issue will be further discussed in chapter 11.

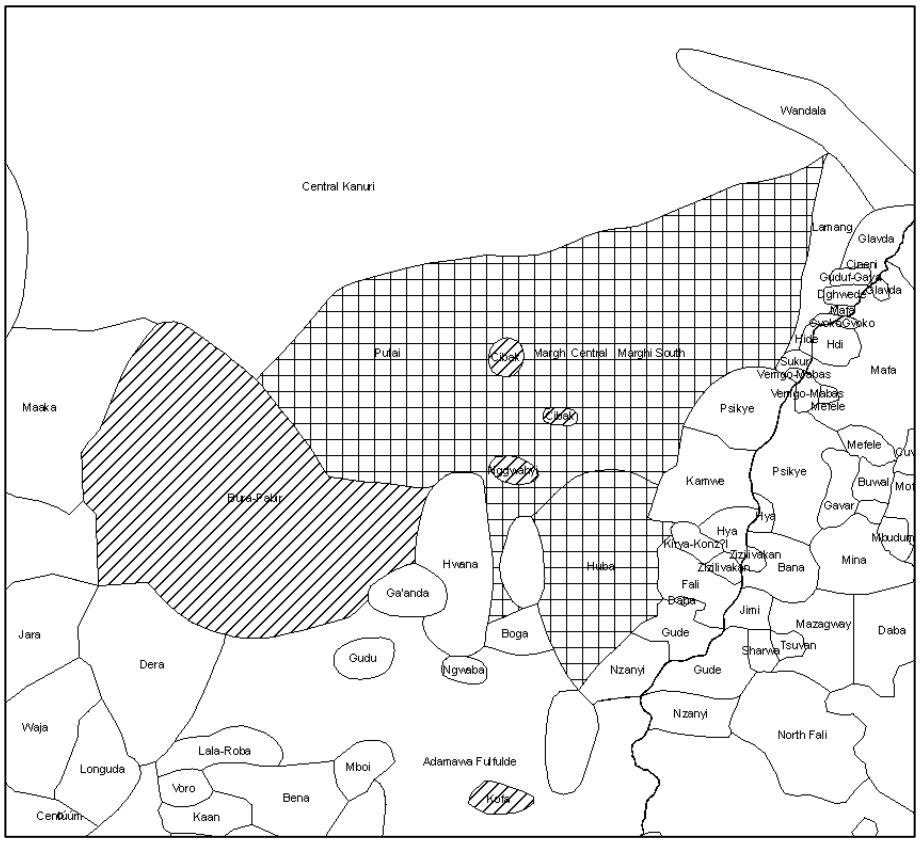
6.3.4.4 Summary

When looking at Proto-Bata, we can be confident that the language possessed three underlying vowels, and that it had labialized velar consonants and labialized labial consonants in its inventory in addition to the regular consonants. Palatalized consonants should not be considered part of the inventory in Proto-Bata, but there was a morpheme-level palatalization prosody that was expressed primarily by the palatalization of consonants.

6.4 Margi group

Hoffmann (Hoffmann 1988) divides the Margi group into two subgroups: West Margi (which we here call the Bura subgroup), covering Bura, Nggwahyi, Cibak and Putai; and Eastern (here referred to as the Margi subgroup), covering Kilba (Huba), South Margi and Margi. Data is only available for Bura and the three Margi subgroup languages, Kilba (Schuh n.d.; Mu'azu 2009), Margi (Hoffmann 1963; Maddieson 1987) and South Margi (Harley n.d.).

The present-day locations of the Margi group languages and the subgroups of Margi are shown in the following map.



Map 22 - Margi group

6.4.1 Margi

The first description of Margi phonology was by Hoffmann (1963). The language gained some notoriety due to his inclusion of sets of labio-coronal consonants in its phonemic inventory. His data was reanalysed by Schuh (1971) and also Maddieson (1987). Maddieson presented a coherent analysis which reduced Hoffmann's six vowel system to a system of just two vowels. These combine with sets of plain, palatalized and labialized consonants to produce the six surface vowels described by Hoffmann.

Maddieson allows for palatalization and labialization to apply to consonants from any place of articulation. This includes permitting labialized alveolo-palatal consonants (e.g. [ʃʷ]). If these alveolo-palatal consonants are analysed as palatalized laminal consonants (the position we shall be adopting), then the labialized alveolo-palatal consonants can be analysed as consonants which are simultaneously palatalized and labialized.

Maddieson also demonstrates contrast between /ə/ and its absence. /ə/ must therefore be treated as a full vowel phoneme, and not (always) as the result of epenthesis, as stated by Schuh. The implication is therefore that there are two full vowel phonemes, along with a possible epenthetic or zero vowel. This 'two plus one' vowel system is in line with the system that we have found in the Bata group (see section 6.3.4.1), but contrasts with the 'one plus one' vowel system that we found in most of the Vowel Prosody languages (see section 5.3.1.2 for the situation in the Mofu group, for example).

Maddieson disputes Hoffmann's claim that the labio-coronal consonants are phonemic units. He concludes that there is no justification for treating them as single units, and prefers that they be treated as CC sequences. Viewed from an historic perspective, these complex consonants do indeed come from a sequence of two consonants.

In summary, Margi has a system of two vowels, plus a possible zero vowel, and a consonant inventory that includes labialized and palatalized consonants.

6.4.2 Bura

There have been two descriptions of Bura phonology, though both have limitations. Warren (2005, 77), in setting out proposals for writing Bura, describes the basic consonantal system as follows:

p	pt	pts	t	ts	tʃ	k
b	bd	bdz	d	dz	dʒ	g
mp	mt	mpts	nt	nts	ntʃ	ŋk
^{m}b	md	^{m}bdz	^{n}d	^{n}ddz	^{n}dʒ	^{ŋ}g
ɓ	ɓɗ		ɗ			ƙ
f	pɬ	ps	ɬ	s	ʃ	x
v	bɮ	bz	ɮ	z	ʒ	ɣ
nf	mɬ	mps	nɬ	ns	nʃ	ŋx
nv	mɮ	^{m}bz	nɮ	nz	nʒ	ŋɣ
m			n			ŋ
			l		y	w
			r			

Table 60 - Bura consonants (Warren)

The analysis is unusual in that it includes a large selection of labio-alveolar consonants. However many of these potential consonants do not appear in the data, and of those that do, many are clearly the result of the coalescence of two distinct consonants. The following words show evidence for this from related languages.

(101)	'hare'	mpti	pita (Kilba)	
	'sun'	ptʃi	pətʃi (Kilba)	patsa (Podoko)
	'to chew'	ɓɗa	paɗ (Ouldeme)	
	'child'	bzər	bəzej (Mofu Gudur)	
	'to sprinkle'	pʃa	pəʃa (Malgwa)	

Whilst it may be necessary to treat these consonants as single phonemes when analysing the language, they clearly have historical origins as two distinct consonants.

Warren lists six vowel phonemes: /a/, /ə/, /i/, /e/, /u/, /o/.

Blench (2009b) presents a similar set of consonant phonemes to Warren, along with the same six vowel phonemes. He describes the distribution of palatalized and labialized consonants in terms of which following vowels they may occur with. However, as was the case with Margi (see section 6.4.1), an analysis with a smaller set of vowels conditioned by the palatalized and labialized consonants may turn out to be more accurate.

Inspection of the data (Blench 2009a; Schuh n.d.) indicates that only velar and labial consonants occur frequently followed by [w], implying that there are sets

of labialized labial and labialized velar consonant phonemes in the language. There are instances of some other consonants followed by [w], but given their rarity, these are best treated as CC sequences. All consonants appear to permit palatalization.

The palatalized alveolar consonants are rare, with the exception of /nʲ/, /lʲ/ and /dʲ/. Their rarity may be just a fact of the language, or it may be that these consonants are simply best analysed as CC sequences.

The data also indicates that [ə] does not occur following a palatalized or labialized consonant. In these environments it can be presumed that /ə/ is realised as [i] following a palatalized consonant and [u] following a labialized consonant.

However it is necessary to also propose a separate /i/ phoneme, since all the occurrences of [i] cannot be due to the palatalization of /ə/. In particular, there are many instances of [i] occurring following an unpalatalized laminal phoneme. The following data comes from (Blench 2009a).

(102) sipadu ‘sorghum’
sim ‘to eat’
zilaku ‘crow’
tsitsa ‘to hatch’
dziba ‘to plaster (house)’

Similarly, it is also necessary to propose a phoneme /u/, since there are many instances of [u] following alveolar and laminal consonants, and following palatalized consonants. None of these consonants can be labialized, so there is no possibility of the underlying vowel being /ə/.

(103) tuna ‘abscess’
ɮutsa ‘to grab’
tsutsa ‘shrub (type)’
ʃura ‘to smell’
ʒuʒa ‘bird (type)’

In Schuh’s data, the vowels [e] and [o] are rare, and almost always occur in Hausa loan words. These two vowels can be excluded from the core phonemic inventory.

In summary, Bura has four vowel phonemes, and a consonant inventory that includes palatalized and labialized consonants.

6.4.3 Kilba

As yet there is no published phonology of Kilba, and the only lexical data found comes from an unpublished word list (Schuh n.d.). Muazu (2003; 2009) has described a number of morphological processes in the language.

Examination of the available data shows that Kilba has sets of palatalized laminal and velar consonants, and labialized velar and labial consonants. There are a few examples of possible palatalized labial and alveolar consonants.

The vowel [o] may not be part of the core phonemic inventory in Kilba, as it occurs mostly in loan words. The vowel [e] may not be phonemic either, but may be the realisation of sequences such as /əja/.

(104) doo^{ŋ}gal 'load (Fulfulde)'
vamija/vamee 'boyfriend'

Looking at the distribution of vowels following velar consonants, we find that [ə] does not occur following palatalized or labialized velars. Following labialized velars, only [a] may occur (except for a couple of easily explicable exceptions). Following palatalized velars, we also have /a/ as the only vowel that can occur. There are a number of exceptions, many of which involve [i] following /h^{j}/.

The implication of this distribution is that there are only two underlying vowels, /a/ and /ə/, with /ə/ being realised as [u] following labialized consonants and [i] following palatalized consonants. In these cases, the labialization and palatalization are not realised on the consonant.

All four phonetic vowels occur following unlabialized labial consonants, but only [a] occurs following labialized labials. This distribution supports the two vowel analysis. However there are examples of [i] following plain labial consonants, and these cannot be accounted for by this analysis.

Following laminal consonants, we have a few instances of [u] following both plain and palatalized laminals, but almost all of these are adjacent to /w/ or a labialized velar. Likewise, there are some occurrences of [i] following plain

laminal consonants, but these are either preceding /j/ or word final, where they could be underlying /əj/.

There are a few instances of [ə] following palatalized laminals. These may simply be transcription errors. Cognates of these words in the other languages of the group exhibit [i], as is expected.

(105) Kilba tʃəsu Bura ntʃisu 'eight'
Kilba tʃədî Bura tʃir 'honey'

Following alveolar consonants, there are instances of all four vowels. However the instances of [u] are almost all either word-final or preceding /w/. The instances of [i] also occur almost always either word-final or preceding /j/. We can surmise that /ə/ is realised as [i] preceding /j/ and as [u] preceding /w/, and that word-final [i] and [u] are the realisations of /əj/ and /əw/ respectively.

In the case of Kilba, whilst the data from vowel distribution indicates that the underlying vowel system consists of just two vowels, it is not possible to rule out the existence of /i/ and /u/ as phonemes due to the small amount of data that does not follow the regular distribution pattern. However, the weak evidence for these two vowels may suggest that they were not present in the immediate ancestor language.

In summary, Kilba probably has two phonemic vowels, and includes palatalized and labialized consonants, though the system is not as extensive as for Bura and Margi.

6.4.4 Reconstructing Proto-Margi phonology

From the three languages where information is available we can propose that the phonology of Proto-Margi consisted of a set of consonants that included labialized labials and labialized velars, along with palatalized consonants from all places of articulation, most particularly palatalized laminals and velars. The vowel system probably comprised two full vowels /a/, /i/, along with /ɨ/, which may have been an epenthetic vowel or a zero vowel.

6.4.4.1 Labialized Consonants

For the labialized velars, only *k^{w} can be reliably reconstructed for the group. (The phonemic forms given are based on my own analysis. Data from Margi South is included where available.)

Gloss	Proto-Margi	Bura	Margi	Margi S	Kilba
grass	k^{w}ɨsar	/k^{w}əsar/ kusar	/psar/ psar	/sar/ sar	/sar/ sar
belly	k^{w}ɨta	/k^{w}əta/ kuta			/ta/ ta
buffalo	k^{w}ɨfɨr	/k^{w}əfər/ kufur		/f^{w}ər/ fur	/f^{w}ər/ fur
girl	k^{w}a	/nk^{w}a/ nk^{w}a	/ŋk^{w}a/ ŋk^{w}a	/k^{w}a/ k^{w}a	/k^{w}a/ k^{w}a
goat	k^{w}i	/k^{w}i/ k^{w}i	/k^{w}ə/ ku		/k^{w}a, k^{w}ə/ k^{w}a, ku
baobab	k^{w}ag^{w}ɨ	/k^{w}ag^{w}ə/ k^{w}agu			/g^{w}ə/ gu
to chew	k^{w}asa	/k^{w}asa/ k^{w}asa			/k^{w}asa/ k^{w}asa
quiver	k^{w}adza^{y}	/k^{w}adza^{y}/ k^{w}adʒa		/k^{w}adza/ k^{w}adza	/g^{w}adza^{y}/ g^{w}adʒa
six	k^{w}a	/nk^{w}a/ nk^{w}a		/k^{w}a/ k^{w}a	

Table 61 - Proto-Margi *k^{w}

Labialized labials can be reconstructed for Proto-Margi as in the following roots:

Gloss	Proto-Margi	Bura	Margi	Margi S	Kilba
to pour	*pʷɨ	/pʷə/ pu	/pʷa/ pʷa	/pʷa/ pʷa	/pʷəə/ puu
white	*pʷakʷɨ	/pʷakʷə/ pʷaku	/pʷakʷə/ pʷaku		
snake	*pʷabʷɨ	/pʷapʷə/ pʷapu			/pʷabʷə/ pʷabu
flour	*ɨpʷɨ	/mpʷa/ mpʷa	/əmpʷə/ əmpu	/upaw/ upau	/əpʷa/ upʷa
to boil	*ɓʷa	/ᵐbʷa/ ᵐbʷa	/ɓʷa/ ɓʷa	/ɓʷaa/ ɓʷaa	/ɓʷa/ ɓʷa
roan	*mʷaʔʲ	/mʷi/ mʷi	/mʷaʔʲə/ mʷaʔʲə		/mʷaʔʲə/ mʷaʔi
hide	*ᵐbʷɨ		/ᵐbʷə/ ᵐbu		/ᵐbʷa/ ᵐbʷa
navel	*sɨᵐbʷɨɗɨwʸ			/sʲəᵐbʷəɗəw/ ʃəᵐbuɗu	/sʲəᵐbʷəɗəw/ ʃiᵐbuɗu
four	*fʷaɗu	/nfʷar/ nfʷar	/fʷaɗə/ foɗə	/fʷaɗəw/ fʷaɗu	/fʷaɗəw/ fʷaɗu
civet/jackal	*ɨfʷa	/əfʷa/ ufʷa	/əfʷa/ ufʷa	/əfʷa/ ufʷa	/əfʷa/ ufʷa
charcoal	*vʷɨni	/vina/ vina	/vʷənʲə/ vunʲi	/əvʷənʲə/ uvʷunʲi	

Table 62 - Proto-Margi labialized labials

6.4.4.2 Palatalization

Palatalized consonants can be reconstructed for the laminal series and for the velar consonants. (Note that the unpalatalized Proto-Central Chadic *z and *dz have become devoiced in the Margi group and merged with *s and *ts.)

Gloss	Proto-Margi[5]	Bura	Margi	Margi S	Kilba
eight	*tsʲɨsɨw	/ntsʲəsəw/ ntʃisu		/tsʲəsəw/ tʃisu	
elephant	*tsʲɨwar	/tsʲəwar/ tʃiwar	/tsʲəwar/ tʃuwar	/tsʲəwar/ tʃiwar	
fly (insect)	*tsʲɨɗɨ	/tsʲər/ tʃir	/tsʲəɗəj/ tʃiɗi		/tsʲəɗi/ tʃəɗi
nose	*hʷɨtsʲɨr	/kʷətsʲər/ kutʃir	/mtsʲər/ mtʃir	/tsʲər/ tʃir	/tsʲər/ tʃir
sun	*pɨtsʲɨ	/ptsʲə/ ptʃi		/pətsʲə/ pətʃi	/pətsʲə/ pətʃi
navel	*sʲɨᵐbʷɨɗɨw			/sʲəᵐbʷəɗəw/ ʃəᵐbuɗu	/sʲəᵐbʷəɗəw/ ʃiᵐbuɗu
squirrel	*sʲar	/sʲar/ ʃar		/sʲan/ ʃan	/sʲan/ ʃan
tail	*sʲɨw		/sʲəw/ ʃu	/sʲəw/ ʃu	/sʲəw/ ʃu
kidney	*kʷɨlsʲi	/kʷəlsʲə/ kulʃi	/hʷəlsʲə/ hulʃi		
tongue	*gʲar	/kʲəᵑgʲar/ keᵑgʲar	/kʲar/ kʲar	/kʲar/ kʲar	/kʲar/ kʲar
leg	*hʲɨ		/hʲə/ hʲi	/hʲə/ hi	/hʲə/ hʲi
thigh	*ʔʲa		/ʔʲa/ ʔʲa	/ʔʲa/ ʔʲa	/ʔʲa/ ʔʲa
earth	*hɨdʲ	/həj/ hi	/həʔʲ/ həʔi		

Table 63 – Palatalized consonants in Proto-Margi

With the Bata group we noted (section 6.3.4.3) that palatalization of consonants can be analysed as a word-level feature that falls primarily on the laminal consonants, then on velar consonants where no laminal consonants are present, and then on to labials and alveolars if circumstances require it.

[5] A provisional segmental reconstruction

Within the Margi group the same phenomenon is present, as far as can be determined from the data available. For example, in the Bura data of nearly 8,000 entries, there are no examples of words containing unpalatalized /s/ along with a palatalized consonant. The only apparent exceptions are verbs with the /mja/ 'completely' extension (Blench 2010).

(106) masa 'to buy'
masamja 'to buy up (more than one thing)'

However, if /mja/ is analysed as a separate particle rather than a suffix, these examples do not violate the consonant palatalization priorities.

If palatalization of consonants is indeed a word-level feature, then rather than reconstructing palatalized laminals and velars for Proto-Margi (as in Table 63 above), we should instead reconstruct the consonant palatalization prosody for Proto-Margi. This is the position we will be adopting when reconstructing Proto-Central Chadic, and we will see that historically the palatalization prosody was present at this earlier time. At some point between Proto-Central Chadic and today's Margi group languages, the prosody ceased to be productive, and resulted in the creation of a set of palatalized consonants. However we cannot be certain whether this development took place before or after the time of Proto-Margi. The position we will adopt is that the palatalization prosody was still present in Proto-Margi.

6.4.4.3 Vowels

The vowel system of Proto-Margi consisted of *a, *i and *ɨ, which may have been an epenthetic vowel.

The proto-phoneme *a is stable, and is easily reconstructed from the data.

Gloss	Root	Bura	Margi	Margi S	Kilba
four	fʷaɗu	/nfʷar/ nfʷar	/fʷaɗə/ foɗə	/fʷaɗəw/ fʷaɗu	/fʷaɗəw/ fʷaɗu
grass	kʷɨsar	/kʷəsar/ kusar	/psar/ psar	/sar/ sar	/sar/ sar
horse	takʷ	/takʷə/ taku	/tagʷə/ tagu	/tagʷə/ tagu	/takʷə/ taku
leaf	ɬali	/ɬali/ ɬali			/hʲali/ hʲali
oil	mal	/mal/ mal			/mal/ mal
quiver	kʷadzaʸ	/kʷadzaʸ/ kʷadʒa		/kʷadza/ kʷadza	/gʷadzaʸ/ gʷadʒa
ram	gam	/gam/ gam			/gam/ gam
woman	mʷala	/mʷala/ mʷala	/mala/ mala		/mala/ mala

Table 64 - Proto-Margi *a

Proto-Margi *i is harder to reconstruct. In Bura *i has the reflex /i/, but in the languages of the Margi subgroup (Margi, Margi South and Kilba) it became /ə/. The representation *i is preferred for consistency with the reconstructions from the Bata group. The actual phonetic form in Proto-Margi cannot be deduced. The reconstruction is justified on the basis of the following data:

Gloss	Proto-Margi	Bura	Margi	Margi S	Kilba
butterfly	*pir	pirpir			pərpər
claw	*pil	mpil			pəl
to eat	*sim	sim	səm	səma	
fear	*ɬivira	ɬivira			ləvəra
goat	*kʷi	kʷi	ku (/kʷə/)		ku (/kʷə/)
head	*kir	kir	kər	kər	kər
to jump	*fila	fila			fəla
name	*ɬim	ɬim			ɬəm
to spit	*tifa	tifa			təfa
to steal	*hila	hila		həl	həla
three	*maakir	makir		maakər	maakəru
work	*ɬir	kiɬir	ɬər		ɬəra

Table 65 - Proto-Margi *i

Proto-Margi *ɨ can be easily reconstructed, though the widespread occurrence of palatalized and labialized consonants leads to many cases where the realisation of the reflex of *ɨ is other than [ə]. In some environments *ɨ is manifested as absence of a vowel, as in the Bura word for 'sun' below.

Gloss	Proto-Margi	Bura	Margi	Margi South	Kilba
chicken	*tɨka	mtəka		teka	təga
guinea fowl	*tsɨvɨr	tsəvəra	tsəvər		tsəvər
sun	*pɨtsi	ptʃi		pətʃi	pətʃi
tooth	*ɬɨr^{y}	/ɬʲər/ ɬir, hʲir	/hʲər/ hʲir	/hʲər/ hʲir	/hʲər/ hʲir
ten	*kʷɨma	/kʷəma/ kuma		/kʷəmaw/ kumow	
tamarind	*^{m}bɨwla	/^{m}bəwla/ ^{m}bula		^{m}bəla	^{m}bəla

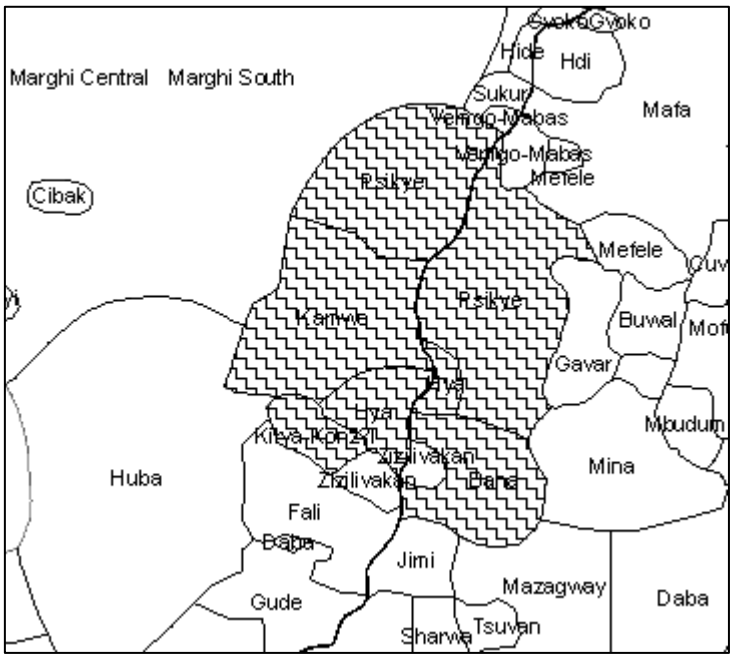
Table 66 - Proto-Margi *ɨ

6.4.4.4 Summary

For Proto-Margi, we can reconstruct a proto-language with similar features to Proto-Bata. Proto-Margi had three vowel phonemes *a, *i and *ɨ, along with a word-level palatalization feature. The consonant inventory included a set of labialized velar phonemes and a set of labialized labial phonemes.

6.5 Higi group

According to the Ethnologue (Lewis 2009), the Higi group consists of five languages: Bana, Hya, Kamwe, Kirya-Konzel and Psikye. Kamwe has a number of dialects, including Futu and Nkafa. The name Higi is also used to refer to Kamwe. The locations of the Higi group languages are shown in the following map.



Map 23 - Higi group

There are published phonological works on Bana (Hoffman 1990) and Higi (Hoffmann 1965; Laver 1965; Mohrlang 1971; Mohrlang 1972; Barreteau 1983). The languages in the Higi group have complex phonologies, with many features of interest to theoretical phonologists. It was Hoffmann's analysis of Higi that first made use of the term 'prosody' to describe the interplay of consonants, vowels, labialization and palatalization in a Chadic language (Hoffmann 1965).

We will begin with an overview of the important phonological characteristics of the individual languages, as far as possible, before moving onto the reconstruction of Proto-Higi.

6.5.1 Bana

An excellent analysis of Bana phonology was carried out by Erica Hoffman (1990). She analysed Bana as having three vowel phonemes /ə/, /e/ and /a/. The consonant inventory includes labialized velar consonants, but no labialized labial consonants as found in the Bata and Margi groups.

Hoffman analyses consonant palatalization as the result of a palatalization prosody which acts at the level of the syllable. In a palatalized syllable, laminal and velar consonants are palatalized, and /ə/ is realised as [i]. If none of these elements are present, the palatalization is not realised phonetically.

There should be a level of caution in adopting the notion of a prosody acting on a syllable. Elsewhere in Central Chadic we have seen prosodies acting at the level of the morpheme or as modifications of individual segments, but not acting at the level of the syllable. The concept of prosodies acting on syllables comes from Mohrlang's work on Higi (Mohrlang 1972). However for Bana the notion of syllable prosody does not explain anything that cannot be explained by proposing the existence of palatalized consonants which condition adjacent /ə/ to be realised as [i].

Looking at the short Bana lexicon (Lienhard and Giger 1989), it becomes apparent that to avoid including /i/ as a phoneme it is necessary to propose not only palatalized laminal and palatalized velar phonemes, but also palatalized alveolar and labial phonemes. In other words, all consonants potentially have palatalized counterparts, as is the case with languages of the Bata group. Such an analysis fits in with the system we shall establish for Proto-Higi (see section 6.5.7) based on evidence from other languages of the Higi group.

In the Bata group it was possible to analyse palatalization as a feature of the word (see section 6.3.4.3), with palatalization being realised on a consonant according to a prioritisation system based on the place of articulation of the consonants in the word. A general look at the Bana data shows that the laminal consonants are most likely to be palatalized, with 45% of all laminals palatalized, compared with 11% of velars and 7% of alveolars, and labials rarely showing evidence of palatalization. This is consistent with the same

prioritisation sequence that we found in the Bata group. There is not enough data to be able to propose that Bana has a word-level palatalization prosody that functions in the same way as in Jimi for example (see section 6.2.5), but the same general patterning is apparent.

Hoffman notes that plurals are often formed by changing the internal vowels of the word to /e/, combined with palatalization. It is apparent from the data that there is something approaching vowel harmony, whereby in most cases /a/ and /e/ do not both appear in the same root. In addition, with only two exceptions, whenever /e/ appears in a root, the laminal consonants in the root are palatalized. This is exactly the behaviour of the palatalization prosody in Vowel Prosody languages (see section 5.2.2 in the chapter on Vowel Prosody languages). Further analysis is needed to look at the exceptional cases and to study whether the vowel prosody is a productive feature of the language.

The interesting implication of this is that there may be a twin system at work in Bana, where there are two palatalization prosodies, one vowel prosody and one consonant prosody. We will encounter this system with the Mixed Prosody languages (chapter 7).

6.5.2 Psikye

Whilst there is a published work on the grammar of Psikye (also known as Kapsiki) (D. M. Smith 1969), there are no published materials on Psikye phonology. Father Angelo Mazzucci, priest in Mogode, has collected some data for the language, along with some information on the grammar, designed for learners of Psikye. He has also set out a system for writing the language.

The data available show that labialization and palatalization are far more limited than in the Kamwe dialects. Labialization is limited to velar consonants, and palatalization of consonants is only possible for the laminal consonants.

The vowel system has three central vowels /ɨ/, /ə/ and /a/, along with the high vowels /i/and /u/. Mazzucci does not write /u/, interpreting it as the result of /ɨ/ preceded by /w/ or a labialized consonant. This analysis works in most cases, but there are some exceptions in the data, and for this reason I am retaining it as a phoneme here. /ə/ preceded by labialized consonants results in [o]. [ɨ] is not found preceded by a palatalized laminal consonant, presumably since /ɨ/ is realised as [i] in that environment.

6.5.3 Higi

Higi is a name accorded to a wide grouping of speech forms listed in the Ethnologue (Lewis 2009) under Kamwe, which includes Kamwe of Futu, Kamwe of Nkafa, and several more.

Mohrlang (1972), working mainly from Nkafa, analysed Higi using a system of prosodies acting at the level of the syllable. These prosodies are palatalization, labialization and nasalization. In the case of nasalization, which has no effect on vowels and does not spread in any way, it seems that there is little to be gained from such an analysis for understanding the sound system of the language.

Labialization of a syllable is given as the analysis for a variety of phenomena, from actual labialization of a consonant to pre-labialization and the presence of a labial plosive or a nasal (often transcribed as pre-nasalization).

(107) /^{w} ve/ [v^{w}ɛ] ‘farm’
/^{w} ʃa/ [^{w}ʃa] ‘things’
/^{w} ta/ [pta] ‘leather skin’
/^{w} ne/ [^{m}nɛ] ‘salt’

Labialization in the narrow phonetic sense only occurs on the velar and labial consonants, as in most other languages of this group. This is also the case in the Bata and Margi groups. The motivation for analysing other consonants as carrying the labialization prosody is unclear. The three examples in (108) are better analysed simply as /wʃa/, /pta/ and /mne/.

For the vowels, Mohrlang says that there is a tendency to back and round the vowels in a syllable with the labialization prosody, and that this back-rounding may extend into adjacent syllables both before and after the labialized syllable.

Palatalization applies to almost every consonant, and is realised as the palatalization of the consonant. The following vowel may also be affected by this palatalization, especially the high vowel. Mohrlang also notes that an /i/ in a word can cause the fronting of previous vowels, most noticeably /a/.

Four vowel contrasts are given for word-final position, though only three in word-medial position. The four vowels are /ɨ/, /e/, /a/ and /ɛ/. /ɛ/ is neutralised with /ɨ/ in word-medial position.

6.5.4 Kamwe Nkafa

Kamwe Nkafa data comes from a wordlist of just over 1,000 entries taken in 2008 (Harley 2009b). There is as yet no analysis of the data, except that this is probably the same language that was described in Mohrlang's Higi Phonology (Mohrlang 1972).

The data gives a vast array of phonetic consonants, including many with labialized or palatalized forms. Consonants permitting labialization include the velars and labials, but also others from the alveolar and laminal sets. There are even instances of labialized post-alveolar consonants such as [tʃʷ]. Consonants from all places of articulation can be palatalized, though palatalized laminal consonants (e.g. [ʒ], [tʃ]) are by far the most common.

It is very difficult to analyse the vowel system. The fact that all consonants have palatalized and labialized forms, means that any front or back-rounded surface vowel could be analysed as the result of the influence of a modified consonant on a central vowel. However there are certain environments where we can determine the true status of the underlying vowel.

For [i], in sequences such as [ki] it is possible that the underlying form is /kʲə/. However, if [i] occurs after an unpalatalized laminal, e.g. [si], or after a labialized non-laminal consonant, e.g. [kʷi], then we can be sure that [i] is not /ə/ conditioned by the preceding palatalized consonant. For Kamwe Nkafa there are plenty of examples of [i] occurring in these environments, and we can propose /i/ as a phoneme in this language. We will see in section 6.5.7 that the two Kamwe dialects have preserved *i where the other languages have the reflex /ə/.

For [e], there are many examples in the data. However a large number of entries include duplicates where [e] appears as [ə]. The data as it stands does not suggest the existence of /e/. Its presence in the data may be as an allophone of /ə/, or may be due to mistakes in keyboarding.

For the back-rounded vowel [u], the only environment where we can be sure that the vowel is not underlying /ə/ is following a palatalized consonant other than a palatalized laminal, since these are the only consonants that cannot be labialized. Only one such example exists in the data. The balance of probability is that there is no /u/ phoneme in the language, but that all instances of [u] are due to an adjacent labialized consonant.

The Kamwe Nkafa vowel system is taken to consist of three vowels /a/, /i/ and /ə/, though further research is very necessary.

6.5.5 Kamwe Futu

As with Kamwe Nkafa, no phonological analysis is yet available, but there is a wordlist of just under 1,500 entries (Harley 2009a). The data indicates that labialization and palatalization can be applied to almost every consonant in much the same way as for Kamwe Nkafa.

With the vowels, there are significant numbers of [u] and [o]. None of these occur following a palatalized, non-laminal consonant, so it is theoretically possible to ascribe their presence to the influence of a labialized consonant on /ə/ and /a/.

For the front vowels [i] and [e], the evidence for /i/ is similar to that for Kamwe Nkafa, and is reasonably clear. For [e] the evidence is less clear.

6.5.6 Kirya-Konzel

Blench (2009b) gives a few notes on the phonology of Kirya-Konzel (abbreviated to Kirya henceforth). He lists six possible vowel phonemes, /i/, /e/, /ə/, /a/, /u/ and /o/, and states that palatalized and labialized consonants are common. From the data available, it can be seen that almost all consonants can be labialized, including velars, labials, laminals and post-alveolar laminals, and a few alveolars.

In the vast majority of cases [u] and [o] occur following either a velar consonant or a labial consonant. However there remain a significant number of exceptions. It is entirely possible that these instances may be due to the presence of other labialized consonants. Detailed analysis of the Kirya data and cognates for evidence of transferred labialization gives justification for this, and allows both back-rounded vowels to be eliminated from the list of phonemes.

As with Bana, the only consonants to allow palatalization are the velars and the laminals. Interestingly, the laminals permit both palatalization and labialization, which is not possible with consonants from other places of articulation. This may be an indication that the language considers the post-alveolar consonants, i.e. palatalized laminals, as segments in their own right, and therefore palatalization should not be analysed as a prosody in this language.

The phoneme /i/ occurs for the most part in environments that could be explained by a Bana-type palatalization phenomenon, i.e. in all environments except following unpalatalized laminal or velar phonemes. However there are examples of [i] following these consonants, so it is not possible with the current data to eliminate /i/ as a phoneme.

The existence of [e] after unpalatalized consonants, and [a] after palatalized consonants appears to rule out the possibility that [e] is a palatalized allophone of /a/.

Kirya is unusual in possessing a retroflex [ɽ] sound, described by Blench and Ndamsai (2009b) as 'not a true retroflex but pronounced with the tongue towards the alveolar ridge'. From the data it can be seen that in two thirds of cases [ɽ] is followed by [i]. In contrast [r] is almost always found before central vowels, and only before [i] in a small fraction of cases. This patterning may indicate that [ɽ] is the palatalized form of /r/, though a thorough check of the data would be necessary before reaching a firm conclusion.

6.5.7 Reconstructing Proto-Higi

There are several issues to be addressed in reconstructing the phonology of Proto-Higi. First we shall establish that the only labialized consonants in Proto-Higi are the labialized velars. Secondly we shall look at the status of the palatalized consonants in the languages of the group and determine how best to treat the palatalized consonants of Proto-Higi. Finally we shall attempt to reconstruct the vowel system of Proto-Higi.

6.5.7.1 Labialized consonants

All velar consonants can be labialized in all the languages of the group for which information is available. In Kirya, Kamwe Futu and Kamwe Nkafa almost all consonants are attested in labialized form. However in Bana and Psikye only the velar consonants can be labialized.

Gloss	Proto-Higi	Bana	Psikye	Kamwe-Futu	Kirya
goat	k^{w}ɨ	k^{w}ə	k^{w}ə	/k^{w}a/ ko	/k^{w}ə/ ku
grass	g^{w}ɨzɨn	g^{w}əzən	g^{w}əzə		s^{w}ən
belly	h^{w}iɗ	x^{w}ər		h^{w}i	/h^{w}ər/ h^{w}ur
fire	ɣ^{w}i	ɣ^{w}ə	/g^{w}ə/ g^{w}u	ɣ^{w}i	/ɣ^{w}ə/ ɣu

Table 67 - Labialized velars in Proto-Higi

The data below indicates that labialized labial consonants have been created in Kamwe, rather than lost in Psikye. They have been created as a result of the merging of *w with a labial phoneme.

(108) ‘tree’ wufə /wɨfə/ (Psikye) f^{w}ə (Kamwe-Nkafa)
‘four’ wufaɗə /wɨfaɗə/ (Psikye) f^{w}aɗo (Kamwe-Futu)
‘field’ wuvə /wɨvə/ (Psikye) v^{w}ə (Kamwe-Nkafa)

In these cases, we see that the /w/ present in the Psikye data has become desegmentalised in the Kamwe languages, and has attached to the labial consonants /f/ and /v/, resulting in the labialized labial phonemes /f^{w}/ and /v^{w}/.

The same applies for labialized alveolar and laminal consonants. If indeed the sequences such as /tw/ are phonetically labialized (the source data is unclear), their existence is due to the merging of *w with another consonant. In some cases the *w is itself the reflex of a labialized velar phoneme. If the sequences such as /tw/ are in fact CC sequences, then they are the result of metathesis.

(109) ‘skin’ xuta /x^{w}ɨta/ (Psikye) wta (Futu) twa (Kirya)
‘grass’ g^{w}əzən (Bana) wuzən (Tera) swən (Kirya)
‘tail’ hutɨrə /h^{w}ɨtɨrə/ (Sharwa) twələ (Kirya)
‘thing’ wusu /wɨsə/ (Psikye) wsi (Futu) swə (Kirya)
‘hearth’ ruwetʃ /rəwəts^{y}/ (Mafa) rətwə (Nkafa)
‘five’ hutaf /h^{w}ətaf/ Hdi mtʃef (Psikye) mtʃ^{w}afə (Nkafa)

The last item shows the creation of labialized post-alveolar consonants (at the phonetic level, at least) in Kamwe. These are in effect labialized palatalized laminal consonants. Kamwe is the only Central Chadic languages where these sounds occur.

The existence of labialized post-alveolar consonants in Kamwe argues for two things. Firstly, the spread of labialization onto non-velar consonants is a more recent process than the palatalization of laminals, since palatalization of laminals occurs across the group, whereas this labialization is an innovation that only applies to a subset of languages within the group. Secondly, consonant palatalization cannot be treated as a word-level prosody in these languages. It is difficult to argue that a labialized consonant has received the prosody, since in many other Consonant Prosody languages, labialization blocks the application of palatalization to a consonant.

6.5.7.2 Palatalization

All languages in the Higi group have a set of palatalized laminal consonants. All the languages except Psikye also permit the palatalization of velars. In Kamwe Nkafa and Kamwe Futu almost all consonants may be palatalized.

There are three possibilities to consider. The first is that palatalization in Proto-Higi was limited to the laminal consonants, and then developed in other sets of consonants in some of the languages in the group. Secondly, palatalization could have been found on several sets of consonants, but was lost from certain consonant series in some of the languages. Thirdly, there may have been a consonant palatalization prosody in Proto-Higi, of the same type as that found in the Bata and Margi groups, i.e. one that applies palatalization to a consonant in the word according to a hierarchy based largely on the place of articulation.

First we shall see that the only phonemes that are palatalized consistently across the group are the laminals, and that these can be reconstructed for Proto-Higi. Then we will show that the other palatalized consonants developed during the time after Proto-Higi split into the different languages.

The palatalized laminal series are easily reconstructable at least as far as Proto-Higi.

Gloss	Proto-Higi	Bana	Psikye	Kamwe Nkafa	Kamwe Futu	Kirya
elephant	tsʲɨwɨn	/tsʲəwə/ tʃiwə		/tsʲəwə/ tʃiwə	/tsʲəwe/ tʃiwe	/tsʲəwənə/ tʃuunə
five	wɨtsʲɨfɨ	/tsʲəfə/ tʃifə	/mtsʲəfə/ mtʃefə	/ntsʲʷəfə/ ntʃufə	/mtsʲʷafə/ mtʃwafə	
nose	hɨtsʲɨn	/kəsʲən/ kʃən		/ntsʲə/ ntʃi	/ntsʲə/ ntʃi	/nsʲən/ nʃin
broom	sʲɨmɨ	/sʲəm/ ʃəm	/sʲəmu/ ʃimu	/sʲəmi/ ʃimi	/sʲəme/ ʃime	/sʲəmə/ ʃimə
navel	zʲɨᵐbʷiɗ	/zʲəᵐber/ ʒiᵐber		/zʲəᵐbʷi/ ʒiᵐbwi	/zʲəᵐbʷi/ ʒeᵐbwi	/zʲəᵐbʷər/ ʒiᵐbur

Table 68 - Proto-Higi palatalized laminals

There are a few roots that may indicate consistent palatalization of a non-laminal consonant.

Gloss	Proto-Higi (provisional)	Bana	Kamwe Nkafa	Kamwe Futu	Kirya
bow	lɨgʲi	/rəgʲə/ rəgi	/ləgʲi/ ligʲi	/rəgi/ regi	
grasshopper	hagʲi	/xaj/ xaj	/hagʲi/ hagʲi	/hagi/ hagi	/haji/ haji
neck	wɨlʲi	/wərʲə/ wəri	/wəlʲə/ wulʲə	/wəlʲi/ wulʲi	/wərʲi/ wurʲi

Table 69 - Palatalization of non-laminal consonants in Proto-Higi

The data is weak, consisting only of three consonants appearing before a final *i. The palatalization heard on these consonants can be ascribed to the presence of the *i. We cannot therefore conclude that there were any palatalized non-laminal consonants in Proto-Higi. Without any palatalized consonants from non-laminal places of articulation, there is no motivation for proposing a word-level consonant palatalization prosody.

If there were no palatalized non-laminal consonants in Proto-Higi, we would need to find a way to explain their appearance in the present-day Higi group languages. The following table shows how some of the palatalized consonants

have come into languages of the Higi group. There are two paths. The first is the palatalization of a consonant by a following /i/ (the first eight entries). The second is the reanalysis of *j as /i/, leading to palatalization of a preceding consonant (the following three entries – note that Proto-Central Chadic *ɗʸ→*ɗʲ→j in Proto-Higi).

Gloss	PCC	Proto-Higi	Bana	Kamwe-Nkafa	Kamwe-Futu	Kirya
black		ᵑgɨri	/ᵑgɨrʲə/ ᵑgri	/ᵑgəlʲə/ ᵑgəlʲə	/ᵑgərə/ ᵑgəre	/nkərʲə/ nkərʲi
dog	kɨri	kɨli	/kərʲə/ kəri	kəlʲə	kəlʲe	/kərʲə/ kərʲi
neck	wɨraj	wɨlɨj	/wərʲə/ wəri	/wəlʲə/ wulʲə	/wəlʲə/ wulʲi	/wərʲə/ wurʲi
saliva		ⁿdiɣʷɨɗî	/ⁿdiɣʷər/ ⁿdiɣʷər	/ⁿdigʷəlʲi/ ⁿdigulʲi	/ⁿdigʷəɗî/ ⁿdiguɗî	
to spit	tif	tifi	/tfə/ tfə	/ntivi/ ntivi	/ntʲəvi/ ntʲivi	/ntəfə/ ntəfə
earth	hʷaɗîk	hɨɗî	/hʲɨɗî/ xʲiɗî		/hʲɨɗî/ hʲiɗî	/hahaj/ hahaj
grass-hopper	haɗîkʷ	haɗîk	*haɗî→/haj/ xaj	/hagʲə/ hagʲi	*haki→/hagʲə/ hagi	/hajə/ haji
wind		lini	/rəniki/ rəniki	/nili/ nili	/rinʲə/ rinʲə	
bow	rɨgɨɗʸ	lɨgɨj	/rəgəj/ rəgi	/ləgʲə/ ligʲi	/rəgi/ regi	
hut	ɣaj	ɣaj	/ɣʲə/ ɣʲi		/ɣʷa/ ɣʷo	/ɣaj/ ɣaj
meat	ɬɨwɨɗʸ	ɬɨj			/ɬʲə/ ɬʲi	/ɬəj/ ɬe

Table 70 - Origins of palatalized consonants in the Higi group

From this data, the palatalized non-laminal consonants can be seen to have originated within the Higi group, and were not present in Proto-Higi.

We conclude, then, that Proto-Higi possessed palatalized laminal phonemes, but no other palatalized phonemes. There is no evidence for a word-level consonant palatalization prosody in Proto-Higi.

In the reconstructions for Proto-Higi, we will notate the palatalized laminals as *sʲ etc.

6.5.7.3 Vowels

We have seen that the following vowel systems are present in the languages of the Higi group (parentheses indicate marginal phonemes):

- Bana: /ə/, /a/, /e/
- Higi: /ɨ/, /a/, /e/, (/ɛ/)
- Psikye: /ɨ/, /ə/, /a/, (/i/, /u/)
- Kamwe Nkafa: /ə/, /a/, /i/
- Kamwe Futu: /ə/, /a/, /i/
- Fali Kirya: /ə/, /a/, /i/, /e/

It should be remembered that for most of the languages there is no published phonology, so any conclusions are provisional.

All of the likely systems consist of at least three vowels. In most cases there are two central vowels and one front vowel. This goes against Barreteau (1983), who analysed Higi with just two vowels and a vowel prosody.

Proto-Higi *a has the reflex /a/ across the group.

Gloss	Proto-Higi	Bana	Psikye	Kirya	Futu	Nkafa
tongue	ɣanɨj	/ɣanəj/ ɣani		/nɣanə/ nɣanə	/ɣani/ ɣani	/anʲə/ anʲə
breast	ʔʷa	/ʔʷa/ ʔʷa		/ʔʷa/ ʔʷa	/əwa/ uwo	
cough	ʔʲɨɬa	/ʔʲəɬa/ ʔʲiɬa	/ʔʲəɬa/ ʔʲiɬa		/tsajɬa/ tsajɬa	/ʔʲaɬa/ ʔʲaɬa
four	wɨfadɨ	/fadə/ fadə	/wəfadə/ wufadə	/fʷadə/ fʷadə	/fʷadəw/ fʷado	/fʷarə/ fʷarə

Table 71 - Proto-Higi *a

Proto-Higi *ɨ has the reflexes /ə/ or zero.

Gloss	Proto-Higi	Bana	Psikye	Kirya	Futu	Nkafa
crocodile	kɨlɨm	/kələ^{m}bə/ kələ^{m}bə		/hələmə/ hələmə	/kələməŋ/ kələməŋ	/kəlmi/ kəlmi
to die	mɨtɨ	/mətəj/ m(ə)ti	/mtə/ mtə		/mtəw/ mto	/mtə/ mtə
field	wɨvɨhɨ	/vəhə/ vəxə	/wəvə/ wuvə	/nv^{w}əkə/ nv^{w}əkə		/v^{w}ə/ v^{w}ə
tree	wɨfɨ	/fə/ fə	/wəfə/ wufə	/fwə/ fwə	/fwə/ fwo	/fwə/ fwə

Table 72 - Proto-Higi *ɨ

There is evidence, especially from Kamwe Nkafa and Kamwe Futu, for reconstructing a Proto-Higi *i.

Gloss	Proto-Higi	Bana	Psikye	Kirya	Futu	Nkafa
belly	h^{w}iɗ	/h^{w}ər/ x^{w}ər		/h^{w}ər/ h^{w}ur	/h^{w}i/ h^{w}i	/h^{w}i/ h^{w}i
hare	vira	/vəle/ vəle		/pitə/ pitə	/vira/ vira	
work	ɬinɨ	/ɬənəj/ ɬəni	/ɬənə/ ɬənə	/ɬənə/ ɬənə	/ɬinə/ ɬinə	/ɬənə/ ɬənə
to spit	tifi	/tfə/ tfə		/ntəfə/ ntəfə	/ntivi/ nt^{j}ivi	/ntivi/ ntivi
horn	tɨlim^{w}ɨ	/təl^{j}əmə/ təlimə			/tərim^{w}ə/ tərimo	/tərm^{w}i/ tərm^{w}i

Table 73 - Proto-Higi *i

In the two varieties of Kamwe, in most cases *i has the reflex /i/.

For Bana, there is no evidence to link /e/ to Proto-Higi *i. Instead, /e/ maybe the result of a vowel palatalization prosody acting on /a/. The /ə/ phoneme in Bana is described by Hoffman as not being a zero vowel (i.e. it is not an epenthetic vowel), though as she states (Hoffman 1990, 91): 'My own hypothesis is that for Bana, there are two cases of phonetic [ə]: one being the high vowel phoneme..., and the other being a zero vowel.' If this is the case then we could hypothesise that the full vowel was a reflex of *i and the zero vowel was a reflex of *ɨ.

Likewise, with Psikye there is contrast between /ɨ/ and /ə/, and we can hypothesise that /ɨ/ is the reflex of *ɨ and /ə/ is the reflex of *i.

This gives us the following provisional equivalences for the three vowels of Proto-Higi.

	Bana	Psikye	Kirya	Futu	Nkafa
***a**	/a/	/a/	/a/	/a/	/a/
***i**	/ə/	/ə/	/ə/	/i/	/i/
***ɨ**	/ə/ or zero	/ɨ/	/ə/	/ə/	/ə/

Table 74 - Reflexes of Proto-Higi vowels

In the reconstructions for Proto-Higi, the vowels are more difficult to reconstruct than for other groups. This is partly due to the limited number of languages that contrast the reflexes of *i and *ɨ, and partly due to the obscuring effect of the palatalized laminals on the underlying vowels. It is difficult to propose exact correspondences, but the correspondences described above hold in many cases.

6.5.7.4 Summary

For Proto-Higi, we can reconstruct sets of labialized velar phonemes and palatalized laminal phonemes. There were three underlying vowel phonemes.

6.6 Issues for reconstructing Proto-Central Chadic

The three distinctive features of the languages exhibiting the Consonant Prosody system – a three-vowel system, labialized consonants and a morpheme-level consonant palatalization prosody – raise important questions for the study of other languages in Central Chadic. How does the three-vowel system relate to the two-vowel system of the Vowel Prosody languages? Why are there more labialized consonants in these languages than there are elsewhere? Are the consonant palatalization prosody in Consonant Prosody languages and the vowel palatalization prosody in Vowel Prosody languages related? These questions will be addressed in chapters 0 and 0.

It should be noted that the three groups studied here do not form a genetic unit, and so we cannot use these groups directly to reconstruct the phonological features of an immediate ancestor language. We can, however, identify features of these groups that are relevant to the reconstruction of Proto-Central Chadic.

6.6.1 The existence of back-rounded vowels

In the three groups studied in this chapter the evidence has been that, historically at least, there were no back-rounded vowel phonemes, only front and central vowel phonemes. We shall see that in other groups within Central Chadic it is possible to reconstruct back-rounded vowel phonemes, or else to reconstruct a vowel labialization prosody. The question therefore arises of the origin of these back-rounded vowel phonemes, or of their loss in the three groups presented here.

6.6.2 The number of underlying vowels

In all three of the groups studied here it has been possible to reconstruct three underlying vowels, or at least two vowel phonemes and an epenthetic or zero vowel. As we shall see, other Central Chadic languages can be analysed with just two underlying vowels, or even one. The question must be addressed of whether a third vowel has been gained in these groups, or else lost in the other groups, or if there is a link between one or several of the vowels in these groups and the creation of prosodies in other groups.

6.6.3 Labialized labial consonants

Whilst the existence of a set of labialized velar consonants is almost universal amongst Central Chadic languages, the labialized labial consonants are only reconstructed for the Bata and Margi groups. The question arises of whether these consonants are an innovation in the Bata and Margi groups – in which case we need to establish where they originated – or whether they indicate the presence of these phonemes at an earlier stage in the history of Chadic.

6.6.4 Palatalized consonants

Palatalized consonants do not exist in many Central Chadic languages. In the groups studied here it was possible to reconstruct palatalized laminal phonemes for Proto-Higi. For Proto-Bata and Proto-Margi, the presence of palatalized consonants at the phonetic level was analysed as being due to a morpheme-level palatalization prosody acting on consonants.

We need to address the questions of whether any sets of palatalized consonants should be reconstructed for Proto-Central Chadic, and of how the consonant palatalization prosody came into existence in the Bata group. This is done in section 11.2.