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Chadic Classification and Reconstructions

by

Paul Newman



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CHADIC CLASSIFICATION AND RECONSTRUCTIONS

by

Paul Newman
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This paper contains a comprehensive classification of the Chadic family and new reconstructions of Proto-Chadic phonology and lexicon. The classification shows the position of all known Chadic languages from the level of sub-group to major branch. It is supplemented by an index in which all distinct languages as well as dialect variants and alternative names are identified.

The phonemic system of PC is reconstructed with a rich inventory of consonants and a sparse inventory of vowels. For the consonants, a large number of sound laws are described leading from the PC inventory to the modern reflexes in individual languages and language groups. The PC word list includes 150 items attributable to the proto-language with a high degree of certainty. Each item includes a reconstructed form indicating vowels as well as consonants and supporting citations from at least two distinct major branches of the family.

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0. INTRODUCTION*

The first comparative Chadic word list with Proto-Chadic reconstructions was published a

*Thus study was partially supported by a National Science Foundation Grant SOC-7205563. Field work on Kotoko and Warji was carried out under the auspices of the Centre for the Study of Nigerian Languages, Bayero University College, Kano. I am grateful to Thilo Schadeberg for comments on an earlier draft of this paper and to Russell Schuh for innumerable ideas on questions of Chadic language history,

mere ten years ago (Newman and Ma 1966 [henceforth N/M]).¹ The list included 145 etymologies of which 25 were labelled as second-level confidence. The reconstructions indicated consonants only, hyphens being used to mark the position of vowels. It was understood at the time, however, that the use of hyphens for vowels was simply a notational device (in view of our then inability to reconstruct the vowels) and not an indication of their lexical significance or insignificance in Chadic.

As the first such list of its type, the N/M set of reconstructions became a point of reference for comparative work within Chadic and between Chadic and other Afroasiatic languages. However, being a first attempt, and depending as it did on primary sources of unequal reliability, the N/M list inevitably contained a number of false (or questionable) etymologies, erroneous language citations, and inexact reconstructions. Meanwhile, the emergence over the past decade of good quality descriptive materials on numerous Chadic languages has made possible the discovery of additional Proto-Chadic items—including some important, basic words—as well as the development of better ideas about the original nature and subsequent history of Chadic phonology. A work that would update the N/M study thus seemed called for.

One of the major purposes of this paper is to present a new Proto-Chadic [henceforth PC] word list, building on the earlier N/M list, but taking advantage of insights and knowledge acquired over the past ten years. As in the earlier work, all of the comparisons are intra-Chadic and no attempt has been made to relate the PC reconstructions to lexical items elsewhere in Afroasiatic (see Cohen 1947, Gouffé 1969/70, Hodge 1968, Pilszczikowa 1960). All of the items in this new list can be ascribed to PC with a high degree of confidence, being well attested throughout the family and in conformity with sound laws identified as having taken place. To emphasize the fact that this list is intended as a qualitative improvement on N/M and not a multiplication of speculative etymologies of questionable validity, the number of reconstructions has purposely been limited to approximately the number in the earlier work. The addition offered in this work is not to the gross number of proto-forms reconstructed, but to the reliability of the etymologies and to the fullness of the reconstructions per se. In this work, for example, the consonants have been specified more explicitly and a first attempt has been made to incorporate vowels in the reconstructions.

The other major aim of this paper is to present a new classification of languages in the Chadic family, with greater and more precise internal structure than provided in any previous classification. This classification is accompanied by a comprehensive index that permits immediate identification of all Chadic languages that we now know of, with cross-referencing provided for alternative names and dialect variants.

The organization of the paper is as follows: (1) the classification; (2) the phonological inventory postulated for PC; (3) selected sound laws affecting various languages and language groups within the family; (4) the PC word list; (5) the language index; and (6) references.

¹An earlier paper by Pilszczikowa (1958) consisted mainly of comparisons between Hausa and other West Chadic languages. It did not contain reconstructions. The comparative study by Illič-Svityč (1966), published in the same year as N/M, was limited to etymologies containing a bilabial consonant, but it did contain some valuable reconstructions. However, having been published in Russian, it did not at the time receive the attention among Chadicists that it deserved.

1. CHADIC CLASSIFICATION

The Chadic family of the Afroasiatic phylum includes over 100 languages spoken in northern Nigeria, northern Cameroon, western and central Chad, and, in the case of Hausa, Niger. Some twenty-five years after Greenberg first advocated the unity of the Chadic family as we now know it, it is now possible to provide a fairly accurate picture of the interrelationship of the many languages that make up the family. The composition and internal classification of the family that I have adopted is given in the following outline. For the listing of language names and for the membership of the lower level groups and clusters, I have depended on recent works of Caprile and Jungraithmayr (1973), E. Wolff (1971), Schuh (n.d.(a)), and, most importantly, Hoffmann (1971a). The higher groupings showing the general structure of subclassification within Chadic are my own. The units of classification employed are "branch", "subbranch", "group" (which may be combined with another group into a "major group"), and "language".² Within a group, more closely related languages are set apart from less closely related languages by the use of letters and/or by the use of semi-colons as opposed to commas. The tree diagram which accompanies the classification does not show subdivisions below the level of the "group."

My aim has been to provide a comprehensive inventory and classification of languages in the Chadic family. It has not always been easy, however, to decide exactly what to include and what not to include since the dividing line between separate languages and dialects of the same language is not discrete and the very same language may be known by a variety of names depending on cultural, historical, or geographical factors. In order to make the classification easier to use for referential purposes, I have tried, wherever possible, to extract alternative spellings, dialect variants, village names, etc. from the major listing and to relegate such information to the index. In the case of well-known alternative names, however, both are shown in the classification, one being treated as the primary name and the other being enclosed in parentheses.

Chadic Language Family

I. West Branch (WST)

A. Subbranch WST-A

1. Hausa group
Hausa, Gwandara
- 2/3. Bole/Angas major group
2. Bole group
 - a. Bole (Bolanci), Bele, Ngamo, Maha, Kirfi, Deno, Kubi, Galambu, Gera; Karekare
 - b. Tangale, Pero, Kupto; Kanakuru (Dera)
3. Angas group
 - a. Angas, Sura, Kofyar, Chip; Goemai (Ankwe), Montol, Tal, Pyapun, Koenom
 - b. Gerka

²The groups are all referred to by the name of a well-known language in the group. This is not an ideal system, but it seems preferable to multiplying new and unfamiliar designations.

- 4. Ron group³
 - a. Ron, Sha, Kulere, Karfa, Shagawu
 - b. Fyer
- B. Subbranch WST-B
 - 1/2. Bade/Warji major group
 - 1. Bade group
 - Bade, Ngizim; Duwai⁴
 - 2. Warji group⁵
 - Warji, Pa'a, Siri, Diri, Jimbin, Miya, Mburku, Kariya, Tsagu
 - 3. Zaar group⁶
 - a. Zaar (Sayanci), Barawa, Zeem, Polchi, Geji ...
 - b. Guruntum, Ju ...
 - c. Boghom, Mangas ...
- II. Biu-Mandara Branch (BM)
 - A. Subbranch BM-A
 - 1. Tera group
 - a. Tera, Jara
 - b. Ga'anda, Hona
 - 2/3. Bura/Higi major group

³Jungraithmayr (1970) uses the term "Ron" for the group as such and refers to the individual languages as "Ron-Bokkos", "Ron-Sha", "Ron-Kulere", etc. I have departed from this practice by adopting "Ron" as the name for the language spoken in Bokkos and by referring to the other languages in the group simply as Sha, Kulere, etc.

⁴Hoffmann (1971a) follows Greenberg (1963) in including Mober, Auyokawa, and Shirawa in this group. None belongs. Mober is a dialect of Kanuri while the other two are now extinct, having been replaced by Hausa.

⁵Called "North Bauchi" group by Hoffmann (1971a) and Skinner (1974). The list of language names has been copied directly from Skinner. It is not clear how many of these names actually represent separate languages and how many could be interpreted as dialects of a smaller number of languages.

⁶Called "South Bauchi" group by Hoffmann (1971a). I have rejected the terms "North Bauchi" and "South Bauchi" for two main reasons. First, the terms are geographically misleading since the Chadic languages spoken closest to Bauchi town are Gera and Geruma in the Bole group. Second, the terms give the impression that these are subsections of a single group, which seems not to be the case. In a recent survey, K. Shimizu recorded some 30 different names for languages in this group. Most of these are village names and cannot be taken as independent languages. The available evidence indicates that the Zaar group consists of three discrete clusters within each of which one needs to distinguish no more than two or perhaps three separate languages. To list 30 language names would give a completely false picture of the true linguistic situation. In this case, I would suggest that it is better to err on the side of listing too few names than too many: it is much easier to add a language name at a later date than it is to expunge a wrong or redundant name once it gets established in the literature, cf. footnote 4.

2. Bura group
 - a. Bura-Pabir,⁷ Chibak, Putai
 - b. Margi, Kilba
 3. Higi group
 - Higi, Bana (Mbana)
 - 4/5/6. Mandara/Matakam/Sukur major group
 4. Mandara group
 - a. Mandara (Wandala); Paduko; Glavda, Guduf, Dghwede, Gvoko
 - b. Lamang
 5. Matakam group
 - Matakam, Mofu, Gisiga, Mada, Hurza, Muktele
 6. Sukur group
 - Sukur
 7. Daba group
 - Daba, Gawar, Hina
 8. Bata group
 - Bata-Bachama,⁸ Gude (Cheke), Nzangi (Jeng); Gudu
 - B. Subbranch BM-B
 1. Kotoko group
 - Kotoko, Logone; Buduma
 2. Musgu group
 - Musgu
 3. Gidar group
 - Gidar
- III. East Branch (EST)
- A. Subbranch EST-A
 1. Somrai group
 - Somrai, Tumak, Ndam; Sarwa, Gadang, Mod, Miltu
 2. Nancere group
 - Nancere, Lele; Gabri, Kabalai
 3. Kera group
 - Kera, Kwang
 - B. Subbranch EST-B
 1. Dangla group
 - a. Dangla (Dangaléat), Miamma, Makwa, Jugu, Nostum, Bidiyo
 - b. Mubi, Masmaje, Kajakse, Birgit, Toram
 2. Mokulu group
 - Mokulu

⁷The terms Bura and Pabir refer to two ethnically different peoples, who, however, speak a common language.

⁸The terms Bata and Bachama refer to two ethnically different peoples, who, however, speak a common language.

2. Bura group
 - a. Bura-Pabir,⁷ Chibak, Putai
 - b. Margi, Kilba
 3. Higi group
 - Higi, Bana (Mbana)
 - 4/5/6. Mandara/Matakam/Sukur major group
 4. Mandara group
 - a. Mandara (Wandala); Paduko; Glavda, Guduf, Dghwede, Gvoko
 - b. Lamang
 5. Matakam group
 - Matakam, Mofu, Gisiga, Mada, Hurza, Muktele
 6. Sukur group
 - Sukur
 7. Daba group
 - Daba, Gawar, Hina
 8. Bata group
 - Bata-Bachama,⁸ Gude (Cheke), Nzangi (Jeng); Gudu
 - B. Subbranch BM-B
 1. Kotoko group
 - Kotoko, Logone; Buduma
 2. Musgu group
 - Musgu
 3. Gidar group
 - Gidar
- III. East Branch (EST)
- A. Subbranch EST-A
 1. Somrai group
 - Somrai, Tumak, Ndam; Sarwa, Gadang, Mod, Miltu
 2. Nancere group
 - Nancere, Lele; Gabri, Kabalai
 3. Kera group
 - Kera, Kwang
 - B. Subbranch EST-B
 1. Dangla group
 - a. Dangla (Dangaléat), Migama, Mahwa, Jegu, Mogum, Bidiyo
 - b. Mubi, Masmaje, Kajakse, Birgit, Toram
 2. Mokulu group
 - Mokulu

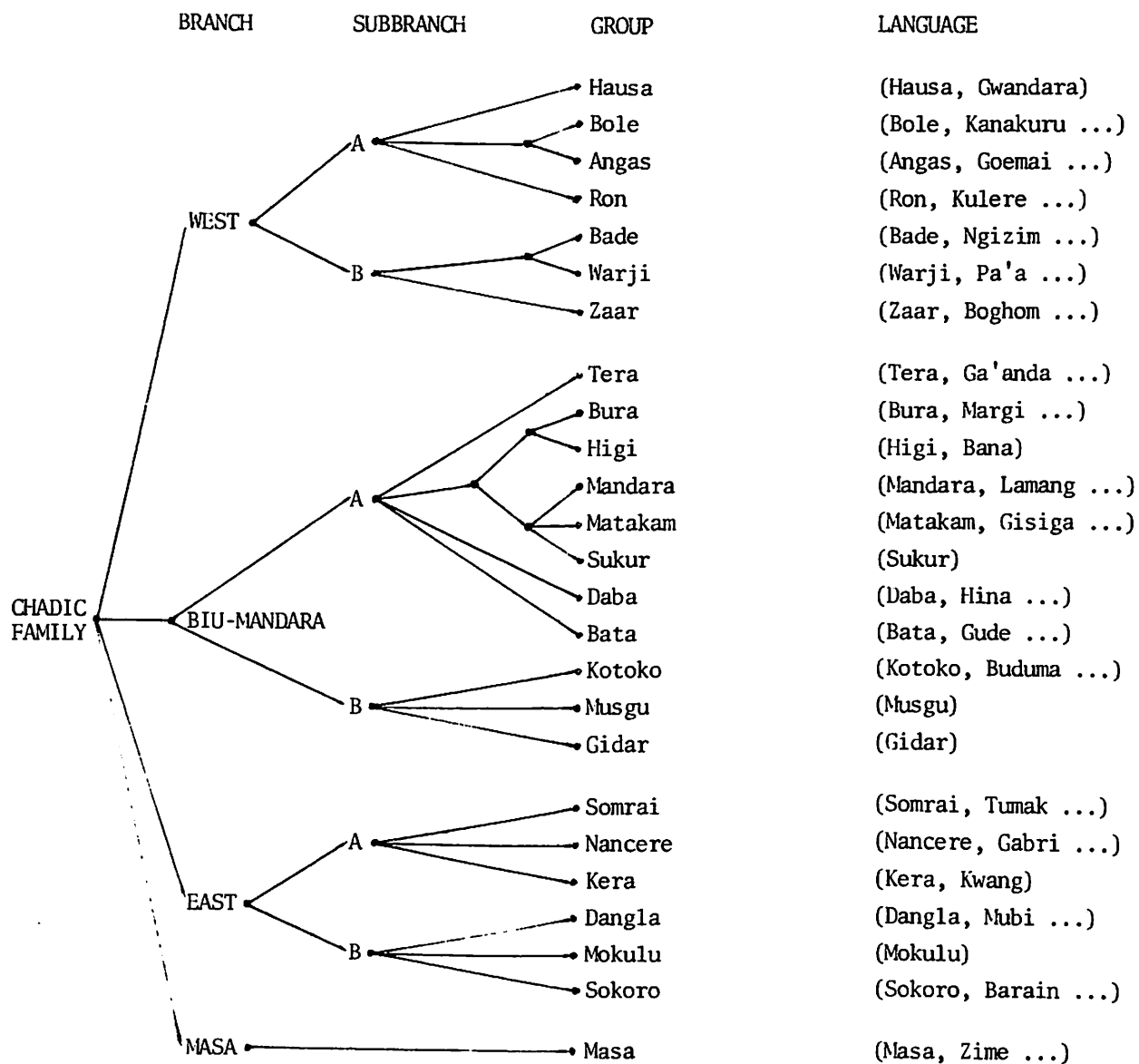
⁷The terms Bura and Pabir refer to two ethnically different peoples, who, however, speak a common language.

⁸The terms Bata and Bachama refer to two ethnically different peoples, who, however, speak a common language.

3. Sokoro group
Sokoro, Barain, Saba

IV. Isolated Branch

- Masa group
Masa, Zime, Mesme, Marba, Musey



1.1. The Three Major Branches

In N/M, the East and West branches were combined into a single branch called "Plateau-Sahel", which was considered to be coordinate with Biu-Mandara.⁹ This combined Plateau-Sahel branch was subsequently adopted by most other Chadicists (e.g. Hoffmann 1971a). In Newman (in press (a)), however, I reversed my earlier opinion and broke up Plateau-Sahel into its two branches, which were taken to be equally distinct from one another and from BM, thereby setting up three coordinate branches for Chadic. This was done because continued research drawing on new and better data on EST languages still failed to turn up any features—whether lexical, grammatical, or phonological—that could be said to be exclusive innovations shared only by EST and WST, and that could therefore serve as evidence in support of the Plateau-Sahel hypothesis. Although there is nothing wrong a priori about the idea of EST and WST forming a single branch, the evidence points more and more to their independence.

By contrast, the unity of the BM branch seems certain, in spite of the considerable internal diversity. While Kotoko and Musgu (and Gidar?) occupy a place apart within BM, they are clearly more closely related to other BM languages such as Tera or Margi than they are to any WST or EST language.

1.2. The Masa Isolated Branch

The Masa group has traditionally been treated as being closely related to Musgu (Westermann and Bryan 1952) and thus by extension as belonging to BM (Hoffmann 1971a, Newman in press (a)). Linguistic justification for this classification, however, turns out to be hard to provide—at least with the inadequate materials we now have at our disposal. Rather it looks as if the cultural and geographical proximity of the Masa and the Musgu has led us to suppose a close linguistic connection that does not in fact exist. Not only does Masa not seem to bear an especially close relationship to Musgu, but it doesn't even seem to fit in the same branch of the family. Masa may not have any special features that would allow one to classify it as EST or WST, but it doesn't share the distinctive characteristics of the BM branch either. I have decided therefore not to include the Masa group in any of the three major branches but rather to consider it provisionally as a separate, independent category. By treating the classification of Masa as a completely open question, the problem can be approached with a fresh perspective, leading hopefully to a quick solution once fuller descriptive data become available.

1.3. Subclassification within the West

Within WST, the Hausa, Bole, Angas, and Ron groups constitute a subbranch (WST-A) as opposed to the Bade, Warji, and Zaar groups (WST-B). Within WST-A, the Bole and Angas groups bear an especially close relationship, which is indicated by referring to the two groups together as a "major group". The relationship between Hausa and this "major group" is also very close. In the case of the WST-B subbranch, the ties between the groups making up the subbranch are less evident. This may be because the languages are in fact less closely related to one another or it may simply be because our knowledge of the Warji and Zaar languages is less advanced. Nevertheless, since the Bade group shares certain distinctive features with Warji and Warji shares certain features with Zaar, the hypothesis of a WST-B subbranch coordinate with WST-A seems reasonable. Within WST-B, the correct grouping is almost certainly Bade-Warji as opposed to Zaar, contrary to earlier indications on the question (e.g. Greenberg 1963).

⁹At the time it was thought that the two branches might correspond to Lukas' distinction between "Chadic" and "Chado-Hamitic" (Westermann and Bryan 1952). This was wrong (see Newman, in press (a)). The major branches of Chadic differ from Lukas' earlier classification both in substance and in conception.

1.4. Subclassification within Biu-Mandara

The large number of languages that in Lukas' earlier classification made up the "Mandara" or "Chadic" family as opposed to the "Chado-Hamitic" family constitute a distinct subbranch (BM-A) within BM as a whole. The other, and much smaller, subbranch (BM-B) consists of the Kotoko, Musgu, and Gidar groups, although the assignment of Gidar to BM-B is extremely tentative. While the internal structure of the BM-A subbranch has not yet been worked out, we can be sure that its eight groups could not be equally distinct from and coordinate with one another. However, constructing a neat family tree diagram turns out to be extremely difficult because of overlapping innovations and criss-crossing isoglosses. For the moment, then, I have been content to start building from the bottom up by combining groups into major groups—namely 2/3 Bura/Higi and 4/5/6 Mandara/Matakam/Sukur—and by suggesting a common node for these two major groups. In this latter respect, I have taken a different position from Greenberg (1963) who put Bura, Bata, and Tera together in one large group as opposed to Mandara and Matakam, which were assigned to two different, separate groups.

1.5. Subclassification within the East

Within the EST branch, there appears to be a fairly sharp distinction between the languages belonging to the Somrai, Nancere, and Kera groups (EST-A) and the languages belonging to the Dangla, Mokulu, and Sokoro groups (EST-B). By contrast, the exact relationship among the groups making up each subbranch is much less clear; and I have therefore refrained from indicating further internal structure until fuller data on these languages become available.

2. PROTO-CHADIC PHONEMIC INVENTORY

2.1. Consonants

The consonantal inventory of PC can be reconstructed as follows:

<i>p</i>	<i>t</i>	<i>c</i>	<i>k</i>	<i>k'</i>	<i>k''</i>
<i>b</i>	<i>d</i>	<i>j</i>	<i>g</i>	<i>g'</i>	<i>g''</i>
<i>ɓ</i>	<i>d'</i>	<i>'j</i>			
<i>ɸ</i>	<i>s</i>	<i>(sh)</i>	<i>x</i>	<i>x'</i>	<i>x''</i>
	<i>z</i>				
	<i>ʒ</i>				
<i>m</i>	<i>n</i>				
	<i>hɛ</i>				
	<i>ɾ</i>				
<i>w</i>		<i>y</i>			

2.1.1. The **p*/**ɸ* contrast

As proposed by Greenberg (1958) and supported by Illič-Svityč (1966), **p* and **ɸ* were probably distinct phonemes in PC. In many present-day Chadic languages, e.g. Hausa, these phonemes do not contrast, only one or the other being found. As a result, it is often difficult in the case of individual lexical items to know which consonant to reconstruct for PC. Nevertheless, the evidence taken as a whole indicates that **p* and **ɸ* were phonemically contrastive in PC.

and that the common non-distinctiveness of the pair is due to much later (often independent) mergers.

2.1.2. PC *b

PC probably did not distinguish *b from *v, although the question is still far from settled. In Ngizim, for example, both b and v occur in native Chadic words, e.g. *barv* 'give', *vaji* 'monkey', but the difference does not correspond systematically to anything elsewhere in the family that would allow one to conclude that the contrast represents the retention of a PC feature rather than being the result of a localized, internal split. In most Chadic languages that have a b/v contrast—many do not—only one of the two consonants normally occurs in native Chadic words, the other being primarily restricted to loanwords. Although I have adopted the letter b to represent this proto-phoneme, its pronunciation in PC may well have varied between bilabial stop, bilabial fricative, and labio-dental fricative.

2.1.3. PC *x

The common occurrence of velar fricatives in Chadic languages, especially in BM, suggests that *x (and its labialized and palatalized counterparts) could have been present in the PC consonantal inventory. It has not yet proved possible, however, to determine the modern reflexes of this presumed PC phoneme. It may be that /x/ in BM is a direct continuation of PC *x, which in WST merged with some other consonant(s) such as k, s (or sh), or f. Compare Br. *xəl*, N. *kəra* 'steal'; T. *xar*, B. *sar* 'hand'; T. *xadi*, Kk. *ɣada* 'illness'. But until additional evidence is provided, the existence of *x in PC must be considered a likely but unverified hypothesis.

2.1.4. PC *'J

In addition to *b and *d, PC had a third glottalized consonant, here indicated *'J. This consonant was probably a glottalized palatal stop, differing from *d primarily by position rather than manner of articulation, and not an ejective like Hausa k' nor an approximant like Margi 'y. In present-day Chadic languages this proto-phoneme is variably realized as dɣ, 'gy, 'g, k', 'w, 'y, ʔ, or ø.

2.1.5. The absence of glottal stop

PC did NOT have glottal stop as a phoneme, either internally or at the beginning of words (Newman 1976). Contrary to the characteristic Afroasiatic word structure which requires all words to begin with a consonant (e.g. Diakonoff 1965), PC words such as *am 'water' and *aku 'fire' were truly vowel initial.

2.1.6. PC *ɬ

In N/M it was observed that s in WST and EST languages sometimes corresponds to BM s and sometimes to BM hl. On the basis of the evidence then at hand, it was assumed that there was only one proto-phoneme *s, which had undergone a split in BM. In Newman (in press (b)), a paper devoted to the problem of "hlaters" (i.e. lateral fricatives), I rejected this earlier position and showed that in addition to *s, one had to reconstruct another sibilant for PC, for which I have adopted the symbol *ɬ. What phonetically distinguished *ɬ from *s is not known, but it seems clear that PC *ɬ was an s-like or, more likely, sh-like fricative and not a hlateral as it later became in BM.¹⁰

¹⁰Russell Schuh and Suzanne Platiel (independently in personal communication) have suggested that the sibilant *ɬ was not merely sh-like, but rather was probably the PC *ɬh as such.

2.1.7. PC *hl

The comparative evidence points to the conclusion that PC had one and only one lateral phoneme (Newman, in press (b)). Phonetically it was unusual in that it was probably pronounced as a voiceless hlateral [ɬ] rather than as a normal frictionless [l], at least in initial position. Because of this "aberrant" pronunciation, I have adopted *hl rather than *l as the symbol for this proto-phoneme even though structurally speaking it constituted THE PC /l/.

2.1.8. The problem of prenasals

The reconstructed consonantal inventory presented above still does not include prenasalized consonants (*mb*, *nd*, *nj*, *ng*, etc.) and the problem of the origin of prenasals in Chadic remains unsolved. Greenberg (1958) had postulated their existence—*mb* specifically—not only for Proto-Chadic but for all of Afroasiatic. Recognizing that the original evidence was thin, Greenberg subsequently reaffirmed his position on prenasals and offered a list of nineteen etymologies as evidence "tending towards the establishment of an original [Afroasiatic] *mb" (1965:89). Of these nineteen etymologies, fourteen drew on evidence from Chadic languages (mainly Hausa); and of these fourteen, only one is reconstructable for PC and this not necessarily with a prenasal (see word list no. 97 'place'). Thus as far as Chadic is concerned, Greenberg still hasn't begun to prove his hypothesis. Similarly, the eight Chadic etymologies with *mb proposed by Illich-Svityč (1966) are much too weak to provide any real support for the idea of prenasals in PC.

The issue of prenasals is complicated because there are in fact two problems to solve: (i) did PC have prenasalized consonants and if so what subsequently happened to them in Chadic linguistic history? and (ii) what is the origin of the prenasals one now finds so widespread in the Chadic family? These may turn out to be the same or related questions but not necessarily so. They may be entirely independent questions and the failure to recognize this may partially account for our inability to make any progress towards solving the problem. In the comparative word list presented here, there is one item (no. 45) where an *mb* in WST corresponds to an *mb* in BM and a few others where *b* in WST corresponds to *m* or *mb* in BM. What the significance of these scattered examples is I cannot say.

2.1.9. Palatal(ized) and labialized consonants

PC almost certainly had palatalized and labialized velars (*kʷ*, *gʷ*, etc.). These are included in the consonantal inventory and are used in the reconstructions, where their correctness in individual cases will ultimately depend on decisions regarding the PC vowel system. PC may also have had palatalized and labialized bilabials (*bʷ*, *ɸʷ*, etc.) such as occur, for example, in Margi and Higi; but evidence for these is yet to be found. As far as the palatals (*c*, 'J', etc.) are concerned, we can assume that they were present in PC, either as palatalized alveolars (i.e. *c* = *tʃ*) or as a separate palatal series defined in terms of a distinct position of articulation. Because of the inherent phonetic instability of palatals, it has been impossible to establish regular correspondences or find other direct evidence that would prove the validity of this assumption. Nevertheless, when one takes into account the indirect evidence bearing on the problem, and considers the inventory of PC consonants and vowels as a phonemic system, the probability of PC having had phonemically contrastive palatals seems very high.

2.2. Vowels

PC can be reconstructed as having had AT MOST four phonemic vowels *i* *a* *u*, and possibly only two, *ə* and *a*.

2.2.1. Number of vowel contrasts

Among present-day Chadic languages, Tangale has been described with nine vowels (Jungraithmayr 1971), Dangla with seven (Fédry 1971), and Bole with five (Lukas 1970-72); but the characteristic Chadic pattern is six vowels *a*, *ə*, *i*, *u*, *e*, *o* (H. Wolff 1959). Of these six, *e* and *o* often have a secondary status, being restricted to loanwords, being recently derived from diphthongs, or being conditioned variants of other vowels. In many languages, moreover, even the four remaining vowels are not fully contrastive, the distinction between *i* and *u*, *ə* and *i*, and/or *ə* and *u* being neutralized in specific phonological environments. The interesting studies by Mirt (1969),¹¹ Parsons (1970), Mohrlang (1972), and Hoskison (1975) illustrate various languages in which a wide range of phonetic vowels can be reduced to two (or in some positions, three) phonemic vowels contrasting only in vowel height.

The comparative evidence points in the same direction for PC, although it would be premature to claim at this time that PC only had **ə* and **a* and that **i* and **u* were merely non-contrastive phonetic variants. On the whole, the choice does seem to lie between a two-vowel system and a four-vowel system with a balanced **i*, **a*, **u* system representing a remote possibility.¹² The most likely explanation, however, is that PC was characterized by the same type of distributional restrictions that one finds in present-day Chadic languages. Thus no blanket statement that PC had this or that number of vowels would be correct as such. Rather, one would have to specify how many vowels and which vowels did PC have in initial position, how many and which vowels in medial position in open syllables, etc. In the reconstructions in this paper, I make use of all four vowels in final position, two vowels (*i* and *a*) in initial position, and, with a few exceptions, two vowels (*ə* and *a*) in medial position. It should be emphasized, however, that these vowel reconstructions are extremely tentative and in each case must be subjected to critical examination before being accepted as correct.

2.2.2. Vowel length

PC probably had phonemic vowel length, but only with *a* and only in word medial position. This feature is not indicated in the reconstructions. The other vowel(s) probably did not have a length contrast.

2.2.3. Tone/Accent

PC must have had distinctive tone or pitch accent, although it is not clear which. If PC were a tone language, it would have had a simple, primitive two-tone system. In this paper, no attempt has been made to consider tone or accent in the reconstructions, nor is tone indicated in the individual language citations.

¹¹In my opinion, Mirt's modest paper represents a major breakthrough in the analysis of Chadic vowel systems.

¹²The best comparative study of Chadic vowels is a yet unpublished paper by Schuh (n.d. (b)). In tackling the problem of Chadic vowels, I have benefitted greatly from this paper and from recent discussions with Schuh, whose ideas on the subject have independently developed in a direction more or less parallel to mine.

3. SOUND LAWS

The identification of true cognates and the reconstruction of proto-forms depends on the knowledge of phonological changes ("sound laws") that have affected a family from the time of the proto-language to the present. These changes are of different sorts: varying in age and scope, applying to a whole branch or to an individual language, applying to a phylogenetic group or to a geographical area, being historically specific or being repeated independently at various places and times, being essentially exceptionless in the manner of a sound "law" or being describable in terms of drift or tendencies, being strictly a fact of history or still being operative as a productive or semi-productive synchronic rule. For Chadic we are now in a position to describe a number of sound laws—at least as far as consonants are concerned—and thus come to a better understanding as to why certain phonetically dissimilar items are cognate (e.g. M. *psar*, T. *wuzən* 'grass'; or Tm. *hɛ*, J. *sɔɾɛ* 'two') and why certain phonetically similar items are not (e.g. H. *wutaa*, G. *waata* 'fire'). Some of these phonological changes have been described elsewhere (e.g. N/M; Newman 1970; Schuh 1976); some are being described here for the first time. In either case, the sound laws are generally quite straightforward, if not entirely regular, and well supported by the available evidence. The accompanying examples are thus meant merely to illustrate the sound laws in question, not to prove their validity. The sound laws described here are of course not intended to be exhaustive. What I have tried to do is to outline some of the more important or phonologically interesting changes plus some perhaps less important changes when they concern better known languages. In describing the changes, it is to be understood that the starred form always refers to the sound undergoing change at the time the change took place without necessary reference to its ultimate source in PC or in the proto-language of the relevant branch. The presentation of the sound laws follows the order of the branches adopted in the classification, namely WST, BM, EST, and Masa. Within each branch, the individual groups and languages discussed are identified according to the classificatory system used in the language index.

3.1. Two Changes Affecting Subbranch WST-A

So far it has not been possible to document any regular changes applying between PC and the WST branch as a whole. Two changes can, however, be described at the subbranch level, both affecting WST-A.

(a) $*hl > l$, e.g. S. *luwa* 'meat', cf. N. *hluwei* and L. *hluwi*. If I am correct that PC (and proto-WST) did not distinguish /hl/ from /l/ (see section 2.1.7), then this change would have consisted in a simple phonetic shift, originally without structural consequences.

(b) $*ɟ > ɖ$, e.g. S. *sum* 'name', cf. M. *hləm* and Mb. *sami*. This change, also found in the EST branch and in Masa, did away with the PC distinction between $*ɟ$ and the normal $*ɖ$, a distinction preserved in different ways in WST-B and in BM.

3.2. Seven Changes Affecting Hausa

Because Hausa (I.A.1) has been relatively well studied, we know more about the phonological changes it has undergone than in the case of most other Chadic languages. Seven sets of changes are described here.

(a) $*ɣ > y$, e.g. *sooyaa* 'fry', cf. B. *surru*; *mai* 'oil', cf. A. *mwir*. This change seems to have been perfectly regular and thus present-day Hausa *ɣ* cannot qualify as a reflex of $*ɣ$ and should not as a rule be identified with *ɣ* in comparisons with other languages.¹³

¹³There are a few anomalies in this regard, see word list nos. 37, 64, and 74.

Examples of $*\ell > y$ are also found, e.g. *biyu* 'two', cf. Kk. *belu*, but this change is of a sporadic nature only and does not represent a regular sound law.

(b) $*\ell > \eta$, e.g. *garaa* 'termite', cf. R. *ngal*; *harshee* 'tongue', cf. Kl. *alush*. This change took place after the $*\eta > y$ change.

(c) $*N > \emptyset$ in final position, e.g. *zaaboo* 'guinea-fowl', cf. N. *zaabanu*. This sound law, discovered by Schuh (1976), applied both to $*n$ and to $*m$. Other examples of words with lost final nasals are *uku* 'three', *hancii* 'nose', and *guzaa* 'monitor' (for lost $*n$) and *kadaa* 'crocodile', *kuusuu* 'mouse', and *k'iishii* 'thirst' (for lost $*m$).

(d) PC has been reconstructed with a third glottalized consonant $*'J$ in addition to $\acute{b}$ and $*d$. In some of its instances, Hausa *k'* is a reflex of this proto-phoneme, e.g. *k'ashii* 'bone' < $*'Jasuu$, cf. T. *'gohl*. More often, however, *k'* is a reflex of $*k$, having developed by an internal split of $*k$ into *k* and *k'*, e.g. *kai* 'head', cf. K. *koi*; *jik'a* 'become wet', cf. K. *yeke*. While the fact of the split seems certain, given the comparative evidence, it is not certain what was the crucial conditioning environment. In Newman (1973) I suggested that the major conditioning factor for the $*k > k'$ change was the presence of a voiced consonant in the preceding or following syllable. This hypothesis—which I still feel to be on the right track—awaits verification.

(e) Glottal stop achieved phonemic status in Hausa only recently in conjunction with the introduction of loanwords from Arabic (Greenberg 1947). Prior to the period of Arabic loans, glottal stop already occurred in initial position as a phonetic feature of word onset, but not as a phoneme in its own right. Before the phonemicization rule $[?] > /ʔ/$, words that now begin with a glottal stop, such as *ʔidoo* 'eye' or *ʔajee* 'put down', would have been truly vowel initial from a structural point of view. All of this is well-known—although too often forgotten. What is not known is that initial *h*¹⁴ in Hausa had essentially the same origin as *ʔ*, having developed from a low-level, non-phonemic feature of word onset (Newman 1976), e.g. *harshee* 'tongue' < $*arshee$, cf. R. *alis*. Since *h* developed internally out of *ʔ*, the only legitimate comparisons involving Hausa *h* are with *ʔ* or other consonants known to have derived from *ʔ* rather than with historically old *h*-like or *x*-like consonants.

(f) In syllable final position, velar obstruents weakened to *u*, alveolars to *ɿ*, and bilabials to *u* (the latter change being restricted to the "standard" dialect).¹⁵ These well-known changes (Klingenheben 1927/28) are best illustrated by synchronic alternations within Hausa such as the following: *talaka* 'commoner', *talau-cii* 'poverty'; *ɸudu* 'four', *ɸuɿ-ɸudu* 'four each'; *makaaɸoo* 'blind man', *makau-niyaa* 'blind woman'.

(g) The palatalization of alveolars before front vowels, $t/d/s/z \rightarrow c/j/sh/j$, still operates as an active synchronic rule in Hausa. In considering words that contain these palatals, one simply has to undo the palatalization rule, e.g. *ci* 'eat' < $*ti$. For historical purposes the important point to note is that *j* can represent either $*d$ or $*z$, e.g. *jee* 'go' < $*de$, cf. N. *da*; *jikii* 'body' < $*ziki$, cf. B. *ziwo*.

¹⁴Reference here is to *h* before *a* and not to the phonetic/orthographic *h* before *o* and *u* which is an allophone of */f/*.

¹⁵The resultant *u*, and thus the existence of the historically prior obstruent, is often hidden because of an accompanying rule changing *iu* to *uu*, e.g. *juunaa* 'each other' < $*jiuna$ < $*jikna$; *shuukaa* 'sow' < $*shiuka$ < $*shipka$.

3.3. Loss of Distinctive Voicing in Tangale and Pero

In Tangale and Pero (I.A.2), distinctive voicing has been lost. In initial and final position, obstruents appear voiceless while in intervocalic position they are generally voiced, e.g. Tg. *tuge* 'pound', cf. H. *dakaa*; P. *peleyo* 'two', cf. Kk. *belu*; P. *iji* 'egg', cf. Ge. *isa*.¹⁶

3.4. Intervocalic Weakening in Kanakuru

In Kanakuru (I.A.2), intervocalic stops **P/*T/*K*¹⁷ weakened to *w/h/h*, respectively, followed by the simplification of geminates to single consonants (Newman 1970, Frajzyngier 1976), e.g. *tuwi* 'spit', cf. H. *tooḡaa*; ¹⁸ *parau* 'four', cf. Ki. *ḡadau*; *dḡhi* 'build', cf. Kk. *ḡaku*; *kape* 'sow', cf. Ki. *kappu*.

3.5. Alteration of Sibilants within the Bole Group

Kanakuru and Tangale share the change **s/*z > y* (followed sometimes by a secondary change *y > w* or *y > ø*); while in Pero, **s/z > c* (with automatic intervocalic voicing as indicated above), e.g. K. *yo*, Tg. *yo*, P. *co* 'leg', cf. H. *sau*. In Bele (I.A.2), a language more closely related to Bole than to these three languages, **s/*z > h*, e.g. *uhi* 'fire', cf. B. (w) *osi*; *hiko* 'body', cf. B. *ziwo*. This universally common change of sibilant to *h* has been repeated independently a number of times in the Chadic family.

3.6. Phonation Changes in the Angas Group

In proto-Angas-Goemai (I.A.3), initial voiced obstruents became voiceless (with a few exceptions) and voiceless obstruents became ejective (Greenberg 1958, Hoffmann n.d.). Thus the original voiced/voiceless contrast was preserved although in a different phonetic form. This is the present state of affairs in the Goemai cluster. In the Angas cluster, however, the ejective consonants lost the ejective feature and merged with the corresponding voiceless consonants, e.g. Gm. *pwee*, A. *pwɔ* 'mouth', cf. B. *bo*; Gm. *p'et*, A. *put* 'go out', cf. B. *pataa*; Gm. *sek*, A. *shik* 'body', cf. Ge. *zuwi*; Gm. *s'em*, A. *səm* 'name', cf. Ge. *soma*.

3.7. **ʒ > y/w* in the Bade Group

The PC distinction between **ʒ* and **s* was apparently preserved in the WST branch until the split of the two subbranches. In WST-A, the consonants then merged into *s*. In the Bade group (I.B.1), **ʒ* changed into a semivowel (*y* or *w*), e.g. N. *yaanau* 'tooth', cf. G. *hlan* and Jg. *saɲɔ*; N. *wana* 'send', cf. Lo. *hlən* and Ms. *sun*. In the other two WST-B groups, Warji (I.B.2) and Zaar (I.B.3), **ʒ* now appears variably as *c* or *sh* or even as *hl*—the sound laws that account for these reflexes have not yet been worked out.

¹⁶In citing Tangale and Pero examples, I have followed the original sources in indicating intervocalic voicing even though this is not necessary on phonemic grounds.

¹⁷P includes *p/ḡ, b, ḡ*; T includes *t, d, ḡ*; and K includes *k* and *g*.

¹⁸In the Shani dialect, there is now a tendency to replace intervocalic *w* by *ḡ*, e.g. *tuḡi* = *tuwi*. This applies to all *w*'s in that position and not just to those derived from P.

3.8. Development of Hlaterals within the Zaar Group

In the Zaar-Barawa subgroup of the Zaar group (I.B.3), prevocalic *s and *z changed into the corresponding hlaterals *hl* and *hl̥*, e.g. Z. *hlyā* 'drink', cf. B. *sa*; Z. *hli* 'body', cf. B. *ziwo*. The resulting voiceless hlateral merged with the *hl* deriving directly from PC *hl̥.

3.9. Two Changes Affecting the BM Branch

In Biu-Mandara, two changes can be described as applying to the proto-language of the branch as a whole.

(a) *b > v, e.g. T. *vɔɔ* 'give', cf. N. *barə* and D. *bere*. As indicated in section 2.1.2, PC probably did not distinguish *b* from *v* and thus the phoneme *b may already have had both pronunciations in the proto-language, either in complementary distribution, in free variation, and/or as dialect variants.

(b) *ɖ > hl̥, e.g. M. *hl̥om* 'name', cf. Ge. *səma*, Mb. *sami*, and Ms. *sam-ma*. In BM, this *hl̥* from *ɖ merged with the *hl̥* coming from PC *hl̥, the history of the two thereafter being indistinguishable. The origin of the voiced hlateral *hl*, now extremely common in BM, is unknown. The *hl̥*/*hl* contrast seems to be very old (perhaps proto-BM-A if not proto-BM) but it cannot be traced back to and identified with the PC *ɖ/*hl̥ contrast. Rather it looks to be a secondary split subsequent to the merger of the *hl̥*'s coming from the two PC sources.

3.10. Weakening of Velar Stops in the Tera Group

In the Tera group (II.A.1), initial velar stops have commonly, but not systematically, changed to *y* or *w*, e.g. G. *yirfa* 'fish', cf. Br. *kilfa*; T. *wuzən* 'grass', cf. Kk. *gəzən*. In final position, velar stops are usually realized as *x*, e.g. T. *gomox* 'roan antelope', cf. H. *gwankii*.

3.11. Phonation Changes in the Tera Group

In the Ga'anda-Hona division of the Tera group, all obstruents have devoiced, thereby completely eliminating the voiced/voiceless contrast, e.g. G. *fara* 'blood', cf. D. *baar*; Hona *kum* 'ten', cf. K. *gum*. In the Tera-Jara division of this group, the tendency has been in the opposite direction. With a few unexplained exceptions, all fricatives in initial position (including hlaterals) have become voiced, e.g. T. *vat* 'four', cf. Bc. *fwat*; J. *hla* 'cow', cf. Gs. *hla*. The result of the criss-crossing voicing rules is that a pair of examples such as T. *za*, G. *sa* 'drink' gives no hint as to the voicing of the original proto-consonant, for which one has to depend on languages such as Hausa in WST, Bachama in BM, or Dangla in EST, where the voicing contrasts of PC are usually preserved.

3.12. *t > d̥ in Tera

Tera, in this case the individual language rather than the group, has also undergone a fairly systematic change of intervocalic *t to d̥, e.g. T. *məd̥o* 'die', cf. N. *mətə*.

3.13. *ɾ > l in the Bura/Higi Major Group

In the Bura/Higi major group, *ɾ shifted to *l* in a regular manner. In the Bura group (II.A.2), the *ɾ > *l* change was an unconditioned sound law applying to *ɾ in all positions, e.g. Br. *la* 'dig', cf. T. *ra*; Br. *səl* 'leg', cf. T. *sarə*; Br. *kilfa* 'fish', cf. G. *yirfa*; Br. *pela* 'stone', cf. Bc. *fara*. In the Higi group (II.A.3), the *ɾ > *l* change took place in all positions EXCEPT in the environment CəɾV where the C was an alveolar obstruent, e.g. *la* 'dig',

kɔlpe 'fish', *pɔle* 'stone', but *sɔra* 'leg' and *tɔre* 'moon' (cf. T. *ndɔra*). The conditioning environment, which seems strange at first, ceases to be so when one thinks of the *Cɔr* sequences as *Cr* clusters, their more usual pronunciation (Mohrlang 1972:50).

3.14. **n* > *r* in the Bura Group

In the Bura group, final **n* changed to *r*, e.g. Br. *hlir* 'tooth', cf. T. *hlin*; M. *makɔr* 'three', cf. G. *maxkan*. This change must have taken place after the **r* > *l* change. It is not possible to know whether Higi also underwent this change since it has lost all final consonants.

3.15. Devoicing in the Bura Group

In the Bura group there was a general devoicing of obstruents, e.g. M. *kumɔ* 'ten', cf. J. *gwom*; Br. *sɔm* 'eat', cf. Gs. *zom*. The existence of this historical rule is quite evident from the comparative evidence even though all languages in the Bura group now exhibit a voiced/voiceless contrast with obstruents.

3.16. Labio-alveolars and Labio-palatals in the Bura Group

The most striking phonological feature of the Bura group is the existence of simultaneously articulated labio-alveolar and labio-palatal consonants, *bd*, *pc*, *ps*, etc. (Hoffmann 1963).¹⁹ Historically these resulted from the loss of an intervening vowel and the consequent fusion of the resulting consonant cluster, i.e. *CVCV > *CCV > CCV, e.g. Br. *pci* 'sun', cf. Mg. *futi*; M. *bhlɔ* 'forge', cf. T. *ḡḡhlɔ*. As a general rule applying to the group as a whole, the vowel reduction and consonant fusion only took place if the initial C was a labial. In Margi, the rule was extended to initial velars, which became bilabial in the process of the fusion, e.g. M. *psar* 'grass', cf. Br. *kusar*; M. *ptɔl* 'chief', cf. G. *kutira*.

3.17. Loss of Final Consonants in Higi

In Higi (II.A.3), all word-final consonants have been dropped and intervocalic **d* has weakened to *r*, e.g. *za* 'man', cf. Br. *sal*; *tsi* 'beans', cf. Br. *tsɔr*; *kwi* 'mouse', cf. Mt. *kwom*; *fware* 'four', cf. M. *fɔwɔdɔ*.

3.18. **r* > *l* in the Mandara Group

In the Mandara group (II.A.4), **r* changed systematically to *l*, but with a number of restrictions. In syllable final position, the **r* > *l* change took place unless the **r* abutted with a voiced consonant, e.g. Mn. *kɔlpɔ* 'fish', cf. Ge. *keruɣa*; Mn. *vɔl* 'give', cf. T. *vɔrɔ*; but Mn. *ɔrdza* 'scorpion', cf. Bd. *wurjɔn*. Medially the restrictions on the change were the same as that described above for Higi (section 3.13) with the addition of *k(ɔ)r* as a "cluster" protecting the **r*, e.g. L. *palak* 'stone', cf. Bc. *ɣara*, but L. *s(ɔ)ra* 'leg', cf. T. *sarɔ*; L. *k(ɔ)rama* 'crocodile', cf. T. *jiran*; L. *kri* 'dog', cf. Hi. *kɔle*.

3.19. **m* > *w* in the Mandara Group

In the Mandara group, **m* changed into *w*, as seen in the equivalent names Wandala = Mandara, e.g. Mn. *yawɔ* 'water', cf. Gs. *yam*; L. *ewe* 'mouth', cf. T. *me*. While a few exceptions

¹⁹Although written as digraphs, these have to be treated as unit phonemes like the labio-velars *kp* and *gb* so common in West Africa.

exist, this shared rule constitutes a distinguishing feature of this group.

3.20. Loss of Hlaterals within the Bata Group

In most of the Bata group (II.A.8), the former hlaterals, both voiced and voiceless, have become frictionless *l*, e.g. Bc. *lin-tə* 'tooth', cf. T. *hlin*; Gd. *la* 'stand', cf. M. *hla*. As a result, Bachama, for example, no longer has any hlaterals. Gude does have *hl* in a small number of words, but this seems to be a re-introduction rather than a retention. Gudu, however, although clearly a closely related member of the Bata group, did not undergo this change and thus preserves the historically earlier hlaterals.

3.21. *t > ɾ in Bachama

In Bachama (II.A.8), intervocalic *t changed to ɾ, e.g. *ɸɔrey* 'sun', cf. Mg. *ɸuti*. Interestingly, the rule did not apply to the suffix -tə used with feminine nouns (e.g. *hoo-tə* 'she-goat', *lihi-tə* 'moon') but it did apply to the third person feminine pronoun *-tə, e.g. *baagə-ɾə* 'her father'.

3.22. *n > ɾ and Other Dialect-specific Changes in Kotoko

In Kotoko (II.B.1), intervocalic *n changed to ɾ while final *n changed to ŋ, thereby producing the consonantal alternation seen in many singular/plural pairs, e.g. *ɸɔɾe*; *shaŋ* 'tooth', pl. *share*. The *n > ɾ change must have taken place very recently since it was not shared by the closely related Logone language, e.g. Ko. *gəɾəm*, Lo. *gənəm* 'woman'; Ko. *saware*, Lo. *suwane* 'dream'. In the Makari dialect, from which all Kotoko examples in this paper are cited, hlaterals have been completely lost, *hl having altered into *sh*, and *hl' (a glottalized hlateral of undetermined origin) into *c'*, e.g. *shu* 'meat', *c'a* 'laugh', cf. *hlu* and *nhl'a* from the Gulfei dialect. In the Gulfei dialect, *s has weakened to *y* under undetermined conditions, e.g. *yin* 'know', *gbiyim* 'mouse', cf. Makari *səŋ* and *kusumu*. The sibilant *s* nevertheless remains a common consonant in the Gulfei dialect.

3.23. Change of Sibilants to h in Buduma

In Buduma (II.B.1), all initial *s's (including those derived from *z and *hl) changed into *h*, e.g. *hue* 'drink', *hum* 'eat', *hanai* 'tooth', cf. Lo. *se*, *zəm*, *hlini*. Medial *s's were also lost—present-day Buduma does not have any sibilants—but what they changed into is not known.

3.24. Loss of Hlaterals in the EST Branch

Since hlaterals are not found in any EST languages, it is reasonable to assume that the change of PC *hl to some other consonant(s) must have taken place very early in that branch, if not in proto-EST. The details are yet to be worked out, but the available evidence suggests that *hl changed into *l* in initial position and to a palatal affricate or fricative in medial position, e.g. Tm. *ləb* 'hit', cf. T. *hləbə*; Mb. *icca* 'cough', cf. M. *wuhla*. As far as PC *s is concerned, the change to *s* in proto-EST was straightforward and regular, e.g. Mb. *sami* 'name', cf. M. *hləm* and Kf. *sum*; Jg. *aso* 'bone', cf. Lo. *ahle* and H. *k'ashii*.

3.25. Three Changes Affecting Tumak

Tumak (III.A.1), one of the few EST languages for which we have a substantial word list (Caprile 1975), has undergone a number of phonological changes, such that its words are now

phonetically quite different from cognate forms in related languages. Three important changes are described here:

(a) $*s > h$ in initial position, $*s > j$ elsewhere, e.g. *he* 'drink', cf. Ke. *saa*; *hin* 'tooth', cf. D. *saarɔ*; *aj* 'cough', cf. Sm. *asɔ*; *gaj* 'laugh', cf. Mb. *gamas-*. The *s* one now finds in Tumak represents a new introduction and cannot be considered a reflex of the PC sibilant.

(b) $*r > \emptyset$ or $\tilde{r}$ [a retroflex vibrant], e.g. *ba* 'blood', cf. D. *baar*; *he* 'two', cf. D. *sɛɛr*; *dɔ̃r* 'moon', cf. Nc. *ke-dere*. One possible explanation for the two reflexes of $*r$ is that $*r$ was lost in final position and changed to $\tilde{r}$ in intervocalic position, followed by a subsequent dropping of the final vowel.

(c) $*t > r$ in non-initial position, e.g. *dɔ-bɔr* 'ashes', *aru-nan* 'tree (pl.)', cf. D. *butu* and *eto*.

3.26. Some Masa Correspondences

As long as the classification of the Masa group (IV) is unsettled and the extent of its internal differentiation unknown, one cannot hope to provide an accurate historical description of its phonological development. All one can really do is to match PC phonemes with corresponding Masa phonemes without describing the processes by which one changed into the other. Some of the regular correspondences include $*\delta = s$, $*r = l$, and $*-d- = r$, e.g. Ms. *asi-na* 'egg', cf. Br. *hlihli*, Ge. *isa*; Ms. *kuluɣ-ɣa* 'fish', cf. Ge. *keruɣa*; Ms. *oro-na* 'fly', cf. Sm. *dou*.

3.27. Common Chadic Neutralization of Phonation Contrasts

A characteristic feature of the Chadic family is the existence of three phonation types for stops: voiced, voiceless, and glottalized. As far as I am aware, all Chadic languages that allow final stops—many do not—neutralize the voiced/voiceless contrast in that position and many neutralize all three contrasts, e.g. Kf. *paat* 'five', *dapit* 'monkey', *ɣwat* 'ashes', cf. B. *baadi*, *bido*, *buto* respectively. Since the neutralization is a common, recurring Chadic feature, the individual manifestations can be interpreted easily and do not need to be accounted for by language-specific historical rules.

4. PROTO-CHADIC WORD LIST

The following list includes 150 Chadic etymologies, each with a starred form reconstructed for PC. About half of the etymologies appeared in N/M; their inclusion here can be taken as further confirmation of their probable correctness. The other half are new. The N/M items that do not appear in this list are not necessarily errors as such. Some are, but others have been replaced because (a) they are valid etymologies for one of the branches but not for the entire family; (b) there is a question whether they are cognates or early loan-words; or (c) the evidence to justify their inclusion is relatively weak, even though they may be perfectly good etymologies. In N/M, a distinction was made between items that were "second-level" confidence and those that were presumably first-level confidence. This distinction has been discarded here since there is really a continuum, not a dichotomy, between the "sure" items and those where greater doubt exists. Also, the confidence one places in a possible etymology depends not only on the quantity and quality of the external evidence but also on the relative weight accorded different variables and on one's scientific viewpoint and intellectual disposition.

4.1. The Reconstructions

Each etymology is accompanied by a starred form which represents the hypothesized PC word. The reconstructions make use of the inventory of consonants presented in section 2.1 with the occasional indication in parentheses of possible prenasalization. Four vowels (*a*, *ə*, *i*, *u*) are used in the reconstructions although, as indicated in section 2.2, the contrastive status of the latter three is open to doubt. Vowel length and tone/accent have not been reconstructed. In initial position, only two vowels appear, *a* and *i*. In final position, all four vowels have been used except in the case of polyconsonantal verbs ("polyverbs"), where only *a* and *ə* have been reconstructed in accordance with my theory of Chadic verb classes (Newman 1975). Medially, all four vowels have also been used but the instances of *i* and *u* are extremely rare. Sometimes it has not been possible to reconstruct a specific vowel for a proto-form; in these cases a hyphen is inserted as a place marker for the vowel. Alternative reconstructions for whatever reason are separated by a slant line; doubtful units are enclosed in parentheses.

The general appearance of the PC reconstructions is very much in line with our usual impressions of Chadic languages. For example, we find disconsonantal words to be the norm, monosyllabic words to be less numerous but still quite common (but mostly with verbs and function words), and triconsonantal words to be rare and limited almost exclusively to nouns. We find, moreover, that consonant clusters do not occur, that syllable-final and word-final consonants do occur but only in the case of sonorants, and that words never contain more than one glottalized consonant. The only really unusual feature—unusual from an Afroasiatic point of view—is the existence of words beginning with a vowel (see section 2.1.5). While these are less common than consonant-initial words, they are far from rare in the reconstructed list.

4.2. The Citations

Each PC reconstruction is illustrated by selected examples from present-day Chadic languages. The citations are grouped according to the three major branches with Masa citations kept apart: (1) = WST, (2) = BM, (3) = EST, and (4) = Isolated (Masa). The individual languages cited are identified according to the abbreviations given in the language index. I have generally limited the examples to two per branch (drawn where possible from different sub-branches or different groups) unless there was some particular point to be made that required further citations. Many well-known cognates in Hausa, for example, are not included because the reconstructed proto-forms are adequately supported by equally good cognates in other WST branch languages.

4.2.1. The transcription system

Citations have been taken from approximately fifty different languages representing every group in the family.²⁰ In order to best present data from such a large number of languages, I have taken the liberty to make minor adjustments in the original source materials where it seemed called for and to standardize the examples according to one transcription system.

The adjustments include the following:

- (a) substitution of *e* and *o* for *ɛ* and *ɔ* in languages such as Pero and Sura where these vowels do not contrast;

²⁰"Group" here refers specifically to the unit of that level employed in the classification.

- (b) substitution of ə for Margi u (Hoffmann 1963);
- (c) use of ə for the lower centralized vowel in Bachama, often transcribed as e;
- (d) substitution of ə for all high vowels in Mandara;
- (e) substitution of x for h in all languages where the h is clearly understood to represent a voiceless velar fricative;
- (f) deletion of initial glottal stop in all languages where the glottal stop appears not to be phonemic.

The standardized transcription system used in the examples employs the following special symbols and conventions.

hl, hl	voiceless and voiced hlaterals (lateral fricatives) [usually transcribed in sources as tl, dl or sl, zl]
c, j	voiceless and voiced (pre-)palatal affricates
sh, zh	voiceless and voiced (pre-)palatal fricatives
x, γ	voiceless and voiced velar fricatives
ṛ	rolled r (but only when it contrasts with another r as in Hausa)
ṛ	retroflex vibrant
mb, nz, nj, etc.	prenasalized ("semi-nasal") obstruents
bd̥, bz, pc, etc.	coarticulated obstruents
ḃ, ḋ, 'g, etc.	glottalized ("implosive") obstruents
'y, 'w	glottalized semivowels
p', ts', k', etc.	ejective obstruents
ʔ	glottal stop
aa, ii, uu, etc.	long vowels

If the meaning of a particular language citation is different from the meaning or meanings given for the etymology as such, this is so indicated. A question mark after a citation indicates that the cognation of the particular item is doubtful even though the etymology itself might be quite certain. Hyphens within a word indicate morpheme boundaries. These are most often used in the case of languages such as Bade and Bachama where the citation form of words contains a suffix in addition to the root. Examples cited with final hyphens represent underlying roots or stems as indicated in the original sources.

4.3. Sources

Language data cited in the word list and elsewhere in the paper have been drawn from a large number of published and unpublished sources. The major published sources utilized are listed in the references. Other published sources that were consulted, but less intensively, can be found in my earlier Chadichibliography (Newman 1971). Regarding unpublished materials,

I have been fortunate in having access to word lists, field notes, and draft manuscripts that were put at my disposal by the following scholars, to whom I express my utmost thanks: Y. Abubakar (Zaar, Barawa), D. Barreteau (Mofu-Gudur), N. Cyffer (Buduma), Z. Frajzyngier (Pero), C.H. Kraft (Matakam, Daba, Pero, Tangale), R.M. Newman (Boghom, Ga'anda), M. Sachnine (Lane), N. Schneeberg (Barawa), M. Schuh (Karekare), R.G. Schuh (Ngizim, Bade, Gera-Kirfi cluster), K. Shimizu (Barawa, Guruntum, and other Zaar group languages), M. Skinner (Bachama), and E. Wolff (Lamang, Dghwede, Guduf, Gvoko). In addition, I have made extensive use of my own field notes on Tera, Jara, Hona, Gudu, Kotoko, Bole, and Warji.

4.4. WORD LIST

1. accept, answer *hləwə
(1) K. *ləwi*, A. *la*; (2) Gd. *ləwə*, T. *hlə*; (4) Ml. *hli*.
2. ashes *batu
(1) B. *buto*, N. *bəbat*; (2) G. *ʃəc-*, Gs. *aʃtso*; (3) D. *butu*, Tm. *də-bər*; (4) Ms. *buduu*.
3. baobab *kuka
(1) Kk. *kuci*, N. *kuku*; (2) T. *kukwa*, Bc. *kaw-tə*.
Kanuri *kuwa* is undoubtedly a borrowing from Chadic, as is the case with a number of terms for native flora and fauna.
4. bear, give birth *wa
(2) Gs. *ye*, Mg. *wa*; (3) Mb. *waa*, Ke. *waa*.
5. belch *gʷahlə
(1) Kk. *jile*, Bd. *gaahl-*; (2) T. *jahli*; (3) D. *gɛtyɛ*; (4) Ms. *gihlaʔ*.
6. bird *dəy-
(1) P. *diyo*, Bm. *dwaii*; (2) Gs. *diyew*, L. *diyaka*; (3) D. *diida*, Tm. *deri*.
7. bite/chew₁ *kədə
(1) B. *ngadu*, N. *kiidə*; (2) T. *kədə*, M. *bdə*; (3) Tm. *gəd*.
8. bite/chew₂ *adə
(1) A. *at*, B. *wodu*; (2) Bc. *adə*, Mt. *je*; (3) Mb. *aad*, Sm. *yidə*; (4) Zm. *ite*.
9. bitter *d-t-
(1) H. *daacii*, Kf. *dēet*; (2) T. *dyot*, L. *uɣ-data* 'gall'; (3) D. *dyuutu*.
10. blood *bar
(1) Z. *vorarj* (?); (2) J. *vara*, Mg. *ʃel*; (3) D. *baar*, Tm. *ba*.

N/M also reconstructed a *d-N (more correctly, *d-m) root for 'blood' based on citations such as N. *dədam* and Tg. *tom*. This root is not, however, found outside the WST branch and thus cannot be reconstructed for PC, notwithstanding the existence of this root elsewhere in Afroasiatic. The question remains open whether this *d-m root is actually a PC form that was preserved only in the WST and lost in the other branches or whether it is a more recent WST innovation.

11. blow **fi*
(1) S. *fi*, R. *fu*²; (2) Br. *fi*, Lo. *fa*; (3) Tm. *po*.
12. body **zi*
(1) B. *ziiwo*, Z. *hli*; (2) Gi. *zu*, Mg. *si*; (3) D. *zii*, Tm. *hig*.
This word, like the word 'mouth', commonly occurs with a *ki* suffix as seen in H. *jikii*.
A BM-A innovation was the replacement of the PC form by a root *(*g-*)*va*.
13. bone *'*Ja*₄*u*
(1) S. *dyes*, W. *k'aasu-na*; (2) Br. *dyehlu*, T. '*gəhl*'; (3) Jg. *aso*, Nc. *ese*; (4) Zm. *so*.
14. bow (n.) **ɾəga*
(1) A. *ri*, K. *ɾəha*; (2) Bc. *ragey*, Hi. *ligyi*.
Assuming that this etymology is valid—there is the possibility that it is an early loanword—it is remarkable in being the only reconstruction in this list with initial **ɾ*.
15. break₁ **ba*₁*hlə*
(1) B. *bolu*, H. *balle*, Pa. *bahlu*; (2) M. *bal*, Mf. *ba*₁*hl-*.
16. break₂ **fa*₂*ə*
(1) H. *fasaa*; (2) G. *fohl*, M. *po*₂*hlə*; (3) Tm. *paj*, Ke. *pese* 'hatch'.
17. break₃ **ka*₃*hlə*
(1) H. *karyaa*, R. *ngyel*, N. *ka*₃*hlə*; (2) T. *wu*₃*hlə*, Gd. *ngəhlə*.
18. breast, milk **wə*₄*di*
(1) Ki. *wudi*, S. *wur*; (2) T. *wudi*, Bc. *wadin-tə*; (3) Mk. *udu*, So. *wat*.
19. brother, friend **mahl-*
(1) A. *mwol*, K. *mol*; (2) T. *məhl-*, Mt. *mahli*.
20. buffalo, bush-cow **kə*₂*bən*
(1) K. *kimme*, Du. *kabən*; (2) T. *ngəbən*, Gs. *gubən*; (3) Mb. *kibeni*, Tm. *gun*; (4) Ms. *a*₂*fun-ta* (?).
21. buy **masə*
(1) H. *musaayaa* 'exchange', N. *masə*; (2) T. *masa*, Br. *masə*.
22. calabash **d'-ka*
(1) Tg. *dəgo*, Ki. *kodə*; (2) T. *dəka*; (3) D. *dəka*.
23. call **wa*
(1) P. *yo*; (2) T. '*ga*, Bc. *wa*; (3) Mb. *waa*, Tm. *wəg*; (4) Mu. *yi*.
Compare no. 4 'bear, give birth', for which an identical reconstruction is provided.
In Mubi, the two words constitute a minimal tone pair suggesting that this could have been the case for PC, although I doubt it. More probably the words were either homonyms or else one or the other reconstruction is faulty in detail.

24. carry *kənɔ
(1) H. *kai*, N. *kakənɔ*; (2) Bc. *ngurɔ*, Br. *kəl*; (3) Tm. *gəŋ*.
25. close/cover *fu
(1) Ge. *fee*, Kl. *fu*; (2) T. *mbu*, L. *fo*; (3) Mk. *app-*.
26. come₁ *(-)sɔ
(1) R. *yes*, Z. *hlɔ* 'go'; (2) Bc. *shi*, Mf. *s-*, Ko. *soo* 'enter'; (3) D. *ase*, Mi. *as-*.
27. come₂ (imperative) *ya
(1) H. *yaa-ka*, K. *wo-ko*, N. *ye-n*; (2) Bc. *hwa*, Sk. *yo*, Lo. *awa*.
In all of the citations this is a special suppletive imperative form and not the ordinary verb 'to come'. This must also have been the case in PC.
28. cook *da
(1) P. *to-jo*, Bm. *ti*; (2) Gd. *da*, L. *d-*, Mg. *da*; (3) Jg. *tewo* 'cooked'.
29. cough *'Jahla
(1) N. *aahla*, W. *aihli*; (2) M. *'wuhla*, Hi. *'gyahla*; (3) Mb. *icca*, Tm. *aj*; (4) Ms. *ʔohl*.
30. cow *hla
(1) K. *la*, N. *hla*; (2) T. *hla*, Mg. *hlay*; (3) Nc. *si* 'ox' (?).
My guess is that Hausa *saa*, fem. *saaniyaa*, is not a reflex of this proto-form, as is usually thought, but rather is a more recent loanword, perhaps from Tuareg (cf. Gouffé 1974).
31. crocodile *kəɖəm
(1) B. *kadam*, Bd. *ɔgdəm-ən*; (2) Br. *ngɔləm*, Mn. *cərwɔ*; (3) Ke. *kim*; (4) Ms. *hurum-ma*.
In subbranch BM-A of Biu-Mandara, PC *kəɖəm was replaced by *kənɔm. This was a lexically specific change and not an instance of a general phonological change. Note that the Masa citation supports the reconstruction of the original PC form with intervocalic *d*; otherwise the Masa word would now appear with an *l*, its normal reflex of proto **ɔ*. The Ngizim word *kaɣam* is interesting in that it is a borrowing from Kanuri, which at an earlier stage must have borrowed the word from some Chadic language.
32. cure *kənɔ
(1) K. *janɣi*, Z. *wukɣ* 'medicine'; (2) T. *kənɔ*, Br. *kuri*, L. *ɣwini* 'medicine'.
33. cut *hla
(1) P. *la*, Z. *hla*; (2) T. *hla*, Gd. *la*.
34. die *mətɔ
(1) H. *mutu*, N. *mətɔ*; (2) T. *mədɔ*, M. *mtɔ*; (3) D. *mate*, So. *mita*; (4) Zm. *mat*.
35. dislike, not want *sɔ
(1) R. *sha*; (2) T. *hlɔ*, L. *hl-*; (3) Mb. *ese*.

36. do *yɔ/*cɔ

(1) H. *yɪ*, P. *yu*, Pa. *ayo* (verbal noun); (2) M. 'yɔ, Cb. *ya*, T. *cɔ*; (3) Jg. *yɪ*, Ke. *jəɔ*.

Although the examples with initial *y* are numerically predominant, the reconstruction with *c has the advantage of making it possible to relate all of the citations by natural phonological processes that could have been repeated independently in the different branches.

37. dog *kɔɾ-

(1) H. *karee*, R. *kyara*; (2) L. *kɔre*, Hi. *kɔle*; (3) Nc. *gare*, Tm. *ga*.

In Hausa, *y* not *ɾ* is the normal reflex of PC *ɾ. Two alternative explanations can be offered for the citation here: (a) *karee* < **karne* (cf. the pl. *kañnai*) in which environment the *ɾ > *y* change was blocked; or (b) *karee* is a loanword and not a direct survival of the PC form. The PC reconstruction as such, however, seems well established on the basis of the citations which are both numerous and which conform to regular sound laws (e.g. *ɾ > *l* in Higi, or *ɾ > *ɸ* in Tumak). Nevertheless, one cannot discount the possibility that we are dealing here with a widespread, early loanword and that the true PC word for dog was something like **ada*, as exemplified by Kk. *ada*, Bd. *j-aan*, and Mu. *di-na*.

38. dream *sɔwnɔ

(1) P. *cuna*, N. *saunɔ* (vb.), *suwan* (n.); (2) Br. *sunɪ*, Lo. *suwane*; (3) Mb. *suno*, Nc. *sune*. Compare no. 116 'sleep'.

39. drink *sa

(1) H. *shaa*, Pa. *sa*; (2) T. *za*, Ko. *se*; (3) D. *sɛɛ*, Tm. *he*.

40. ear *sɔmi

(2) Hi. *hlɔme*, Lo. *hlɪmi*, Bu. *hamo*; (3) Mb. *sumaamu*, Nc. *sema*.

N/M treated 'ear' and 'name' (see no. 90) as a combined entry. As suggested by Hoffmann (1970), these words were distinct, though phonologically similar, in PC. In the WST branch, this PC form was replaced very early by a **k-m-* root, e.g. H. *kun-nee*, Kk. *kumo*, Bm. *kum-si*.

41. eat *ti

(1) H. *ci*, N. *ta*; (3) D. *tee*, Mb. *t-*; (4) Zm. *ti*.

This was the basic verb indicating 'to eat staple food'. In BM, this PC form was replaced by **zɔmɔ*, e.g. T. *zɔmɔ*, Br. *sɔm*, Bu. *hum*, an innovation not shared by the Masa group.

42. egg *asi

(1) P. *iji*, W. *suu-na*; (2) Pd. *hlihlya*, Mg. *ehle*; (4) Ms. *asi-na*.

43. elephant *gʷɔwan

(1) H. *giwaa*, Du. *giwɔn*; (2) T. *juwan*, Br. *cuwar*; (3) Mb. *gauyax*, Nc. *june*.

44. excrement *isi

(1) Kk. *ishe*, Bm. *yis*; (2) Mn. *shewa*; (3) So. *issi*, Ke. *k-usi*.

45. extinguish *(m)bətə

(1) Gm. *pít*, Kk. *mbutu*, Z. *mbətsə*; (2) T. *mbidə* 'to cool', Bc. *mburə*.

This is one of the rare PC words where a reconstruction with a prenasalized stop seems called for.

46. eye *idə

(1) H. *ɪdoo*, Z. *yir*; (2) Mn. *əcə*, Mt. *di*; (3) D. *odo*, So. *idi-m*; (4) Ms. *ir-nu*.

47. fill *n-(y-)

(1) N. *niyə*, W. *yanau*; (2) M. *nyə*, Bc. *na*; (3) Tm. *an*.

48. fire *aku/*ak*a

(1) N. *aka*, W. *kəwei*; (2) G. *waa-ta*, Mt. *akwa*; (3) D. *ako*, So. *oko*; (4) Ms. *aku-da*.

The *w-t- form reconstructed by N/M is a WST-A innovation and not a PC word. The phonetically similar *waata* found in Ga'anda, a BM language, can be analyzed as *wa* < **kwa* (by phonological weakening) plus a suffix *ta* used in the citation form of nouns—thereby invalidating the comparison with WST forms such as Hausa *wutaa*. The example points up the danger of basing reconstructions on isolated surface similarities.

49. fish *kərfi

(1) H. *kiiɸii*, Kf. *cerep*; (2) T. *yurvu*, Mg. *xiliɸ*; (4) Ms. *kuluɸ-ɸa*.

In the EST branch, this proto-form has been replaced by *k-s- in EST-A and *b-s- in EST-B, e.g. Sm. *gose* and Nc. *kusa*, but D. *boosa* and So. *busi*. The similarity between the EST-A forms and nearly identical items in the Ron group (e.g. R. *gushe*) is nothing but mere coincidence.

50. five *badə

(1) Kk. *baadu*, N. *vaad*, (3) D. *bɛɛdy*, Ke. *wiidw*.

51. fly, jump *pərə

(1) Gm. *p'aar*; (2) Cb. *ɸəla*, Db. *mbir*, Ko. *ɸəl*; (3) Mb. *bir*, Ke. *ɸaa* (?).

52. fly (n.) *diwa

(1) Kk. *diyau*, N. *juw-ak*; (2) Gs. *jijuw-ed*, Mg. *adway*; (3) D. *diwo*, Sm. *dou*; (4) Ms. *oro-na*.

53. forget *m-n(t)-

(1) H. *mantaa*, K. *mone*; (2) Bc. *myentə*, T. *mona*.

While the stem final *t* seems like a suffixal element, it has quite a wide distribution within the family.

54. four *ɸadə

(1) B. *poddo*, W. *ɸədi*; (2) M. *ɸwadə*, Db. *ɸwot*; (3) Mb. *ɸada*, Ke. *waadē*.

55. fry₁ *surə

(1) B. *surru*, H. *sooyaa*, Z. *wuhliɾ*; (2) T. *zurə*, Pd. *sula*.

56. fry₂ *kaw-

(1) Tg. *kaw-*, W. *kaw-au*; (2) Bu. *kawe*; (3) D. *ogiye*, Ke. *saawe* (?).

57. give *barə

(1) Kk. baru, N. barə; (2) T. vərə, Gs. vol; (3) D. bere.

58. go₁ *d-/*j-

(1) H. jee, H. daawoo 'come back', N. ju, N. dee 'come', Kk. ndu, S. ji 'come'; (2) Mf. dow, Ko. də; (3) Mb. nja, Jg. jawo; (4) Zm. də.

This word is extremely difficult to reconstruct with precision. One reason is that it is common in Chadic to find morphological and semantic shifting and overlapping among various verbs of motion: 'go', 'come', 'return', etc. (Compare Hausa, for example, where jee 'go' and zoo 'come' have come to be interpreted as a morphological pair although historically they were not.) Another reason is that the words 'go' and 'come' often have a number of grammatically determined variants within the same language. (In Ngizim, 'go/come' has three suppletive variants depending on tense/aspect among other factors (Schuh 1972a:17).) Finally, a problem is posed by the fact that the d/j alternation seen, for example, in the Hausa and Ngizim citations, cannot be discounted as a surface manifestation of low-level phonological rules, but rather must be viewed as a possible shared feature of real historical significance.

59. go₂ *d̥ə

(1) Ng. d̥e-tu 'come'; (2) T. d̥ə, M. d̥u 'migrate'; (3) D. aad̥e 'follow', Ke. d̥e; (4) Zm. 'ya 'leave'.

60. go out *pəta

(1) H. ɸita, Gm. p'et; (2) G. pəda, Db. put.

61. goat *a(w)ku

(1) H. ɤawaakii (pl.), Kf. ək, N. aaku; (2) M. ku, Lo. ogu; (3) D. awko; (4) Ms. ahu-na.

62. grass *gʷəzən

(1) Kk. gəzən, H. gaajii 'type of grass' (?); (2) T. wuzən, M. psar, Hi. gwezu.

63. grinding-stone *bəna

(1) K. buni, Z. vuun; (2) T. vəna, Mn. uvra, Gi. buna.

64. grow old *garə

(1) Ki. gaaro 'old', N. garə; (2) T. gorə, Gs. gal; (3) So. gue.

65. guinea-fowl *zaban

(1) H. zaaboo, N. zaabanu, Z. ɸlepm; (2) Gs. tsuvon, Lo. zawan.

A distinctive EST innovation is the replacement of the PC form by *z-p-l, e.g. D. zopulo, Tm. hibəl; cf. no. 140 'wash oneself'.

66. hair *gasi

(1) H. gaashii, W. gəzhi; (2) T. ɣos, Gl. guja; (4) Zm. ngisa.

67. head *ka

(1) K. koi, Gm. k'aa; (2) Ko. go, Gi. ki; (3) D. kaa, Ke. cə.

In Subbranch BM-A, PC *ka was replaced by a *g-n root, e.g. L. ɣan, M. kər. In subbranch WST-B, the PC form was replaced by *g-m, e.g. W. ɣam, Z. gaam. (I am assuming that this was a proto-WST-B innovation even though *g-m is no longer found in the Bade group.)

68. hit *hləb̥ə
(1) P. *lovo*; (2) T. *hlaḅə*, Mg. *hləḅ-*; (3) Tm. *ləb*, Ke. *laa*.
69. hole, pit *bək-
(1) Ki. *boyo*, Bd. *vək-ən*, S. *fun* (?); (2) Gs. *veg-ed*, Mn. *əvgə*; (3) D. *bee*.
70. honey, bee *ami
(1) H. *ɾamyaa* 'beehive'; (2) M. *ami*, Gs. *amam*; (3) Jg. *imo*, Tm. *də-m*; (4) Ms. *ayum-ma*.
71. hunger *maya
(1) N. *maya*, H. *yurwaa* (?); (2) Bc. *miya-tə*, Pd. *maya*; (3) D. *meya*, Tm. *may*; (4) Ms. *may-ta*.
72. hut, house *bən-
(1) B. *bono*, Z. *viin*; (2) Bc. *vəney*, Ko. *ḡən*; (3) Mb. *beni* 'build', Mk. *biino*.
73. if *(m)b-
(1) K. *bo*; (2) T. *mə* or *mbə*, Hi. *ma*; (3) Nc. *ma*.
74. in-law *s-ɾ-
(1) A. *siir*, N. *saur-ak*; (2) Bc. *sherwey*, Mg. *sula*.
75. kill *d-
(1) Z. *tsi* (?); (2) Mn. *ja*; (3) Jg. *d-*, So. *da*; (4) Ms. *ci*.
The *d-k- root for 'beat' found in the WST, e.g. Kk. *duku*, N. *təkə*, could be etymologically related.
76. knee *gəfu
(1) N. *kuḑu*, H. *gwiwaa*(?); (3) Jg. *giḑo*, Tm. *gub*; (4) Ms. *gigif-ḑa*.
N/M proposed two forms for 'knee': *F-ɾ-m and *k-ɾ-m. The former was probably an Angas/Bole innovation that spread to other WST languages in the same geographical area. The latter could be the PC word for 'to kneel', e.g. Kf. *kurum*, T. *kurumə*, although more citations are needed outside BM to justify such a reconstruction.
77. knife *ḑuk-
(1) Kl. *suk*, Ki. *shonge*; (2) T. *hlugu*, Mf. *hluw-ed*, Gi. *hloho*; (3) Tm. *hugən*.
78. know *sənə
(1) H. *sani*, Kl. *syen*; (2) T. *zənə*, Ko. *sən*; (3) Mk. *suuniyo*, Nc. *sen*.
The replacement of PC *sənə by *b-n- in the Angas and Bole groups (see Hoffmann 1970) is one of the shared innovations that characterizes this major group.
79. laugh *gamsə
(1) N. *gamsə*, Z. *gyomhlə*; (2) Br. *kumshi*, Gd. *ɾwəs-ən* 'laughter'; (3) Mb. *gamas-*, Tm. *gaj*.
80. left (side) *g-d-
(1) Ge. *gyadā*, W. *gadi*; (2) T. *gəḑau*, Bc. *lyegde*.

There is also a widespread *g-l- root for 'left', e.g. S. *kul*, Mf. *gula*, D. *geele*. However, since *l* in present-day languages is so often a reflex of some other consonant(s), it is difficult to know how to interpret these various *g-l- forms.

81. leg, foot *asə
 (1) R. *say*, Tg. *yo*; (2) Lo. *asə*, Mg. *azi*; (3) D. *ase*; (4) Ms. *ase-nu*.
 In BM-A, the PC form was replaced by *s-ɲ-, e.g. G. *sarə*, Br. *səl*.
82. lie down *xʷən-
 (1) K. *anu*, Bd. *xənə* 'pass the day'; (2) G. *xuna*, L. *xini*, Db. *wən*; (3) Mk. *kon-* 'sit'.
83. meat, animal *hlɔw-
 (1) Kf. *luwa*, W. *hluu-na*; (2) L. *hluwi*, Ko. *shu*; (4) Ms. *hliw-na*.
84. meet *g-mə
 (1) H. *gamu*, W. *gəmau*; (2) G. *kəm*, Gv. *gəma*.
85. monkey *bədi
 (1) Kk. *bədo*, N. *vəji*; (2) M. *pcu*, L. *vəji*; (4) Zm. *vir*.
86. moon *təra
 (1) Tg. *tere*, W. *cira-na*; (2) T. *ndəra*, Mn. *təra*; (3) Mb. *tiri*, Ke. *ki-tir*; (4) Ms. *til-la*.
87. mouse, rat *kusəm
 (1) Kk. *casəm*, Z. *kusən*; (2) Mt. *kwom*, Ko. *kusumu*; (3) Jg. *kumo*, D. *kumno*, Ke. *komom*.
 The medial *s* of the proto-form seems to have been lost independently in BM-A and in the EST branch.
88. mouth *ba
 (1) H. *baa-kii*, B. *bo*, Z. *vi*; (2) Db. *ma*, L. *ewe*, Mg. *ma*; (3) D. *bii*, So. *bo-*.
 The replacement of *ba by *ma is a distinctive BM innovation evidenced in both sub-branches. The Bade group forms with an initial nasal, e.g. N. *miya*, have to be treated as special cases which do not affect the general statement.
89. mud *tab-
 (1) B. *tebbi*, N. *tabo*; (2) Bc. *səbwe*, Ko. *ndabe*; (3) Tm. *dubo*.
90. name *səm
 (1) Kf. *sum*, Z. *sum*; (2) M. *hləm*, Hi. *hli*, Bu. *homu*; (3) Mb. *sami*, Sm. *sumo*;
 (4) Ms. *sam-ma*.
 Compare no. 40 'ear'.
91. neck *wəra
 (1) H. *wuyaa*, N. *wura*; (2) Bc. *wura*, Gi. *wul*; (3) Jg. *were*.
92. night *bədi
 (1) B. *bodi*, Bd. *əgveed-ən*; (2) Db. *vudu*, Lo. *vade*.

93. nose *atən

- (1) H. *hancii*, R. *atin*, Pa. *atən*; (2) M. *mcir*, Sk. *shin*; (3) D. *ete(n)*, Jg. *etento*;
 (4) Ms. *acini-nu*.

The etymology of the Hausa word is **atin* > **antin* (by insertion of an epenthetic nasal) > **antii* (by the general loss of final nasals) > **hantii* (by phonemicization of a feature of word-onset) > *hancii* (by automatic palatalization).

94. not *wa

- (1) K. *wo...u*, Pa. *wa*; (2) G. *w-...wa*, Hi. *we*; (3) Mk. *ye*, Tm. *ay*.

This was presumably the general PC negative marker used at the end of negative sentences. The connection, if any, between this proto-form and the extremely common *ba* negative, found for example in Hausa and Ngizim, is yet to be determined.

95. oil *mar

- (1) H. *mai*, Z. *mir*; (2) T. *mor*, Mf. *mal*.

96. person *mātu

- (1) H. *mutum*, Bd. *md-ən*; (2) Bc. *mure*, M. *mdə*; (3) Jg. *mito*, So. *mati* 'man'.

97. place *ba

- (1) K. *boi*, Kf. *pe*; (2) T. *ma*, Lo. *mba*.

98. pour *pə

- (1) Ge. *ḡuu*, N. *pa*; (2) M. *pə*, Gs. *pe*; (3) Tm. *pe*.

99. put *sə

- (1) H. *saa*, K. *wui*; (2) G. *sə*; (3) D. *ise*, Nc. *se*.

100. python *mādə

- (1) H. (Sokoto) *muuduwa*, B. *midī*, S. *mir*; (2) Gd. *myəd-ən*, Ko. *mudə*.

101. rain *ban

- (1) S. *ḡwan*, Z. *vwan*; (2) Hi. *va*, Mg. *ḡau*; (3) Jg. *boŋ*.

102. ram *gam

- (1) K. *gam*, Kl. *nzam*; (2) T. *gam*, Sk. *gammak*; (3) Nc. *gamge* (pl. of 'sheep').

103. refuse *kurə

- (1) K. *kuri*, N. *kurə*, Bm. *kəi*; (2) M. *ɪgəl*, G. *kar*.

Compare no. 24 'carry'.

104. return *ma

- (1) K. *mai*, Du. *ma-*; (2) Gs. *me*; (4) Zm. *mbu* 'come'.

105. ripen *nə

- (1) Kk. *nuu*, P. *ni*, W. *nau*; (2) Bc. *na*, Ko. *na*; (3) D. *nɛɛ*, Tm. *ni*.

In Newman (1975) I argued that the final vowel of Chadic verbs was lexically distinctive and not just grammatical as is commonly thought. The contrast between this verb and

the verb *na 'see' (no. 111) strongly supports this position. In some present-day languages, 'ripen' appears with an *a*, sometimes becoming homonymous with 'see'; but the comparative evidence taken as a whole shows that the two verbs must have been distinct in the proto-language and that the difference lay in the quality of the vowel.

106. roast, burn *b-kə
(1) H. *babbakee*, B. *bokku*, N. *bakə*; (2) Gs. *ʃok*, Mg. *ʃung-*; (3) D. *bike*.
107. root *ʒar-
(1) H. *say-waa*, P. *coori*; (2) G. *hlar*, Mn. *hlalwe*; (3) Nc. *sar-*, Ke. *kə-sar*.
108. rope *zawi
(1) N. *zayi*, W. *zhau-na*; (2) Hi. *zowe*, Gs. *zhew-ed*; (3) Tm. *ha*.
109. say *p-də/*p-ɾə
(1) H. *ʃadii*, Kk. *daʃu*, B. *poru*; (2) Br. *pəl*, Gi. *pəl*.
110. scorpion *(x)arda
(1) Bd. *wurj-ən*, Dir. *ariduwa*; (2) L. *arda*; (4) Ms. *hurduu-da*.
111. see *na
(1) Kk. *naa*, W. *nahau*; (2) T. *na*, Bc. *na*.
112. send *ʒənə
(1) N. *wana*, W. *cən-*; (2) Bc. *lyenə*, Lo. *hlən*; (4) Ms. *sun*.
Compare no. 150 'work', where the lexical difference seems to lie only in the quality of the final vowel.
113. shave *səkə
(1) A. *sak*, N. *səkə*, H. *askii* (?); (2) Mn. *səxə*, Bc. *sawə*, T. *xəzə* (?).
114. sheep *təmki
(1) H. *tumaakii*(pl.), W. *təmakway*; (2) J. *ndomox*, Mg. *adəmək*; (3) Mb. *tumak*, Nc. *damge*.
While the final *ki* can be analyzed as a suffix, its widespread occurrence in languages throughout the family indicates that it may already have been fused to the root for 'sheep' in the proto-language.
115. skin *zəm
(1) Gm. *shim*; (2) T. *kəzəm*, Br. *kisəm*; (3) D. *zaama*, Tm. *hum*.
116. sleep *s-n(-)
(1) P. *cən*; (2) Gi. *sini*, Lo. *san*; (3) Tm. *nun* (?); (4) Zm. *shene*.
N/M treated 'sleep' and 'dream' as a combined entry. I have given them separate reconstructions here even though it is very possible that these separate forms could be derivational variants of the same root.
117. smell *sunə
(1) H. *sunsunaa*, W. *səsən-*; (2) Br. *sur*; (3) Tm. *hunən*.

118. smoke *'Jan
(1) Bm. *oon*, W. *k'yanu-na*; (2) T. *'gən*, M. *'yar*.
119. spear *gas
(1) P. *kac*, N. *ngas*; (2) J. *gas*, Mt. *gwosh* 'knife'.
The word-final obstruent suggests that we may be dealing with an early loanword rather than with a true PC form.
120. spew, spray *pəsə
(1) Ki. *fishu*, Pa. *pəsə*; (2) T. *pəshə*, Bc. *fiisə*; (3) D. *beese* (?).
121. spit *təfə/*tufo
(1) H. *toofaa*, N. *təpkə*; (2) M. *ntəfə*, Lo. *tufo*; (3) Mb. *tufoa*, Ke. *tufo*; (4) Zm. *tufo*.
122. stand up *hla
(1) Ki. *laa*, N. *hla*; (2) L. *hl-*, Lo. *hla*; (3) D. *utye*, Ke. *luu* 'go up'.
123. stay, stop *dārə
(1) Kk. *'yaaru*, Bm. *dai*, H. *ts'ayaa*; (2) Mn. *dāl* 'climb', Ko. (Afade) *ts'arga*; (3) Mb. *dār*.
124. steal *xərə
(1) Kk. *curu*, N. *kərə*; (2) Gd. *xərə*, Br. *xəl*.
N/M reconstruct a root *m-*r-* on the basis of citations such as Gera *moorə* and Tera *muura*. My guess is that these *m-*r-* forms represent not another PC word but rather a reduced form of a *m-*x-r-* stem indicating 'thief', composed of an agential prefix *m- plus the PC verb 'steal'.
125. suck *səbə
(2) Bc. *səbə* 'drink', Mf. *asəb-*, Ko. *s'afo* (?); (3) Mk. *sib-* 'drink', Ke. *sobe*; (4) Zm. *sobo*.
126. sun, day *fati
(1) Kk. *fati*, Z. *fiitə*; (2) Db. *pic*, Mg. *futi*; (3) D. *pato*; (4) Zm. *futa*.
A diagnostic feature of the Bade/Warji major group is the shared loss of the *t* in this word, e.g. N. *afo*, W. *fai*.
127. tail *kətər
(1) Ki. *kitiri*, Bd. *uktər-ən*; (2) L. *xtiri*, Gi. *kutra*.
128. ten *g'am-
(1) H. *gooma*, N. *guuma*; (2) J. *gwom*, Ko. *karj*.
129. termite *gəhla
(1) R. *ngal*, W. *gwahlala-na*; (2) T. *gəhl* 'termite hill', M. *kəhla*; (3) D. *gudiyina* (?).
130. thirst *kəzəm
(1) B. *kəzəm*, N. *gəji*; (2) T. *xujum*, Ko. *skəm* 'hunger'.

131. this, that, the *d-

(1) H. *dī-n*, S. *dī*; (2) G. *dī*, *dā*, Mg. *dā*; (3) D. *edē* 'here', Tm. *dō*.

The glosses are not meant to be taken literally. They merely serve as a mnemonic for a PC deictic particle whose exact function and meaning are still to be determined. The entry acts as a reminder of the possibilities for reconstruction available in morphological domains outside the lexicon in the narrow sense.

132. three *k(*)ən

(1) Ki. *kunu*, N. *kwan*; (2) Sk. *makən*, G. *maxkan*, L. *xkəna*, Lo. *gakəra*; (4) Zm. *hindi* (?).

In almost all BM languages that have this root, one finds either a *ma* prefix, a velar prefix, or both. In the EST branch, the PC form has been replaced by a root *s-B-, e.g. D. *subba*, Ke. *soope*.

133. tie *g-nə

(1) A. *gyin*, Bm. *kaan*; (2) T. *gənə*, Db. *kən*; (3) Mb. *ewen* (?); (4) Zm. *jīn*.

134. tongue *ahləsi

(1) A. *liis*, Kl. *alush*, H. *harshee*; (2) Mg. *aləsi*; (3) D. *leese*.

The body-part prefix in the Hausa word is not *ha*, as suggested by Leslau (1962), but *a*, as seen in the Kl. and Mg. citations. The source of the initial *h* is explained in section 3.2(e) and in Newman (1976).

135. tooth *san(-)

(1) N. *yaanau*, Z. *shin*; (2) Pd. *hlira*, Ko. *shan*; (3) Jg. *sarjo*, Tm. *hin*.

136. tree *it-

(1) H. *ʔicee*, Kl. *yic-aw*; (2) L. *udzu*, Ko. *si*; (3) D. *eto*, Tm. *aru-nan* (pl.).

137. two *sər(-)

(1) Bd. *sərən*, W. *ma-sər* 'seven'; (2) J. *səre*, Gi. *sul*; (3) Mb. *siir*, Sm. *sir*.

A shared innovation of the WST-A subbranch is the replacement of this PC form by a *b-l- root (see Hoffmann 1970), e.g. H. *biyu*, Kk. *belu*, R. *apil*.

138. uncle, nephew *kən-

(1) K. *kən-ək*, S. *kən*; (2) T. *ṅənyin-ki*, Mg. *kəna*; (3) Tm. *gənwun* 'cousin' (?).

139. untie *pərə

(1) A. *ḡwin*, N. *ḡatkə*; (2) T. *pərə*, Ko. *ḡal*; (3) D. *ipire*, Nc. *pure*.

140. wash oneself, bathe *bəna

(1) B. *binaa*, H. *wankaa*; (2) T. *vənə*, Pd. *para*.

In the EST branch, the PC form has been replaced by *p-l-, e.g. Mk. *opil-*, Nc. *pele*; cf. no. 65 'guinea-fowl'.

141. wash something *c-ḡə

(1) K. *jobe*, Z. *tsop*; (2) T. *ciḡə*, Hi. *yabe*; (3) Mb. *cuubi*.

142. water *am

(1) Tg. *am*, N. *am*; (2) Sk. *iyam*, Lo. *am*; (3) D. *amay*, Tm. *nam*.

143. what? *mi/*mə

(1) R. *mi*, N. *ta-m*; (2) M. *mi*, Bc. *munə*; (3) D. *maa*, Nc. *me*, *mene*; (4) Zm. *mi*.

The vowel contrast seen in Hausa *mee* (in Sokoto, *mii*) 'what' and *waa* 'who' is reconstructable for PC. It is difficult to know what significance to ascribe to the scattered examples where this word has a second syllable containing an *n*.

144. where? *ina

(1) H. *inaa*, A. *ane*; (2) T. *ɣə-na*, Lo. *ina-ke*; (3) Ke. *ane*.

This etymology is much less certain than the ones for 'what' and 'who'. There may be a confusion here with the word for 'which', often found with a root **n*-, since a number of Chadic languages express 'where' not by a separate word but by the phrase 'which place?'.
 This etymology is much less certain than the ones for 'what' and 'who'. There may be a confusion here with the word for 'which', often found with a root **n*-, since a number of Chadic languages express 'where' not by a separate word but by the phrase 'which place?'.

145. white *p-()

(1) A. *pye*, H. *ɣarii*, W. *pyau-na*, Z. *ɣyali*; (2) M. *pərtu*, Lo. *pou*; (3) Mb. *ɣeret*.

This is one of those cases where the cognation of the various citations seems highly probable but the correct form of the PC reconstruction is difficult to ascertain.

146. who? *wa

(1) R. *wa*, N. *ta-y*; (2) M. *wa*, Bc. *wonə*; (3) D. *waa*, Nc. *wei*.

Compare no. 143 'what?'.

147. wing *p-k-

(1) H. *ɣikaafikii*, W. *pakə*, Bm. *pakap*; (2) T. *kopax*, G. *pəpax* 'feather'.

148. with/and₁ *də

(1) H. *da*, Kl. *tu*, Bd. *də*; (2) T. *ndə*, Gi. *dí*; (3) Mk. *ti*, Ke. *də*.

149. with/and₂ *ka/*ga

(1) B. *ga*, K. *ka*; (2) Bc. *ka*, Ko. *go*; (3) Jg. *ka*.

150. work *ɣəna

(1) N. *wana*, W. *cuna*; (2) T. *hləna*, Gs. *hləna*; (3) So. *ussan*; (4) Zm. *sin*.

Compare no. 112 'send'.

5. CHADIC LANGUAGE INDEX

The following index includes approximately 250 names culled from the literature on Chadic linguistics. The symbol = is used to indicate alternative (sometimes more precise, sometimes "incorrect") names for the same language. The phrase dial. of is used to indicate dialect variants or village names. The names taken as the primary designations for the approximately 125 different Chadic languages are identified according to the classification presented in section 1. Each language is identified as to its branch (indicated by a Roman numeral), its subbranch (indicated by a capital letter), and its group (indicated by an Arabic numeral). The notation II.A.4, for example, would indicate a language belonging to the Biu-Mandara branch, subbranch BM-A, and group 4, i.e. a language belonging to the Mandara group. Lower level subgroups and clusters are not indicated. Finally, the index also serves as a key to the abbreviation of those languages from which examples have been cited in the word list and elsewhere in the paper.

Afa = Pa'a		Breme <u>dial. of</u> Hurza	
Afade <u>dial. of</u> Kotoko		Buduma	(Bu) II.B.1
Alataghwa <u>dial. of</u> Lamang		Buli <u>dial. of</u> Polchi	
Angas	(A) I.A.3	Bura	(Br) II.A.2
Auyokawa (extinct)	I.B.1	Burru = Boghom	
Babur = Pabir		Butura <u>dial. of</u> Daffo	
Bachama	(Bc) II.A.8	Bwol <u>dial. of</u> Kofyar	
Bade	(Bd) I.B.1	Chakfem-Mushere <u>dial. of</u> Sura	
Balda <u>dial. of</u> Muktele		Chala = Ron	
Bana	II.A.3	Cheke = Gude	
Banana = Masa		Chena <u>dial. of</u> Guduf	
Barain	III.B.3	Chibak	(Cb) II.A.2
Barawa	I.B.3	Chikide <u>dial. of</u> Guduf	
Barke = Mburku		Chip	I.A.3
Baron = Ron		Chire <u>dial. of</u> Gabri	
Bata	II.A.8	Chonge <u>dial. of</u> Pero	
Baza <u>dial. of</u> Higi		Daba	(Db) II.A.7
Bedanga = Sokoro		Daffo <u>dial. of</u> Ron	
Bedde = Bade		Dangaléat = Dangla	
Bele	I.A.2	Dangla	(D) III.B.1
Bidiyo	III.B.1	Dari <u>dial. of</u> Zime	
Birgit	III.B.1	Daza <u>dial. of</u> Bole?	
Boga <u>dial. of</u> Ga'anda		Deno	I.A.2
Boghom	(Bm) I.B.3	Dera = Kanakuru	
Bokkos <u>dial. of</u> Ron		Dghwede	II.A.4
Bolanci = Bole		Dimmuk <u>dial. of</u> Kofyar	
Bole	(B) I.A.2	Diri	I.B.2
Boto <u>dial. of</u> Zaar			

Dirya = Diri		Gvoko	(Gv) II.A.4
Doga <u>dial. of</u> Migama		Gwandara	I.A.1
Doka <u>dial. of</u> Chip		Gwara <u>dial. of</u> Margi	
Dormo <u>dial. of</u> Gabri		Gwoza = Lamang	
Duwai	(Du) I.B.1	Hausa	(H) I.A.1
Fali of Jilvu <u>dial. of</u> Gude		Hide = Turu	
Fali of Kiria <u>dial. of</u> Higi		Higi	(Hi) II.A.3
Fali of Mijilu <u>dial. of</u> Higi		Hina ₁	II.A.7
Fali of Mubi/Vimtim <u>dial. of</u> Gude		Hina ₂ = Pidlimmdi	
Fali of Mucella <u>dial. of</u> Gude		Hitkala <u>dial. of</u> Lamang	
Fyer	I.A.4	Holma <u>dial. of</u> Nzangi	
Ga'anda	(G) II.A.1	Hona	II.A.1
Gabin <u>dial. of</u> Ga'anda		Hurza	II.A.5
Gablai = Kabalai		Jara	(J) II.A.1
Gabri	III.A.2	Jegu	(Jg) III.B.1
Gadang	III.A.1	Jeng = Nzangi	
Gala <u>dial. of</u> Warji		Jimbin	I.B.2
Galambu	I.A.2	Jino = Zumu	
Gamargu <u>dial. of</u> Mandara		Jipal <u>dial. of</u> Kofyar	
Gasi <u>dial. of</u> Kanakuru		Jonkor of Abu Telfan = Migama	
Gawar	II.A.7	Jonkor of Gera = Mokulu	
Geji	I.B.3	Jorto <u>dial. of</u> Kofyar?	
Gemjek <u>dial. of</u> Zulgo		Ju	I.B.3
Gera	(Ge) I.A.2	Kabalai	III.A.2
Gerka	I.A.3	Kajakse	III.B.1
Geruma	I.A.2	Kanakuru	(K) I.A.2
Gidar	(Gi) II.B.3	Kapsiki <u>dial. of</u> Higi	
Gisiga	(Gs) II.A.5	Karbo = Dangla	
Glavda	(Gl) II.A.4	Karekare	(Kk) I.A.2
Goemai	(Gm) I.A.3	Karfa	I.A.4
Gude	(Gd) II.A.8	Kariya	I.B.2
Gudu	II.A.8	Kera	(Ke) III.A.3
Guduf	II.A.4	Kilba	II.A.2
Gudur <u>dial. of</u> Mofu		Kirfi	(Ki) I.A.2
Gulei = Ndam		Kobochi <u>dial. of</u> Bata	
Gulfei <u>dial. of</u> Kotoko		Koenom	
Guruntum	I.B.3	Kofa = Mogum	I.A.3

Kofyar	(Kf) I.A.3	Mburku	I.B.2
Kola <u>dial. of</u> Daba		Mernyang = Mirriam	
Kotoko	(Ko) II.B.1	Mesme	IV
Kubi	I.A.2	Midah <u>dial. of</u> Logone?	
Kulere	(Kl) I.A.4	Migama	(Mi) III.B.1
Kulong = Marba		Mijivin <u>dial. of</u> Gisiga	
Kupto	I.A.2	Miltu	III.A.1
Kuri <u>dial. of</u> Buduma		Mirriam = Kofyar	
Kuseri <u>dial. of</u> Kotoko		Miya	I.B.2
Kushi = Chonge		Mod	III.A.1
Kwalla <u>dial. of</u> Kofyar		Modgel = Kwang	
Kwam <u>dial. of</u> Bole		Mofu	(Mf) II.A.5
Kwang	III.A.3	Mogum	III.B.1
Kyibaku = Chibak		Mokulu	(Mk) III.B.2
Lamang	(L) II.A.4	Monogoy <u>dial. of</u> Marba?	
Lame <u>dial. of</u> Zime		Montol	I.A.3
Lele	III.A.2	Mora <u>dial. of</u> Hurza	
Logone	(Lo) II.B.1	Mser <u>dial. of</u> Kotoko	
Mada	II.A.5	Mubi	(Mb) III.B.1
Mafa = Matakam		Muktele	II.A.5
Maha	I.A.2	Muleng <u>dial. of</u> Bata	
Mahwa	III.B.1	Mulwi = Musgu	
Makari <u>dial. of</u> Kotoko		Mundat <u>dial. of</u> Sha	
Malabu <u>dial. of</u> Bata		Musey	(Mu) IV
Mandara	(Mn) II.A.4	Musgoi <u>dial. of</u> Daba	
Mangar <u>dial. of</u> Ron?		Musgu	(Mg) II.B.2
Mangas	I.B.3	Musgum = Musgu	
Marba	IV	Muturuwa <u>dial. of</u> Gisiga	
Margi	(M) II.A.2	Muyang <u>dial. of</u> Mada?	
Margi West = Putai		Muzuk = Musgu	
Marva <u>dial. of</u> Gisiga		Mwaghavul = Sura	
Masa	(Ms) IV	Nafunfia = Shagawu	
Masana = Masa		Nancere	(Nc) III.A.2
Masmaje	III.B.1	Ndam	III.A.1
Matakam	(Mt) II.A.5	Ngamo	I.A.2
Mawer <u>dial. of</u> Tumak		Nggwahyi <u>dial. of</u> Putai?	
Mbana = Bana		Ngizim	(N) I.B.1
Mboku <u>dial. of</u> Hurza		Ngweshe = Gvoko	

Njai = Nzangi		Tobanga <u>dial. of</u> Gabri	
Njeny = Nzangi		Toram	III.B.1
Nkafa <u>dial. of</u> Higi		Truade = Dghwede	
Nyimatli = Tera		Tsagu	I.B.2
Nzangi	II.A.8	Tumak	(Tm) III.A.1
Ouldémé = Udlam		Turu <u>dial. of</u> Lamang	
Ourza = Hurza		Udlam <u>dial. of</u> Mada	
Pa'a	(Pa) I.B.2	Vame <u>dial. of</u> Hurza	
Pabir	II.A.2	Vemgo <u>dial. of</u> Lamang	
Paduko	(Pd) II.A.4	Vizik <u>dial. of</u> Lamang	
Pero	(P) I.A.2	Vulum <u>dial. of</u> Musgu	
Peve <u>dial. of</u> Zime		Wandala = Mandara	
Pia <u>dial. of</u> Pero		Warji	(W) I.B.2
Pidlimdi <u>dial. of</u> Tera		Waga <u>dial. of</u> Lamang	
Podok(w)o = Paduko		Wula <u>dial. of</u> Higi	
Polchi	I.B.3	Wurkun = Pia	
Putai	II.A.2	Yaghwatadaxa = Guduf	
Pyapun	I.A.3	Yamaltu = Tera	
Ron	(R) I.A.4	Yedina = Buduma	
Saba	III.B.3	Yiwom = Gerka	
Sarwa	III.A.1	Zaar	(Z) I.B.3
Sayanci = Zaar		Zaladva <u>dial. of</u> Lamang	
Sha	I.A.4	Zany = Nzangi	
Shagawu	I.A.4	Zeem	I.B.3
Ship = Chip		Zelgwa = Zulgo	
Shirawa (extinct)	I.B.1	Zime	(Zm) IV
Shoe <u>dial. of</u> Kotoko		Zulgo <u>dial. of</u> Mofu	
Siri	I.B.2	Zumu <u>dial. of</u> Bata	
Sokoro	(So) III.B.3		
Somrai	(Sm) III.A.1		
Sukur	(Sk) II.A.6		
Sura	(S) I.A.3		
Tal	I.A.3		
Tambas <u>dial. of</u> Fyer			
Tangale	(Tg) I.A.2		
Teel = Montol			
Tera	(T) II.A.1		

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Abbreviations:

- AM *Africana Marburgensia*
 Auü *Afrika und Übersee*
 JAL *Journal of African Languages*
 SAL *Studies in African Linguistics*

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