

## **THE CLASSIFICATION OF THE MASA GROUP OF LANGUAGES\***

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The Chadic family of languages comprises approximately 140 languages classified into three major branches: West Chadic, Biu-Mandara, and East Chadic. Newman [1977b] has proposed an additional, fourth branch of Chadic consisting of the Masa group of languages, previously classified in the Biu-Mandara branch. This article provides supporting evidence for Newman's classification of the Masa group as a fourth branch by demonstrating that this group does not exhibit the phonological, lexical, and morphological innovations characteristic of the Biu-Mandara branch. It follows from the absence of these innovations that there is no evidence for the classification of the Masa group in the Biu-Mandara branch.

### **1. Introduction**

Chadic languages, of which there are approximately 140, are spoken in southern Niger, northern Nigeria, northern Cameroon, and western and central Chad [Newman 1977b, 1990, 1992]. Since the first comprehensive classification of these languages [Greenberg 1963], there has been considerable disagreement in the literature about the internal subclassification of Chadic. Currently, there is a consensus that the Chadic family is composed of three major branches: West Chadic, Biu-Mandara or Central Chadic, and East Chadic [Newman 1977b, 1992; Jungraithmayr and Shimizu 1981; Jungraithmayr and Ibrizimow 1994]. However, Newman [1977b] has proposed an additional, fourth branch of Chadic consisting of the Masa group of languages. This group was previously classified in the Biu-Mandara branch of the family [Hoffmann 1971, Newman 1978]. In response to Newman's proposal, Tourneux [1990] presented evidence in support of the

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subgrouping of Masa in Biu-Mandara. This subclassification has been maintained by Jungraithmayr [1981], Jungraithmayr and Shimizu [1981], Barreteau [1987], and Jungraithmayr and Ibrizimow [1994] in their studies of the Chadic family.

In this paper I provide supporting evidence for the classification of the Masa group as a fourth branch of the Chadic family. I demonstrate that the Masa group does not exhibit the phonological, lexical, and morphological innovations characteristic of the Biu-Mandara branch. It follows from the absence of these innovations that there is no evidence for the subclassification of this group in Biu-Mandara. Thus, I conclude that the Chadic family is composed of four branches as proposed by Newman [1977b].

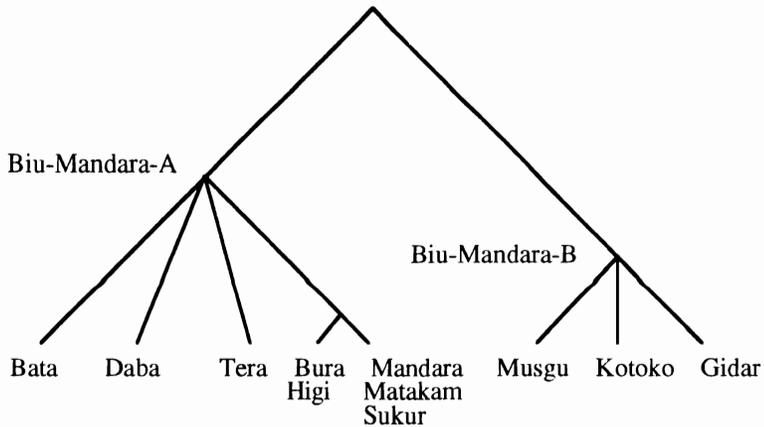
The paper is organized as follows. In section 2 I present an overview of the Chadic family. I outline the internal composition and subclassification of the Biu-Mandara languages and the languages of the Masa group. I then summarize the major classifications of the Chadic languages in section 3. The principal arguments regarding the position of the Masa group in the Chadic family are also considered. In sections 4 through 6, I present several phonological, lexical, and morphological innovations of the Biu-Mandara branch and demonstrate that these innovations are not attested in the Masa group of languages. I provide an appendix containing a list of 204 words reconstructed for the Proto-Masa group in order to substantiate the arguments presented in this paper as well as to encourage further comparative research.

## **2. The Chadic family**

As noted above, the Chadic family consists of three major branches: West Chadic, Biu-Mandara, and East Chadic [Newman 1977b, 1990, 1992]. In the West Chadic branch there are approximately 64 languages spoken primarily in northern and northwestern Nigeria. Hausa, the predominant Chadic language, belongs to the West Chadic branch. Hausa has over 40 million speakers located primarily in northern Nigeria but it extends west and north into Niger. The languages of the Biu-Mandara branch are spoken in northeastern Nigeria, northern Cameroon, and westernmost Chad. There are at least 68 languages in this branch. The estimated 30 languages comprising the East Chadic branch are spoken primarily in western and central Chad. Finally, the Masa group is composed of nine closely related languages spoken along the border of northern Cameroon and southwestern Chad. In the remainder of this section, I outline in more depth the composition and internal classification of the Biu-Mandara branch and the Masa group.

**2.1. Biu-Mandara.** The internal classification of the Biu-Mandara branch (BM) is schematized in (1) following Newman [1977b]. According to Newman, Biu-Mandara is comprised of two subbranches, 'A' and 'B'. The Biu-Mandara-A subbranch (BM-A) is comprised of eight groups. The Biu-Mandara-B subbranch (BM-B) includes the Musgu, Kotoko, and Gidar groups.

## (1) The Biu-Mandara branch



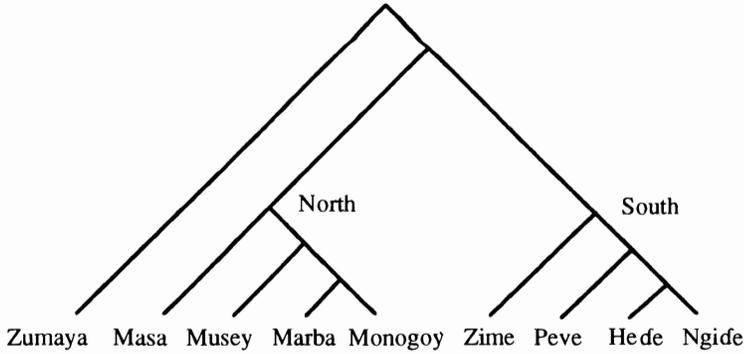
In Newman's 1990 classification of the Chadic languages, the Gidar group is subclassified as a separate, third subbranch in Biu-Mandara. The innovations presented for the Biu-Mandara-B subbranch in this paper hold for the Gidar group as well as the Musgu and Kotoko groups. Since the position of Gidar as a third subbranch may be questioned, I follow Newman's 1977b subclassification of Biu-Mandara into two branches. Regardless of the position of Gidar in the Biu-Mandara branch, the principal argument of this paper remains the same: the Masa group of languages does not exhibit the innovations characteristic of the Biu-Mandara languages.

**2.2. The Masa group.** The Masa group consists of nine closely related languages spoken in southwestern Chad and contiguous regions of northern Cameroon. The languages comprising the group are subclassified into two subgroups, 'north' and 'south' [Dieu and Renaud 1983, Tourneux 1990]. The northern subgroup consists of Masa, Musey, Marba, and Monogoy [Barreteau 1987, Tourneux 1990]; the southern subgroup of Zime (Mesme), Peve, Hede, and Ngide [Jungraithmayr 1978a, Hufnagel 1986, Noss 1990]. Zumaya is provisionally classified as separate from these principal subgroups following Barreteau [1987]. The internal subclassification of the group is summarized in (2).

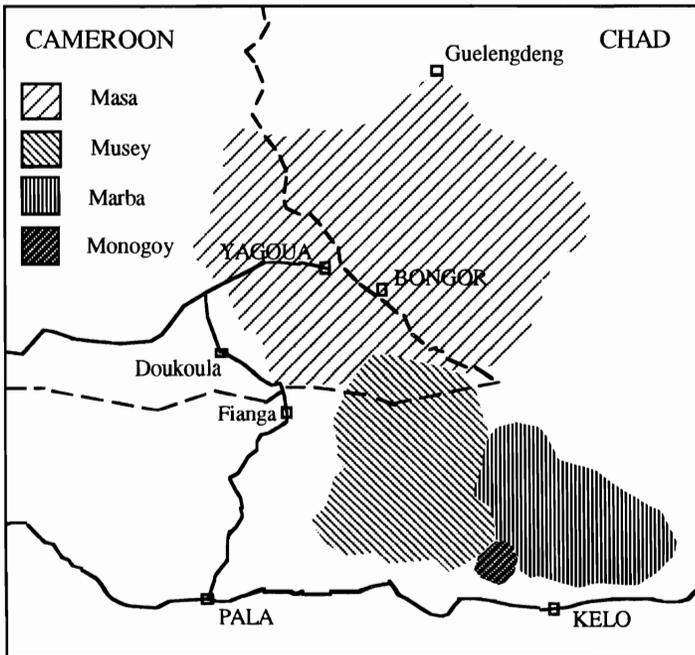
As noted above, the northern subgroup consists of Masa, Musey, Marba, and Monogoy. Masa has approximately 180,000 speakers situated in the Mayo-Kebbi prefecture of southwestern Chad and in northern Cameroon in the Mayo-Danay Division of the Far North Province [Caïtucoli 1983]. There are approximately 150,000 speakers of Musey [Platiel 1968; R. Duncanson, p.c.], of whom approximately 120,000 live in the Mayo-Kebbi prefecture situated between Fianga and Kelo, the remaining 30,000 in the Mayo-Danay Division of the Far North Province in Cameroon. The approximately 80,000 speakers of Marba, also known

as Azumeina [Price 1968], reside primarily in the Mayo-Kebbi prefecture, north of Kelo. Finally, Monogoy has an estimated 5,000 speakers located in the Mayo-Kebbi prefecture northwest of Kelo [R. Duncanson, p.c.]. The Marba and Monogoy are culturally distinct groups, but linguistically they may be similar enough to warrant being classified as dialects of a single language [R. Duncanson, p.c.; S. Lazicki, p.c.].

(2) The languages of the Masa group

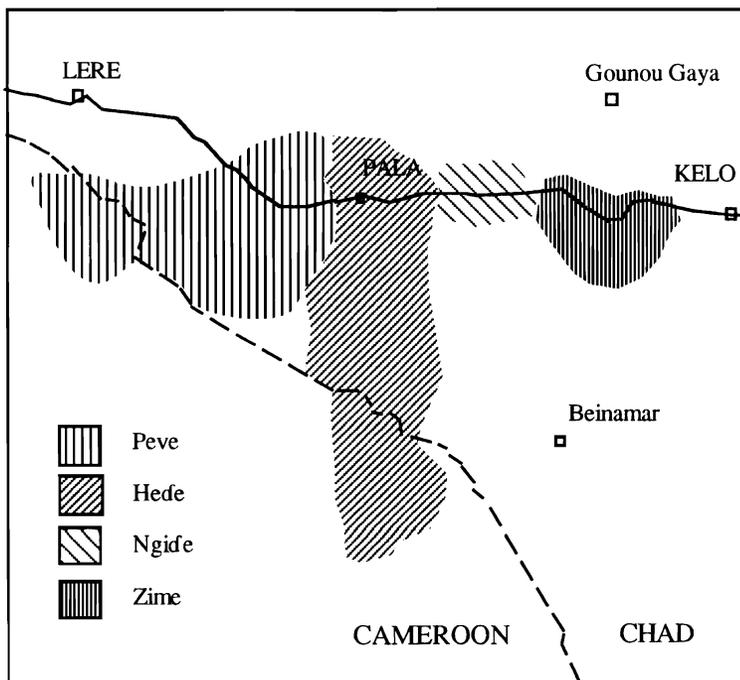


(3) Map for Masa, Musey, Marba, and Monogoy



The southern subgroup consists of Zime (Mesme), Peve, Hede, and Ngide [Jungraithmayr 1978a, Hufnagel 1986, Noss 1990]. Zime, which has an estimated 30,000 speakers [Hufnagel 1986, Kieschke 1990, Noss 1990], is spoken in the Mayo-Kebbi prefecture, immediately east of Kelo, Chad. Peve is also spoken in the Mayo-Kebbi prefecture, west of Pala in a region which extends into the neighboring area of Cameroon. It has approximately 30,000 speakers [Venberg 1975]. Hede, with an estimated 35,000 speakers [Noss 1990], is spoken in an area to the immediate east of the Peve speaking area [Hufnagel 1986, Noss 1990]. Lamé or Dzəpaw is the southernmost dialect of Hede, spoken in Cameroon east of the Bouba Njidda National Forest Reserve [Sachnine 1982]. Finally, Ngide is spoken to the east of Pala and has an estimated 5,000 speakers [Noss 1990; R. Duncanson, p.c.]. Hede and Ngide are the most closely related members of the southern subgroup. Noss [1990] has questioned the status of Ngide as a language separate from Hede, but also notes that the Ngide people consider themselves culturally and linguistically distinct.

(4) Map for Zime, Peve, Hede, and Ngide



Zumaya has only a few remaining speakers [Barreteau 1987]. Its classification in the group is unclear because the language has not been well documented.

### 3. Overview of Chadic classification

**3.1. Classifications of the Chadic languages.** Greenberg [1963] put forward the first comprehensive classification of the languages of the Chadic family, classifying the languages in nine groups and demonstrating their unity as a family. Newman and Ma's [1966] in-depth comparative study of the Chadic languages demonstrated more conclusively the genetic unity of the family. They also provided evidence for the subclassification of four of Greenberg's nine groups. They classified groups 1 and 9 as a single subgroup which they referred to as "Plateau-Sahel" and groups 3 and 6 as a second subgroup referred to as "Biu-Mandara". Hoffmann [1971] placed the remaining five groups of Greenberg [1963] in Newman and Ma's "Biu-Mandara", thereby classifying all the Chadic languages into two major branches. Subsequently, in 1974, Newman [1978] proposed that Plateau-Sahel be split into two separate branches coordinate with the Biu-Mandara branch, introducing the terms "West Chadic" and "East Chadic" to refer to the two groups comprising the Plateau-Sahel branch, formerly Greenberg's groups 1 and 9, respectively. Finally, Newman [1977b] proposed that the Masa group of languages constitutes a fourth branch of Chadic, coordinate with the other three major branches. The Masa group corresponds to Greenberg's group 8 and was previously classified as part of the Biu-Mandara branch [Hoffmann 1971, Newman 1978]. These classifications are summarized in (5).

(5) The major classifications of the Chadic languages

Greenberg [1963]	1	9	3 & 6	2, 4, 5, & 7	8
Newman & Ma [1966]	Plateau-Sahel		Biu-Mandara		
Hoffmann [1971]	Plateau-Sahel		Biu-Mandara		
Newman [1978]	West	East	Biu-Mandara		
Newman [1977b]	West	East	Biu-Mandara		Masa

**3.2. Classification of the Masa group and Musgu.** The Masa group of languages has been considered to be closely related to Musgu, a Biu-Mandara language [Westermann and Bryan 1952, Meyer-Bahlberg 1972, Caprile and Jungraithmayr 1973]. The close relationship between these languages appears to be based primarily on the geographic proximity of Musgu and the Masa language as well as on typological and lexical similarities between these two languages. Meyer-Bahlberg [1972], for instance, noted similarities between Musgu and Masa in the manner in which they form various syntactic constructions such as relative clauses and comparatives. Furthermore, she noted lexical and grammatical resemblances between the languages.

Despite the similarities reported between Masa and Musgu, Greenberg [1963] classified Masa and the other languages of the Masa group as a distinct group from Musgu, in groups 8 and 7, respectively. Newman and Ma [1966] did not place the Masa and Musgu groups with any of the other groups in their classification of Chadic, leaving both outside the Plateau-Sahel and Biu-Mandara groups. As noted above, Hoffmann [1971] then classified the Masa group and Musgu together as part of the Biu-Mandara branch, while Caprile and Jungraithmayr [1973] classified them as a single group. In a later classification, Newman [1978] distinguished two subbranches of the Biu-Mandara branch, designated 'A' and 'B', and, in keeping with the consensus of a close genetic relationship, he placed the Masa group and Musgu in the same subbranch, Biu-Mandara-B.

In 1977, Newman rejected the conventional acceptance of a close relation between the Masa group and Musgu, proposing instead that the Masa group be removed from the Biu-Mandara branch and provisionally classified as a fourth branch of Chadic. He noted that the primary argument for removing the Masa group from Biu-Mandara was that the Masa group does not exhibit the sound change Proto-Chadic \*S > \*ɬ characteristic of the Biu-Mandara branch [Newman 1977a,b]. \*S represents a sibilant distinct from Proto-Chadic \*s, possibly [ʃ]. Furthermore, Newman noted that he could not find any features of the Masa group which would justify its subclassification in the West or East Chadic branches. Consequently, he provisionally classified the group as a separate branch. It is important to note that Newman's subclassification was based on the identification of shared innovations. In the absence of shared innovations among languages or language groups, no subclassification can be inferred.

In response to Newman [1977b], Tourneux [1990] argued for the subclassification of the Masa group as part of Biu-Mandara-B. Tourneux noted three sound correspondences characteristic of the Masa group: Proto-Chadic \*ʃ corresponds to [s], Proto-Chadic \*r to [l], and Proto-Chadic \*d to [r] in intervocalic position. Note that Tourneux's Proto-Chadic \*ʃ is equivalent to Newman's Proto-Chadic \*S. Tourneux compared these correspondences with other Chadic languages and, specifically, with Musgu. He observed that these sound correspondences occur elsewhere in the Chadic family and, more importantly, in Musgu. However, the fact that the Masa group and Musgu share these sound correspondences does not mean that these languages should be subclassified in the same branch of the family. Tourneux illustrated this point well by demonstrating the prevalence of these sound correspondences in other branches of Chadic. If it could be shown that the Masa group and Musgu underwent these sound changes at a similar point in their history, then these correspondences could possibly be phonological innovations indicating a period of common ancestry. Tourneux did not address the relative chronology of these sound changes. In section 4, I show that these sound correspondences represent sound changes which occurred independently in the Masa group and Biu-Mandara.

Tourneux also presented the findings of a lexico-statistical comparison of Musgu and four of the languages of the Masa group based on a modified Swadesh list. This comparison revealed that the Masa group languages exhibited from 37 to 41% cognancy with Musgu. Tourneux suggested that these figures indicated that the Masa group and Musgu are more closely related than Newman's subclassification recognizes. He suggested, moreover, that these findings argue for the subclassification of the Masa group as a group within Biu-Mandara. In support of this proposal, Tourneux noted that the languages of the Matakam group, a group in the A sub-branch of Biu-Mandara, share from 32% to 68% of their vocabulary. Tourneux suggested that since the Masa group and Musgu share approximately 40% of their vocabulary, it follows that the genetic relation between these languages is comparable to that noted for the languages of the Matakam group. It is not the case, however, that the percentage of cognate vocabulary represents an absolute figure with which to determine degree of subclassification. Moreover, the identification of shared innovations remains the principal method of subclassification.

In the remainder of this paper, I present several phonological, lexical, and morphological innovations characteristic of the Biu-Mandara branch and the Biu-Mandara-B sub-branch. I demonstrate that the Masa group of languages consistently does not share the innovations of the Biu-Mandara branch. In the absence of shared innovations, there is no evidence for the subclassification of the Masa group of languages within Biu-Mandara. Thus, the absence of the Biu-Mandara innovations in the Masa group supports Newman's proposal that the Masa group should be classified as a separate, fourth branch of Chadic.

#### **4. Phonological Innovations**

In this section, I present four historical sound changes which affected the Biu-Mandara languages. Two of the sound changes affected Biu-Mandara and distinguish this branch from the East and West Chadic branches. The two remaining changes affected the B subbranch of Biu-Mandara but not the A subbranch. After considering these sound changes in Biu-Mandara, I consider the corresponding historical developments in the Masa group. I demonstrate that the Masa group did not undergo the sound changes reconstructed for Biu-Mandara.

**4.1. Sound changes affecting Proto-Biu-Mandara.** There are two well-documented sound changes which affected Proto-Biu-Mandara (Proto-BM): Proto-Chadic \*b > Proto-BM \*v and Proto-Chadic \*S > Proto-BM \*ʃ [Newman 1977a,b] The first of these changes is illustrated in (6). The Proto-Chadic reconstructions presented in (6) and in subsequent discussions are from Newman [1977b]. See Appendix A for a list of language abbreviations.

## (6) Proto-Chadic \*b &gt; Proto-BM \*v

Proto-Chadic		BM-B	BM-A
*bar	'blood'	Mg <i>fel</i>	J <i>vara</i>
*barə	'to give'	Lo <i>vá</i> , G <i>ə+vaya</i>	T <i>vərə</i>
*zaban	'guinea-fowl'	Lo <i>záawan</i> , G <i>zamvəna</i>	Gs <i>tsuvon</i>
*bədi	'night'	Lo <i>vade</i>	Db <i>vudu</i>

The second sound change, Proto-Chadic \*S > Proto-BM \*ɬ, is of particular interest because a change of this nature only occurred in Biu-Mandara [Newman 1977a,b]. This sound change is illustrated in (7). As noted earlier, Proto-Chadic \*S represents a sibilant distinct from Proto-Chadic \*s.

## (7) Proto-Chadic \*S &gt; Proto-BM \*ɬ

Proto-Chadic		BM-B	BM-A
*'JaSu	'bone'	Lo <i>ate</i> , G <i>lənɬéŋ</i>	T <i>'geɬ</i>
*Səmi	'ear'	Mg <i>time</i> , G <i>ləmá</i>	Hi <i>həme</i>
*Səm	'name'	Lo <i>ɬemi</i>	M <i>ləm</i>
*San(-)	'tooth'	Lo <i>ɬan</i> , G <i>ɬaya</i>	Pd <i>ɬira</i>

**4.2. Sound changes affecting Proto-Biu-Mandara-B.** Two sound changes which affected Proto-Biu-Mandara-B include: Proto-Chadic \*r > Proto-BM \*r > Proto-BM-B \*l and Proto-Chadic \*d > Proto-BM \*d > Proto-BM-B \*r / V\_ V. The first of these changes is illustrated in (8).

## (8) Proto-BM \*r &gt; Proto-BM-B \*l

Proto-Chadic		BM-B	BM-A
*kərfi	'fish'	Mg <i>kilif</i> , G <i>kilfi</i>	T <i>yurvu</i>
*pərə	'to fly'	Mg <i>afili</i> , Lo <i>pelace</i>	
*təra	'moon'	Mg <i>tile</i> , G <i>təla</i>	Mn <i>tərə</i>
*xərə	'to steal'	Mg <i>hala</i> , G <i>ə+hala</i>	Gd <i>xərə</i>

The sound change Proto-Chadic \*r > \*l applied to a significant number of Biu-Mandara-A languages. This sound change, however, cannot be reconstructed for Proto-BM-A. The sound change affected the Bura/Higi, Mandara, Matakam, and Daba groups of Biu-Mandara-A. It did not arise in the Tera and Bacama groups. As seen in (1) above, Bura/Higi, Mandara, Sukur, and Matakam belong to a single subbranch of Biu-Mandara-A. The Daba, Tera, and Bacama groups constitute three separate subbranches. Thus, the change occurred in two of the four subbranches of Biu-Mandara-A. The distribution of this sound change suggests that it occurred independently in these two subgroups after the split of Proto-BM-A.

The second sound change affecting Biu-Mandara-B was Proto-Chadic \*d > Proto-BM \*d > Proto-BM-B \*r / V\_ V. This sound change is illustrated (9).

(9) Proto-BM \*d > Proto-BM-B \*r / V\_ V

Proto-Chadic		BM-B		BM-A
*kədəm	‘crocodile’	Mg	<i>kurum</i>	Mn <i>cərwə</i>
*idə	‘eye’	Bu	<i>yil</i> , Mg <i>arai</i>	Mt <i>di</i>
*bədi	‘monkey’	Mg	<i>ávrik</i> , G <i>bərya</i>	Lng <i>vəji</i>

In Biu-Mandara-A, the Daba and Matakam groups exhibit this sound change. Several languages of the Bura group, including Kilba and Margi, also underwent this change. In the majority of the groups in Biu-Mandara-A, though, Proto-Chadic \*d did not change to \*r intervocalically.

**4.3. Sound changes in the Masa group.** Three sound changes reconstructed for the Proto-Masa group (Proto-MG) are of interest here: Proto-Chadic \*b > Proto-MG \*v, Proto-Chadic \*S > Proto-MG \*s, and Proto-Chadic \*d > Proto-MG \*r / V\_ V. These sound changes are illustrated in the following tables.

(10) Proto-Chadic \*b > Proto-MG \*v

Proto-Chadic		Masa group
*bar	‘blood’	P <i>vūsū</i> , H <i>vursu</i> , Z <i>vursu</i>
*bədi	‘monkey’	Ma <i>vù+rà</i> , Mb <i>vi+ra</i> , H <i>vir</i> , Z <i>vir</i>
*ba	‘mouth’	Ma <i>vùn+nà</i> , P <i>vūn</i> , H <i>vùn</i> , Z <i>vin</i>

(11) Proto-Chadic \*S > Proto-MG \*s

Proto-Chadic		Masa group
*’JaSu	‘bone’	Ma <i>zòk+ηā</i> , Mu <i>sòk+ηà</i> , P <i>ùsò</i> , H <i>uso</i>
*aSi	‘egg’	Mu <i>sē+nà</i> , Mb <i>asse+na</i> , N <i>je?</i>
*Səm	‘name’	Ma <i>sēm+nā</i> , Mu <i>sēm+má</i> , Z <i>sem</i>
*Səne	‘to send’	Mb <i>sun</i> , P <i>fin</i> , H <i>sin</i> , N <i>sin</i>

(12) Proto-Chadic \*d > Proto-MG \*r / V\_ V

Proto-Chadic		Masa group
*idə	‘eye’	Mu <i>ì+rà</i> , Mb <i>ir+a</i> , P <i>ī</i> , H <i>ir</i> , Z <i>ir</i>
*kədəm	‘crocodile’	Mu <i>hūrùm+mà</i> , P <i>hūrūm</i> , H <i>hurum</i> , N <i>hūrūm</i>
*bədi	‘monkey’	Ma <i>vù+rà</i> , Mb <i>vi+ra</i> , H <i>vir</i> , Z <i>vir</i>

The change Proto-Chadic \*d > \*r / V\_V brought about a phonological contrast between \*r, a flap, and \*r, a trill, in Proto-MG. The Proto-MG \*r is the reflex of Proto-Chadic \*r whereas the Proto-MG \*r is the reflex of Proto-Chadic intervocalic \*d. After the split of Proto-Masa group into the northern and southern subgroups, the contrast between the two r's was independently lost in both subgroups. In the southern languages the \*r merged with the \*r; but in the northern languages, \*r merged with \*l. Note the correspondences in (13) for Proto-MG \*r in contrast to the reflexes of Proto-MG \*r and \*l seen in (14) and (15).

(13) Proto-MG \*r > \*l in northern subgroup, \*r in southern subgroup

Proto-Chadic	Proto-MG		North	South
*kər̥fi	*k-rf-	'fish'	Ma <i>kū̀lùf+nà</i>	N <i>kérfé</i>
*tə̀ra	*t̥ir	'moon'	Ma <i>t̥il+tā</i>	P <i>cḕr</i> , Z <i>ter</i>
*mar	*mbur	'oil'	Mu <i>mb̥ùl+lā</i>	H <i>mbur</i>

(14) Proto-MG \*r > \*r

Proto-Chadic	Proto-MG		North	South
*kədəm	*hurum	'crocodile'	Mu <i>hūr̥ùm+mà</i>	P <i>hūr̥ùm</i>
*idə̀	*ir	'eye'	Mb <i>ir+a</i>	H <i>ir</i> , Z <i>ir</i>
*bə̀di	*vir	'monkey'	Ma <i>v̥i+rà</i>	H <i>vir</i> , Z <i>vir</i>

(15) Proto-MG \*l > \*l

Proto-Chadic	Proto-MG		North	South
	*gol	'to watch'	Mu <i>gol</i>	H <i>gól</i>
	*gulok	'rooster'	Mu <i>gògòlók+ŋā</i>	P <i>gùlòk</i>
	*wile	'to shine, flash'	Mb <i>wile+da</i>	L <i>wile?e</i>
	*sal	'to wash grain'	Mu <i>sal</i>	H <i>sal</i>

It is a common characteristic of languages in this area of Africa to distinguish a trill, flap, and voiced lateral. Hausa, Ngizim, and Kanuri (Nilo-Saharan), for instance, exhibit such an inventory of liquids. It is interesting to note that in the Bade group of West Chadic languages, the flap has undergone sound changes in Gashua Bade and Western Bade which are very similar to the sound changes reconstructed for the Masa group. As illustrated in (16), the Proto-Bade flap \*r has undergone the change \*r > \*l in Gashua Bade, but \*r > \*r in Western Bade. The flap \*r remains a flap in Ngizim. The Proto-Bade \*r persists as a trill in the three languages [Schuh 1981a, b; p.c.].

## (16) Reflexes of Proto-Bade \*r and \*r

Proto-Bade	Ngizim	Gashua Bade	Western Bade	
*r	rəvək	àlèvək	àrvəkən	'skin'
*r	màrĩ	mèlí	mèrən	'beard'
*r	zəgər	əzgəl	əzgərən	'foot'
*r	bərbər	bərbər	bərbərən	'dust'
*r	ákúrnà	ákúrnà	ákúrnàn	'gruel'
*r	wūrjĩ	wūrjĩ	wūrjĩ	'scorpion'

**4.4. Historical Inferences.** If the Masa group were a member of Biu-Mandara-B, it would follow that this group of languages would exhibit the phonological innovations characteristic of both Biu-Mandara and Biu-Mandara-B. As noted above, there are four well-attested sound changes which affected Proto-BM and Proto-BM-B. In this section, I argue that only one of these sound changes could have affected Proto-MG. I demonstrate that the other three sound changes which affected the Biu-Mandara languages are not the same sound changes as those which affected Proto-MG.

First, as previously discussed, Proto-BM and Proto-MG exhibit the sound change Proto-Chadic \*b > \*v. The fact that the Masa group and Biu-Mandara share this sound change may indicate that the Masa group is a subgroup in Biu-Mandara. However, the change \*b > \*v has occurred independently elsewhere in the Chadic family. The Zaar, Ron, and Bade groups of West Chadic, for instance, independently underwent this change. In the case of the Ron group, there was apparently subsequent devoicing of the labial fricative. These sound changes are illustrated in (17) for Zaar of the Zaar group [Shimizu 1978], Fyer of the Ron group [Jungraithmayr 1968, 1970], and Ngizim of the Bade group [Schuh 1981a].

## (17) Proto-Chadic \*b &gt; \*v in West Chadic

Proto-Chadic		Zaar	Fyer	Ngizim
*bədi	'monkey'	vwùrì	fìr	vəjĩ
*barə	'to give'	vùrtu	fà	
*bən-	'hut, house'	vìn	fen	
*badə	'five'			vàad
*bəna	'to wash oneself'			vìyú

The fact that this sound change has occurred independently in three separate groups indicates that this is a common change in the Chadic family. Thus, the fact that the Biu-Mandara and Masa group languages exhibit this change may be attributed to the prevalence of this change in the Chadic family.

Newman [1977b] proposes that the Proto-Chadic inventory of sibilants and laterals includes \*s, \*z, \*S, and \*l. As noted earlier, Proto-BM underwent the

sound change Proto-Chadic \*S > Proto-BM \*ɬ. In other words, Proto-Chadic \*S merged with Proto-Chadic \*ɬ in Proto-BM. In Proto-MG, however, Proto-Chadic \*S merged with Proto-Chadic \*s. As Newman [1977b] first noted, the merger of Proto-Chadic \*S with Proto-Chadic \*s provides strong evidence against classification of the Masa group as a subgroup of Biu-Mandara. It is not plausible that the merger of the Proto-Chadic \*S and \*ɬ characteristic of Biu-Mandara could subsequently be reversed in the Masa group, with the reflexes of Proto-Chadic \*S shifting to \*s.

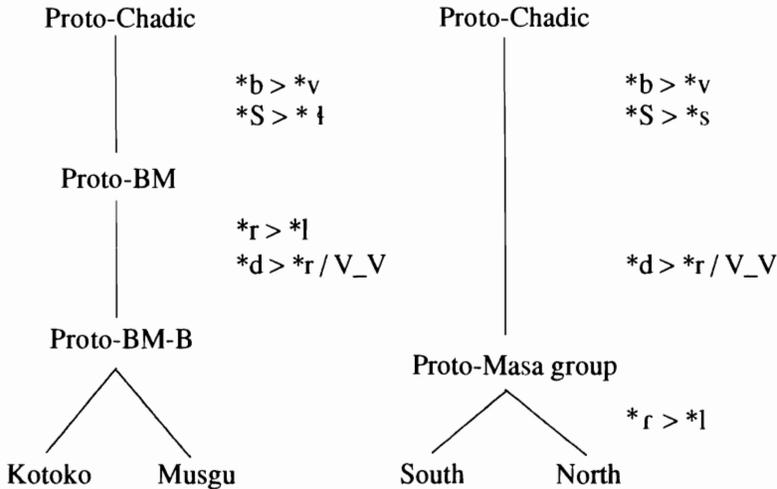
After the split of Proto-BM into its two subbranches, the change Proto-BM \*r > \*l affected Proto-BM-B. After Masa group split into its two subgroups, the sound change (Proto-Chadic \*r >) Proto-Masa \*r > \*l applied to the languages of the northern subgroup. As a result, there are superficial similarities between cognates in the northern subgroup and Biu-Mandara-B, e.g., [kūluf+nà] ‘fish’ in Masa and [kilif] in Musgu and [kilfi] in Gidar. Nonetheless, this sound change in the northern subgroup of Masa was a development independent of the sound change noted for Proto-BM-B.

In the last case to be considered, the sound change \*d > \*r / V\_V affected Proto-BM-B and the Proto-Masa group. In Proto-BM-B, this sound change followed the sound change Proto-BM \*r > \*l. As just noted, the sound change \*r > \*l did not apply to Proto-MG. It follows that the sound change \*d > \*r / V\_V could not have applied to Proto-BM-B and Proto-MG at the same point in time. If this sound change had applied to Proto-BM-B and Proto-MG at the same point in time, Proto-MG would necessarily exhibit the prior sound change of Proto-BM \*r > \*l.

These sound changes and their relative chronologies are summarized in (18). On the left, note the two sound changes affecting Proto-BM after the breakup of Proto-Chadic: Proto-Chadic \*b > \*v and Proto-Chadic \*S > \*ɬ. After the split of Proto-BM, two changes affected Proto-BM-B: Proto-BM \*r > \*l and Proto-BM \*d > \*r / V\_V. On the right, three sound changes affected the Proto-Masa group after the breakup of Proto-Chadic: Proto-Chadic \*b > \*v, Proto-Chadic \*S > \*s, and Proto-Chadic \*d > \*r (reconstructed as a trill) / V\_V. Finally, after the Proto-Masa group split into the northern and southern subgroups, the northern subgroup underwent the change \*r > \*l.

In summary, there is one shared phonological innovation which could support the subclassification of the Masa group within Biu-Mandara: Proto-Chadic \*b > \*v. The fact that the Masa group and Biu-Mandara exhibit this sound change does not, however, indicate that the Masa group should be subclassified in Biu-Mandara. Such a proposal would attribute considerable importance to a single sound change which has occurred independently in other languages of the Chadic family. Moreover, there are three additional sound changes reconstructed for Proto-BM and Proto-BM-B which cannot be reconstructed for Proto-MG.

## (18) Relative chronologies of the sound changes of Biu-Mandara and the Masa group

**5. Lexical Innovations**

The presence of shared lexical innovations provides strong positive evidence for the subclassification of languages. In this section, I present five lexical innovations characteristic of the Biu-Mandara branch as a whole and one innovation characteristic of the Biu-Mandara-B subbranch. In each case, the languages of the Masa group do not exhibit these lexical innovations.

**5.1. Biu-Mandara innovations.** There are three words reconstructed for Proto-Chadic which are well attested in the West and East Chadic branches but absent in Biu-Mandara: Proto-Chadic \*ba ‘mouth’, \*ti ‘to eat’, and \*badə ‘five’ [Newman 1977b]. The Biu-Mandara languages exhibit the innovations \*ma ‘mouth’ and \*zəmə ‘to eat’ [Newman 1977b]. As for Proto-Chadic \*badə ‘five’, the Biu-Mandara languages exhibit reflexes of a form which I provisionally reconstruct as Proto-BM \*ʒəm ‘five’. In the case of each of these innovations, the Masa group exhibits a reflex of the Proto-Chadic form, not the Biu-Mandara innovation. The Proto-Chadic (PC) reconstructions and their reflexes in West and East Chadic and the Masa group as well as the Biu-Mandara innovations are illustrated in (19).

## (19) Biu-Mandara lexical innovations

Proto-Chadic		BM	Masa	West	East
*ba	‘mouth’	Mg <i>ma</i> G <i>ma</i> Db <i>ma</i>	Z <i>vun</i> Mu <i>vùn+nà</i>	Ha <i>baakii</i> Zr <i>vi</i> Mi <i>vin</i>	D <i>bii</i> So <i>bo</i>
*ti	‘to eat’	T <i>zəmə</i> Br <i>səm</i> Bu <i>hum</i>	Z <i>ti</i> Ma <i>ti</i>	Ha <i>ci</i> Ng <i>ta</i> Kk <i>tu</i>	D <i>tèè</i> Bi <i>táyà</i>
*badə	‘five’	Mg <i>ʔim</i> Mt <i>ʔam</i> Gl <i>ʔəba</i>	Z <i>vəʔ</i> Ma <i>vəʔ</i>	Kk <i>baaʔu</i> Mi <i>vəʔ</i> Ng <i>vààʔ</i>	D <i>beedy</i> Ke <i>wiifiw</i>

In addition, there are two forms which are widely attested in the Biu-Mandara branch but which do not occur in East or West Chadic. I provisionally reconstruct these Biu-Mandara innovations as Proto-BM \*kur- ‘urine’ and \*tuw- ‘to weep’, following Jungraithmayr and Ibrisimow [1994]. These innovations do not appear in the Masa group. The Biu-Mandara reconstructions and their reflexes as well as the unrelated forms found in the Masa group are presented in (20). Note that the Masa [tii] ‘to weep’ is reconstructed for the northern subgroup as \*tir. As seen in the reconstructions in Appendix B, word-final [r] has been lost in the northern subgroup with compensatory lengthening of the preceding vowel.

## (20) Biu-Mandara lexical innovations

Proto-BM		BM-A	BM-B	Masa
*kur-	‘urine’	Dg <i>kùrè</i> Mt <i>kùrày</i> Gs <i>kunnay</i>	Y <i>kóray</i> G <i>kúnne</i> Ko <i>ʔkúne</i>	Mu <i>súmúú+rā</i> P <i>jəbūr</i>
*tuw-	‘to weep’	Gd <i>tūna</i> Gs <i>tuway</i> Dg <i>tàwá</i>	Mg <i>twa</i> Ko <i>súwé</i>	Z <i>siʔi</i> Ma <i>tii</i>

Finally, the BM-B languages exhibit the irregular sound change \*k > \*f in Proto-Chadic \*aku/ak<sup>w</sup>a ‘fire’. In BM-A and the Masa group, though, the irregular \*k > \*f did not occur as seen in (21). The regular reflex of Proto-Chadic \*k is Proto-MG \*h, e.g., Proto-Chadic \*kədəm ‘crocodile’ corresponds to Proto-MG \*hurum. Thus, Proto-MG \*ku ‘fire’ does not exhibit the expected reflex of Proto-Chadic \*k. It remains to be determined why Proto-MG \*ku did not undergo the sound change Proto-Chadic \*k > Proto-MG \*h.

(21) \*k > \*f in Proto-Chadic \*aku/ak<sup>w</sup>a 'fire'

Proto-Chadic	BM-B	BM-A	Masa
*aku/ak <sup>w</sup> a	Mg <i>afu</i>	Mt <i>akwa</i>	Ma <i>kū+nā</i>
	G <i>affa</i>	Gd <i>gwun</i>	Mb <i>akku+da</i>
	Lo <i>fu</i>	Hi <i>ywi</i>	P <i>kū</i>

As noted earlier, the presence of shared innovations provides positive evidence for subclassification. Six lexical innovations have been reconstructed for the Biu-Mandara languages. It is striking that the languages of the Masa group do not exhibit even one of the lexical innovations. The absence of these lexical innovations provides strong evidence against the subclassification of the Masa group in the Biu-Mandara branch of Chadic.

## 6. A Morphological Innovation

In this last section, I consider the innovation of the third person plural pronoun in Chadic. The three major branches of Chadic differ with respect to the shape of the third person plural pronoun. The West Chadic languages exhibit a reflex of the PC third person plural \*sun [Kraft 1972, Newman 1980]. The northern subgroup of the Masa group exhibits the pronoun \*-zi, a reflex of PC \*sun. In the southern subgroup of Masa, though, the innovation \*na occurs. In the East Chadic languages, the third person plural can be reconstructed as \*k-ŋ, possibly originating from the PC plural determiner \*k- and the \*n plural [Schuh 1983a]. Finally, the Biu-Mandara languages exhibit the innovation \*t-n [Kraft 1972]. These distinct pronouns are illustrated in (22).

## (22) The third person plural pronoun in Chadic

Proto-Chadic	West	Masa	BM	East
*sun 'they'	Ha <i>suu</i>	Ma nd+izi	Ga <i>tənda</i>	Mk +aŋ
	Dw <i>suŋ</i>	Mu <i>azi</i>	Lo +tən	So +gɪŋ
	Gj <i>si</i>	P ku+na	Ba <i>tə</i>	Si <i>gə</i>
	Ge <i>sundi</i>	Z ta+na	M <i>dar</i>	

Note that the Biu-Mandara innovation \*t-n cannot be reconstructed for the Masa group. The northern subgroup of the Masa group exhibits a reflex of PC \*sun whereas the southern subgroup exhibits the innovation \*na. The absence of this innovation provides further evidence against the classification of the Masa group in Biu-Mandara.

## **7. Conclusion**

In summary, there is no conclusive evidence from shared innovations which supports the subclassification of the Masa group of languages in Biu-Mandara. The only shared phonological innovation which could indicate a close genetic relation between Biu-Mandara and the Masa group is the sound change Proto-Chadic \*b > \*v. However, this is a sound change which has occurred independently in other parts of the Chadic family. Moreover, there are three other phonological changes attested in Biu-Mandara which cannot be reconstructed for the Masa group. In addition, the Masa group does not exhibit the lexical and morphological innovations characteristic of Biu-Mandara and Biu-Mandara-B. Thus, I propose that the Masa group be classified as a separate, fourth branch of Chadic as first proposed by Newman [1977b].

**Appendix A**

## Abbreviations

The following abbreviations are used in this paper. The classification of each language and sources for the data cited are also indicated. Newman [1977b] is abbreviated as 'N 1977', Jungraithmayr and Ibriszimow [1994] as 'J&I 1994.'

Ba	Bacama	BM, A, Bata group	Kraft 1972
Bi	Birgit	East, B, Dangla group	J&I 1994
Br	Bura	BM, A, Bura group	Kraft 1981
Bu	Buduma	BM, B, Kotoko group	Lukas 1939
D	Dangla	East, B, Dangla group	Fédry 1971, N 1977
Db	Daba	BM, A, Daba group	N 1977
Dg	Dghwede	BM, A, Mandara group	J&I 1994
Dw	Dwot	West, B, Saya group	Kraft 1972
G	Gidar	BM, B, Gidar group	Schuh n.d.
Ga	Gabin	BM, A, Tera group	Kraft 1972
Gd	Gude	BM, A, Bacama group	N 1977, J&I 1994
Ge	Geruma	West, A, Bole group	Schuh 1978
Gj	Geji	West, B, Saya	Kraft 1972
Gl	Glavda	BM, A, Matakam group	Rapp and Mühle 1969
Gs	Gisiga	BM, A, Matakam group	Lukas 1970, J&I 1994
H	Hede	Masa group	Noss 1990
Ha	Hausa	West, A, Hausa group	N 1977
Hi	Higi	BM, A, Higi group	N 1977, Kraft 1981
J	Jara	BM, A, Tera group	N 1977
Ke	Kera	East, A, Kera group	N 1977
Kk	Kanakuru	West, A, Bole group	N 1977
Ko	Kotoko	BM, B, Kotoko group	J&I 1994
Lng	Lamang	BM, A, Mandara group	Wolff 1983
Lo	Logone	BM, B, Kotoko group	Lukas 1936
M	Margi	BM, A, Bura group	N 1977
Ma	Masa	Masa group	Caïtucoli 1983
Mb	Marba	Masa group	Franco 1970, Price 1968
Mg	Musgu	BM, B, Kotoko group	Lukas 1941
Mi	Miya	West, A, Bole group	Schuh 1995
Mk	Mokilko	East, B, Mukulu group	Jungraithmayr 1990
Mn	Mandara	BM, A, Mandara group	N 1977
Mt	Matakam	BM, A, Matakam group	N 1977, Kraft 1981, J&I 1994
Mu	Musey	Masa group	Shryock 1995
N	Ngide	Masa group	Noss 1990
Ng	Ngizim	West, B, Bade group	Schuh 1981a

P	Peve	Masa group	Cooper 1984, Hufnagel 1986
Pd	Paduko	BM, A, Mandara group	N 1977
Si	Sibine	East, A, Somrai group	Jungraithmayr 1978b
So	Somrai	East, A, Somrai group	N 1977
T	Tera	BM, A, Tera group	N 1977
Y	Yedin	BM, B, Kotoko group	J&I 1994
Z	Zime	Masa group	Hufnagel 1986, Kraft 1981
Zr	Zaar	West, B, Zaar group	N 1977

## Appendix B

### The Lexicon of Proto-Masa Group

This appendix contains a list of 204 words reconstructed for Proto-Masa group with the data supporting these reconstructions. The data cited below is taken from the sources noted in Appendix A for the respective languages. In the case of Peve, ‘P’ designates data from Cooper [1984], and ‘P2’ data from Hufnagel [1986]. Likewise, ‘Z’ designates Hufnagel [1986], and ‘Z2’ Kraft [1981].

The consonantal inventory outlined in (1) is reconstructed for Proto-Masa group. In addition, five vowels are reconstructed: \*i, \*e, \*a, \*o, \*u. Tone has not been reconstructed. The tone patterns of verbs are not indicated because tone has a grammatical function in these languages, indicating the aspect of the verb (cf. [Jungraithmayr 1978a, Cañitucoli 1983]). For the nouns, however, tone is lexical; consequently, the tone of the nouns has been indicated if transcribed in the original source. Finally, in Masa, Musey, and Marba, the grammatical gender of nouns is explicitly marked by an enclitic: /na/ for masculine nouns, /da/ for feminine nouns.

#### (1) Consonantal inventory of Proto-MG

<i>p</i>	<i>t</i>	<i>c</i>	<i>k</i>	
<i>b</i>	<i>d</i>	<i>j</i>	<i>g</i>	
<i>ɓ</i>	<i>ɗ</i>			
<i>mb</i>	<i>nd</i>	<i>nj</i>	<i>ŋg</i>	
<i>f</i>	<i>s</i>	<i>ʃ</i>		<i>h</i>
<i>v</i>	<i>z</i>	<i>ʒ</i>		<i>fi</i>
<i>m</i>	<i>n</i>		<i>ŋ</i>	
	<i>l</i>			
<i>w</i>	<i>r r</i>	<i>y</i>		

1. to accompany: \*tin  
Ms tin, Mb tin, P cin, H tin
2. antelope: \*zar  
Ms zàà+nà, Mb azar+a, P zār, H zar
3. ashes: \*but  
Ms bùt+nà, Mb but+na, P bût, H butu, N pùtù, Z buf
4. to ask: \*j-p  
Ma jop, Ms jop, Mb jop, P2 caḅ la, H cap
5. arm, hand: \*ḅa  
Ma ḅām+nā, Mb abo+na, P ḅā, H ḅa, N ḅá, Z ḅa
6. to awake: \*ḅ-  
Ma ḅii, Ms ḅit, Mb ḅi, H ḅa?
7. bark, peal: \*b-l-k  
Ma ḅülök+ḅā, Ms ḅölök+ḅā, Mb bloh+a, P ḅālē?, H ḅale?
8. bat: \*babay  
Ma bàybày+nà, Ms bàbày+nà, Mb abibey+na, P ḅḅbāy, H ḅḅbay
9. bean: \*rit  
Ms līt+nà, Mb alit+na, P réḅ, H reḅe
10. bee, honey: \*y-m  
Ma yūm+nā, Ms yūm+má, Mb ayum+a, P īm, H yem, yam, Z yem
11. beer: \*sum  
Ms sūm+mà, Mb sum+a, P sūm, H sum
12. to belch: \*gīl  
Ma gīl, Ms gīl, Mb gīl, P2 gīl, H gīli?, Z gīli
13. to bite: \*et  
Ms et, Mb et, P2 et, H et, N ete, Z eḅe
14. black: \*wura  
Ma wūrā, Ms wár, Mb ura+da, P2 ura?, H ura?, Z2 wura
15. blacksmith, hammer: \*caḅ  
Ma cāḅ+nā, Ms cāḅ+fā, H caḅ
16. blow: \*fo  
Ma fo, Ms fo, Mb fo, P fo?, H fo?, Z fo?o
17. blood: \*vuzur  
Ma bùzùù+nà, Ms bùzùù+nà, Mb buzu+na, P vūsū, H vursu, Z vursu
18. body: \*tu  
Ma tūù+nà, Ms tá+rā, Mb ta+da, P tū, H tu, Z tu
19. to boil: \*zar  
Ma zal, Ms zal, Mb zal, P2 sar, H sar, Z2 zar

20. bone: \*sok  
Ma zòk+ḡā, Ms sòk+ḡā, Mb assoh+a, P ùsò, H uso, Z iseu
21. brain: \*toʔon  
Ma tōdōn+nā, Ms tōtōʔōn+nā, Mb tohon+da, P tūʔóm wā, H teʔem wa, Z2 toʔom
22. to break: \*k-s  
Ma kus, Ms kus, Mb kus, P kəy, H kas, Z kas
23. breast: \*po  
Ma pō+nà, Ms pō+nà, Mb appo+na, P pāʔ, H paʔ, Z pa
24. to breathe: \*m-s-k  
Ms mūzūk, Mb muzuk, P2 mai, H mas
25. broom: \*samat  
Ms sāmát+nā, Mb assumat+na, P sāmɸà
26. to carve: \*cet  
Ma ceɸ, Ms cet, Mb cet, P ceɸ, H ceɸ, N cefe, Z ceɸ
27. charcoal: \*v-n  
Ma vèḡ+ḡā, P vōn, L ʔóvàn
28. chin: \*d-m  
Ma dūm+nā, Ms dūm+mā, Mb dudum+a, P jĩm, H dim, Z2 dum
29. co-wife: \*h-n  
Ms hēnē+rà, H hin
30. cold: \*hep  
Ms hēp, Mb ahēp, P heɸ, H heɸ
31. to come: \*mb-  
Ma mba, Ms mba, Mb mba, P mbu, H mbu, Z mba
32. to cough: \*oʔ  
Ma oʔ, Ms oʔ, Mb hoʔ, P oʔ, H uʔoʔ, Z oʔ
33. crocodile: \*hurum  
Ma hūrūm+nā, Ms hūrūm+mà, Mb hurum+a, P hūrūm, H hurum, N hūrūm, Z hurum
34. to cultivate: \*zum  
Ma zum, Ms zum, Mb zum, H zum
35. to dance: \*ndur  
Ma nul, H nduru
36. darkness: \*nduvun  
Ma jùfūn+nā, Ms ndùvún+dā, Mb nduvun+da, H ndufun, Z2 ndufun
37. death, funeral: \*mat  
Ma mìt+nà, Ms māt+nà, Mb mat+na, P māt, H mata

38. dew: \*mb-d-  
Ma māđíí+nā, Ms mbàđàgí+nā, Mb mbadi+da, P mbàđà, H mbəđa,  
Z2 miđa
39. to die: \*m-t  
Ma mit, Ms mit, Mb mit, P mat, H mat, Z mat
40. to displace: \*j-k  
Ma jok, Ms jok 'move', Mb jok, H jik
41. to do: \*ri See 'time', 'place'  
Ma li, Ms li, Mb le, P ri, H re
42. dog: \*d-  
Ma dīī+nā, Ms dī+nā, Mb adi+da, P dā, H əda, N āīdā?, Z aida
43. to drink: \*ci  
Ma ci, Ms ci, Mb ce, P2 ce, H ce, Z ce
44. ear: \*hum  
Ma hūm+nà, Ms hūm+bà, Mb hum+ba, P hūm, H hum, N húm, Z hum
45. to eat: \*ti  
Ma ti, Ms ti, Mb te, P ti, H ti, N ti, Z ti
46. to eat meat: \*k-m  
Ms kom, P kam, H kam
47. egg: \*se  
Ma zè+nà, Ms sē+nà, Mb asse+na, P fē?, H se?, N fe?, Z se?e
48. to enter: \*kal  
Ma kal, Ms kal, Mb kal, P2 kal, H kal
49. excrement: \*sot  
Ma sūđáy+nā, Ms sōt+nà, P sóđ, H sođ, Z sođo
50. to extract: \*pat  
Ma pat, Ms pat, Mb pat, P pat, H pat
51. eye: \*ir  
Ma īī+rà, Ms íí+rà, Mb ir+a, P ī, H ir, N ér, Z ir
52. to fall: \*nd-  
Ms ndi, Mb nde, P ndie, H nde, Z2 nde
53. father: \*b-  
Ma būm+nā, Ms bú+nā, Mb abu+na, P bà, H əba, ba, Z2 buba
54. feather: \*ļ-m  
Ma ļìmìt, Ms ļīmīt+tā, Mb łimit+a, P lām, P2 łam, H lam
55. field: \*sine  
Ma sīnè+nà, Ms sēnè+nà, Mb assine+na, P2 fīne, H sine, Z sine
56. field rat: \*njuk  
Ms njùk+rà, Mb anjuh+a, P2 njuk, H njuk, Z njuku

57. fig tree: \*turum  
Ms t̄ul̄úm+n̄ā, Mb tulum+a, P t̄ur̄úm
58. fire: \*ku  
Ma k̄ū+n̄ā, Ms k̄ū+r̄à, Mb akku+da, P k̄ū, H ku, Z ku
59. fish: \*k-rf-  
Ma k̄ul̄uf+n̄à, Ms k̄ul̄uf+f̄à, Mb kluf+a, P k̄īēf̄è, H kerfe, N k̄érf̄é, Z kifeʔe
60. five: \*vał  
Ma v̄ał, Ms v̄ał, Mb vał, P v̄ał, H vał, N v̄ał, Z vał
61. flour: \*fut  
Ms f̄ut+t̄à, Mb affut+a, P f̄ut, P2 fur, H fut, Z2 fut
62. flute: \*d-f  
Ma díf+n̄ā, Ms díf+f̄ā, Mb adif+a, P d̄up, H duf
63. fly: \*raw  
Ma r̄aw+n̄ā, Mb aro+na, P r̄ir̄ew, H r̄irew, Z larau
64. foot, leg: \*sem  
Ma s̄em, Ms s̄em+m̄á, Mb assem+a, P ʃ̄em, H sam, L s̄ém, N s̄ám, Z sem
65. to forge: \*ʃi  
Ma ʃ̄i, Ms ʃ̄i, Mb ʃ̄e, P ʃ̄am, H ʃ̄e
66. fork, forked stick: \*garak  
Ms ḡar̄ak+ŋ̄à, Mb grak+a, L garak
67. four: \*fid̄i  
Ma f̄id̄i, Ms f̄id̄i, Mb fidi, P f̄ód̄iʔ, H fid̄iʔ, N f̄ód̄i, Z fid̄i
68. front: \*v-k  
Ma v̄ok+ŋ̄à, Ms v̄ok+ŋ̄à, Mb voh+a, P v̄ūk, H vuk
69. to fry: \*haw  
Ma haw, Ms haw, Mb haw, P haw, H haw, Z hau
70. girl: \*way  
Ms w̄ay+r̄ā, P w̄ay, H wai
71. to give birth: \*vut  
Ma vuđ, Ms vut, Mb vut, P f̄êràʔ, H v̄éráʔ, Z vraʔa
72. to go: \*t-  
Ma tuđ, Ms tut, P ta, H ta, Z ta
73. goat: \*hu  
Ma fiù+n̄à, Ms fiù+n̄à, Mb ahu+na, P h̄ū, H uhu, Z afu
74. granary: \*z-ŋ  
Ms z̄aŋ+ŋ̄à ‘shelter’, Mb az̄aŋ+a ‘shelter’, P2 z̄ona, H s̄ona, Z ziŋa
75. grass: \*-s-  
Ma w̄ūs+n̄ā, Ms ú̄uz̄ú+n̄ā, Mb assu+na, P2 za, H əsa

76. grave: \*us  
Ma wūs+nā, Ms ūs+sà, Mb assu+da, H wa us
77. to grill: \*war  
Ms war, P wor, H war
78. hair: \*ɲgusa  
Ms ɲgús+sā, P sá wā, H ɲgisā wa, Z ɲgisa wa
79. hare: \*v-t  
Ma vèt+nā, Ms vèt+tà, Mb avvivet+a, P fódī?, H fiti, Z viti
80. harmattan: \*kut  
Ms kūt+nā, Mb akkukut+na, P kūt, H kut
81. to hatch: \*eɬ  
Ma eɬ, Ms eɬ, P ieɬ, H eɬ
82. to hear, understand: \*hum  
Ma hum, Ms hum, Mb hum, P hum, H hum, N hum, Z2 hum
83. heart: \*g-l-s  
Ma glēs+nā, Ms gílís 'kidney', P gəla vəsə
84. hedgehog: \*cem  
Ma cēmcēm+nā, Ms cēmcém+mā, Mb cicem+a, P cēcīmè, H caŋcime
85. to help: \*njin  
Ms njun, Mb njun, P jin, H jin
86. to hit: \*p-m  
Ms poŋ, P pum, H pum
87. to hit, kill: \*ci  
Ma ci, Ms ci, Mb ci, P ci, H ci, N ci, Z ci
88. hole: \*z-r  
Ma zùl+lā, Ms zùl+là, Mb zul+a, P zārā, H zəra, Z zra
89. horn: \*mek  
Ma mīyōk+ɲā, Ms mēk+kā, P mīēk, L méké, Z mek
90. hunger: \*me  
Ma máy+nā, Ms māy+rā, Mb mey+da, P mīē?, H me?e, Z2 me
91. hunt: \*ram  
Ms lām+bà, Mb alam+ba, P rāŋ, H raŋ
92. hut, compound: \*z-  
Ma zì+nā, Ms zì+nà, Mb azi+da, P só, P2 zəba, H za, Z za
93. intestines: \*r-w-t  
Ma rwāt+nā, Mb arruwat+na, P rāwū, H raw
94. knee: \*gif  
Ms gìf+fà, Mb gigif+a, H cin gif, Z vun gif

95. to know, see: \*wi  
Ma wi, Ms wi, Mb we, P wa?, H ye, Z we
96. land, uninhabited and uncultivated: \*fur  
Ms fūl+là, H fur
97. larynx, voice: \*hor  
Ms fiòó+nā, Mb hor+ā, P hòr, H hor
98. leaf, foliage: \*ɬab  
Ms ɬáp+mà, Mb aɬap+ma ‘shrub, bush’, P ɬāp, H ɬapa, Z ɬab
99. to leave, forbid: \*hin  
Ma hin, Ms hin, Mb hin, P hin
100. left: \*gur  
Ms gùl, P2 gur, H2 gura, Z gur
101. to lift: \*ɬi  
Ma ɬi, Ms ɬi, Mb ɬe, P ɬie
102. liver: \*duk  
Ma dúk+ɲā, Ms dúdúk+kā, Mb aduduk+a, P2 duk, H tuk, L dùk, Z2 aduk
103. to lose, disappear: \*vid  
Ms vit, Mb vit, P fid, H vid
104. mahogany (*Khaya senegalensis*): \*g-m  
Ma gám+nā, Ms gám+mā, L guma, Z2 guma
105. man, husband: \*nj-f  
Ma jǔf+nā, Ms njǔf+fā, Mb njuf+a, P njī, H nji, N njìf, Z nji
106. mat: \*ɟat  
Ma ɟāt+nā, Ms ɟāt+nā, Mb ɟat+na, P lā?, H la?a
107. to mature: \*ceŋ  
Ms jeŋ, P ceŋ
108. meat, flesh: \*ɬiw  
Ma ɬiw+nā, Ms ɬiw+nā, Mb ɬiu+na, P ɬíéw, H ɬew, Z ɬeu
109. melon: \*b-  
Ma búū+nā, Ms bú+nā, Mb bubu+da, P2 bo?, H po?, Z2 bo?o
110. milk: \*mbir  
Ma mbī+rā, Ms mbì+rà, Mb ambi+ra, P mbīr, H mbir, Z2 mbir
111. to mix: \*ɬum  
Ms ɬum, P ɬum, H ɬum
112. monkey: \*vir  
Ma vī+rà, Ms vī+rà, Mb vi+ra, P vīr, H vir, Z vir
113. moon: \*tir  
Ma tīl+tā, Ms tīlā, Mb til+a, P cēr, H tér, Z ter

114. mortar: \*zu  
Ma zùù+nà, Ms zùzù+nā, Mb zuzo+da, P2 zu?, H zu?u
115. mouth: \*vun  
Ma vùn+nà, Ms vùn+nà, Mb vun+a, P vūn, H vùn, Z vin
116. mud, clay: \*rubu  
Ms lūbú+nā, Mb lubu+na, P rəbà, P2 ruβ, H rúbú, Z luβu
117. mud: \*dorbo  
Ms dòròbóp+mā, Mb dorbop+ma, H dōrbō, Z2 dorbo
118. mushroom: \*bik  
Ms bík+kā, Mb abigi+da, P bīk, H bik
119. name: \*sem  
Ma sēm+nā, Ms sēm+má, Mb simi+na, P jēm, H sam, N sém, Z sem
120. navel: \*fuk  
Ms fūk+kā, Mb uf+a, P fú, H úfú, Z2 afuk
121. nose: \*cin  
Ma cìn+nà, Ms cīn+nà, Mb acin+a, P cīn, H cín, Z cin
122. to obtain: \*fi  
Ma fi trouver, Ms fi, Mb fe, P fie, H fe, Z fe
123. to offer a sacrifice: \*bi vun  
Ms bi vùn, P bie vūn, H be vun
124. oil, grease, fat: \*mbur  
Ma mūl+lā, Ms mbùl+lā, Mb mbul+a, P mbúr, H mbur, N mbúr, Z mbur
125. okra: \*ɟor-  
Ms ɟòdòndò+rà, Mb zulo+da, P ɟōr, H ɟor, Z ɟor
126. penis: \*diw  
Ms dīw+rā, Mb diw+da, P2 diu, H diw
127. people: \*su  
Ms sūū, Mb suma+na, H suno, L sundo
128. person: \*s-  
Ma sā+nà, Ms sā+nà, Mb sa+na, P sù, H su, N sū, Z su
129. place: \*ri  
Ma līi+nā, Ms lī+nā, P rī, H ri, Z li
130. placenta: \*tuʔom  
Ms tōʔòm+mà, Mb atohom+a, P tūʔóm, L tuʔom
131. to play: \*riu  
Ma liu, Ms luu, Mb lu, P2 ru, H riu, N riu 'to dance', Z liu
132. pus: \*r--  
Ms lōō+rā, P rīw, H riw

133. to put: \*tin  
Ma tun, Ms tin, tun, Mb tin, P cin, H tiŋ, Z tiŋ
134. to rain: \*si  
Ma si, Ms si, Mb se, P je, L sé
135. rainy season: \*ndor  
Ms ndòl+là, Mb andol+a, P ndór, H ndor, Z2 ndor
136. to receive: \*fi  
Ma vi, Ms vi, Mb ve, P vie, H fe
137. to recline: \*b-r  
Ma bur, Ms bur, Mb bur, P par, H bar, Z bar
138. red: \*lew  
Ma lāw, Ms lāw, Mb lew, P hí éw, H ɣeo, Z2 leo
139. to return: \*hom  
Ms hoŋ, Mb huloŋ, H hom, Z hom
140. rhinoceros: \*gay  
Ma gāy+nā, Ms gày+rà, P gāi?, H gay, L gəʔi
141. to ripen: \*ne  
Ms ne, Mb ne, P nie, H ne, Z neʔe
142. road, path: \*vot  
Ms vót+tā, Mb lovot+a, P vārì, H vārī, N fààrì, Z2 vari
143. to roast: \*cuf  
Ma cuf, Ms cuf, Mb cuf, P cu, H cuʔu, Z cu
144. rooster: \*golok  
Ms gògòlók+nā, P gùlòk, H gùlòk
145. root: \*s-r  
Ma súdāy+nā, Ms sárí+nā, Mb sidey+na, L sér, Z sed
146. rope: \*zew  
Ms zēw+nā, Mb zyeu+na, P jèw, H zèu, Z zeu
147. roselle (hibiscus Sabdarifla): \*ɣembe  
Ma ɣém+nā, Ms ɣém+mā, Mb aɣem+a, P ɣèb, H tebe, Z lebe
148. saliva: \*ne  
Ma nēēnē+nā, L neʔe
149. salt: \*vu  
Ms vùvù+nā, P vū, H úvù, Z2 avu
150. sand: \*ŋet  
Ma ŋét+nā, Ms ŋét+lā, Mb yet+a, P nyét, H ɣétē, Z ŋet
151. sauce: \*mbar  
Ms mbàlá+rā, Mb ambla+da, P mbár, H mbár, Z mbar

152. to scratch: \*hurok  
Ms horok 'to plow, farm', P hurok, H hurok
153. seed: \*ir  
Ms í+rà, P ī
154. to send: \*s-n  
Ma sun, Ms sun, Mb sun, P ſ in, H sin, N sin, Z sin
155. seven: \*sida  
Ma sīdīyā, Ms kīdīsiyā, Mb kidisya, P jédā?, H sédá, N sefa?, Z2 seda
156. to shake: \*gasak  
Ma gas, Mb gas, P2 gəzak, L gəsək
157. sheep: \*time  
Ms tímí+rā, Mb timi+da, P cīmé, H tīmé, Z time
158. to shine, flash: \*wile  
Ms welet, Mb wile+da, P wufī, H wuli, L wileʔe
159. shoulder, upper arm: \*bike  
Ms bìk+rà, Mb bik+a, P bìkè bā, Z2 wa bike ba
160. side, rib: \*hay  
Ma hāy+nā, Ms hāy+rà 'stomach', Mb hay+da 'stomach', P hāi? 'beside',  
H hai
161. six: \*kargi  
Ma kārgīyā, Ms kārgīyá, Mb karagaya, P kánkī?, H kángī, H kángì,  
Z2 kandi
162. sleep: \*sen  
Ma sēn+nā, Ms sēn+nā, Mb sey+na, P jēn, H sen, N sèn, Z sen
163. small: \*g-  
Ma gòr, Ms gòr, Mb gugor, H ga?, Z2 ga?a
164. spear: \*sap  
Ms sāp+pā, Mb assap+a, P sāb, H sābā, Z asaba
165. spirit: \*ful  
Ma fūl+lā, Ms fūl+lā, P ífràyā, H, Z2 afī 'sky'
166. spirit, shadow: \*ng-s  
Ma ñùs+nā, Ms ñgūs+sá, Mb aņus+a, P nyís, H ñgìsì
167. to squeeze: \*em  
Ms em, Mb em, P iem, H em
168. to stand up: \*cor  
Ma col, Ms col, Mb col, P car, H car, Z car
169. star: \*ciw  
Ms cíwčíw+rā, Mb ciciw+da, P cìcīw, H ìcīu, Z2 ciciu

170. to steal: \*kur  
Ma kul, Ms kul, Mb kul, P kəy, H kir, Z kir
171. stone: \*goy  
Ms gòy+rà, P2 goi?, H gwoi?, N kwòì, Z2 goy
172. story: \*nd-n  
Ms n̄jùnjùn+dà, Mb jujun+da, P n̄jì n, H ndin, Z ndindiŋ
173. to strike: \*p-m  
Ms poŋ, P pum, H pum
174. to suck: \*sop  
Ms sop, Mb sop, P soḅ, H sobo, Z soḅ
175. sun: \*fat  
Ma fāt+nà, Ms fāt+tà, Mb affat+a, P vètà, H fútá, Z faḍa
176. sweat: \*z-mb-r  
Ms zàmál+lã, Mb zumal+a, P sùmbùr, L sùmbùr
177. to swim: \*lus  
Ms lus, P lus, H lus
178. tail: \*c--  
Ma cáw+nā, Ms njáw+rā, Mb anjaw+da, P cēw, H cēu, Z ceu
179. to take out: \*pat  
Ma pat, Ms pat, Mb pat, P pat, H pata
180. tamarind: \*cin  
Ma cīn+nā, Ms cīn+dà, Mb acin+da, P m̄ècīn, H m̄īšīn, L maicín, Z minjin
181. ten: \*gup  
P gūḅ, H guḅ, N gwuḅ, Z guḅ
182. three: \*hindi  
Ma fìḍī, Ms hīndī, Mb hindi, P hínjī, H híndī, N híndī?, Z hindi
183. throat, voice: \*der  
Ma dèl+là, Ms dèl+là, Mb del+a, H đīrài, Z der
184. to throw: \*g-  
Ma gi, Ms gi, Mb ge, P gie, H ge, Z2 ge
185. throwing knife: \*b-r  
Ma b̄il+lã, Ms b̄il+nā, Mb ab̄il+a, P p̄èrà, H brà
186. time: \*ri  
Ms lī+nà, P rī, H ri
187. tongue: \*si  
Ma sīn+nā, Ms sīn+dá, Mb sin+a, P ʃīḍì, H sílé, N sīlī, Z cil
188. tooth: \*s-  
Ma s̄ī+nà, Ms s̄ī+nà, Mb si+na, P ʃē?, H se?, N sé?é, Z sed

189. tree, wood: \*gu  
Ma gú+nā, Ms gú+nā, Mb aggu+na, P gū, H úgù, N ūkū, Z ago
190. urine: \*jumbur  
Ma zùmūū+rā, Ms súmúú+rā, Mb sumu+ra, P jèbūr, L jubur
191. to vomit: \*vin  
Ma vin, Ms vin, Mb vin, L vìnè?è
192. vulture: \*bak  
Ma bāk+ηā, Ms bàk+ηà, Mb abah+a, P2 bwok, L bok
193. warthog: \*z-η  
Ma zεη+ηā, Ms zέη+nā, Mb azeη+a, P zīη, H zιη, Z zιη
194. to wash: \*mbus  
Ma mus, Ms mbus, Mb mbus, P mbi, H mbis, L mbus, Z mbus
195. to wash grain: \*sal  
Ms sal, P sal, H sal
196. wasp: \*viη  
Ms vìηvīη+ηā, Mb viviη+a, H vì vì
197. to watch: \*gol  
Ms gól, Mb gol, H gól
198. water: \*mb-  
Ms mbòó+nā, Mb mbyo+na, P mbi, H mbi, Z mbi
199. what: \*mi  
Ma mìgé, Ms mī, Mb me, P mē, P2 mi su, L mi
200. to whistle: \*f-t  
Ms fet, Mb ge fet, P fəđiw, H fiđiu
201. wind: \*simbet  
Ma símēđ+nā, Ms sémét+nā, Mb simet+na, P2 simbed, H símbē?, Z2 simeđ
202. wound, sore: \*mbir  
Ma mīl+lā, Ms mbìl+là, Mb mbīl+a, P mbīr, H mbìr
203. year: \*kim  
Ms kīm+bá, P kīm, H kīm, Z2 kim
204. yesterday: \*k-mb-  
Ma kāmā+tā, Mb kama, P kúm, L kumbu, kəmbat

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