

THE NIGER-SAHARAN MACROPHYLLUM

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3 September, 2006

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Acronyms and Terminology

I have adopted the convention for reconstructions used in the Niger-Congo volume edited by Bendor-Samuel (1989), distinguishing those established by regular sound-correspondences from those derived by quick inspection of cognates. By this criterion, most major reconstructions are 'quasi-reconstructions' (inevitably). The effect of this is to translate the starred forms of various writers to hache '#'.

Acronyms for Main Sources

- * Reconstruction established from complete analysis of sound-change
 # 'Pseudo-reconstruction' established from quick inspection of cognates

| Acronym | Expansion or source | Reference or language treated |
|---------|---|-------------------------------|
| A49 | Abrahams (1949) | Hausa |
| A58 | Abrahams (1958) | Yoruba |
| Ag | Agheyisi (1986) | Edo |
| ALGCI | Mensah & Tchagbale (1983) | Gur |
| ALKCI | Hérault (1983) | Kwa |
| ALKrCI | Marchese (1983) | Kru |
| ALMCI | Halaoui, Tera and Trabi (1983) | Mande |
| B | Bender (1996) | Nilo-Saharan |
| B79 | Bender (1979) | Gumuz |
| B81 | Bender (1981) | Nilo-Saharan |
| Ba | Bailleul (1996) | Bambara |
| Ban | Banfield (1914) | Nupe |
| BC | Benue-Congo | |
| BCCW | Williamson & Shimizu (1968) & Williamson (1973) | Benue-Congo |
| Be | Bertho (1953) | Dogon |
| Bo | Boyeldieu (1987) | Fer & Yulu |
| Bo93 | Boyeldieu (1993) | Sara-Bongo-Bagirmi |
| BWK | Bernard & White-Kaba (1994) | Zarma |
| C | Consonant | |
| Cr81 | Creissels (1981) | |
| CB | Common Bantu | Guthrie 1967-71 |
| Chr | Christaller (1933) | Twi |
| CS | Central Sudanic | |
| Cy | Cyffer (1994) | Kanuri |
| D | Dimmendaal (1988) | Proto-Nilotic |
| DC | Ducroz & Charles (1978) | Songhay Kaado |
| E | Edgar (1991) | Maba group |
| EBC | East Benue-Congo | |
| ES | Eastern Sudanic | |
| G | Greenberg (1963) | |
| Gr | Gregersen (1972) | Kongo-Saharan |
| Gt | Guthrie (1967-1971) | Bantu |
| JI | Jungraithmayr & Ibrizimow (1995) | Chadic |
| KW | Kay Williamson (p.c.) | Ijoid |
| LS | Lamberti & Sottile (1997) | Cushitic and Omotic |
| M | Mukarovsky (1976/7) | Proto-Western Nigritic |
| Man | Manessy (1975) | Oti-Volta |
| Me | Meeussen (1980) | Proto-Bantu |

| Acronym | Expansion or source | Reference or language treated |
|---------|------------------------|-------------------------------|
| Mo | Moñino (1988) | Ubangian |
| N | Nasal | |
| NC | Niger-Congo | |
| NS | Nilo-Saharan | |
| P | Prost (1953) | South Mande |
| PB | Proto-Bantu | Meussen, 1980 |
| PBC | Proto-Benue-Congo | De Wolf, 1971 ¹ |
| PC | Proto-Cushitic | Ehret, 1987 |
| PD | Proto-Daju | Thelwall, 1989 |
| PEC | Proto-Eastern Cushitic | Ehret, 1987 |
| PEN | Proto-Eastern Nilotic | Vossen, 1982 |
| PI | Proto-Ijo | Williamson, in prep. |
| PK | Proto-Koman | Bender, 1983 |
| PM95 | Perrin & Mouh (1995) | Mambila |
| PM | Proto-Mande | Dwyer, 1989 |
| PN | Proto-Nilotic | Dimmendaal, 1988 |
| PNC | Proto-Niger-Congo | |
| PNGS | Proto-Niger-Saharan | |
| PNS | Proto-Nilo-Saharan | |
| PSN | Proto-Southern Nilotic | Vossen, 1982 |
| PVC | Proto-Volta-Congo | |
| PWN | Proto-Western Nigritic | Mukarovsky, 1976/77 |
| PWS | Proto-West Sudanic | Westermann, 1927 |
| R | Rottland (1982) | |
| RCS | Roland Stevenson mss. | Nilo-Saharan, Kordofanian |
| RMB | Author's fieldwork | |
| Sch81a | Schadeberg (1981a) | Kadu |
| Sch81a | Schadeberg (1981a) | Kadu |
| Sch81b | Schadeberg (1981b) | Heiban Kordofanian |
| Sch81b | Schadeberg (1981b) | Heiban Kordofanian |
| Sch94 | Schadeberg (1994) | Kadu |
| Sch94 | Schadeberg (1994) | Kadu |
| V | Vowel | |
| Vo82 | Voßen (1982) | Eastern Nilotic |
| Vo88 | Voßen (1988) | Maa |
| Vo97 | Voßen (1997) | Khoisan |
| W | Westermann (1927) | Western Sudanic |
| WBC | East Benue-Congo | |

¹His reconstructions deal with Old Benue-Congo, equivalent to East Benue-Congo in Blench's classification

...at the time of his compilation...the desire to astonish the World by the number and variety of Languages, and to supply materials to the builders of Philological Castles in the air, based upon words, brought together, and their fancied resemblance: with this object the compiler collected words from every part of Africa, not only of Languages, but of Dialectal Varieties of Languages, quotations from published works, or from manuscripts.

Cust (1883:27)

1. Introduction

From an early period, scholars have noticed a series of resemblances, both lexical and phonological, between the African language phyla today called Niger-Congo and Nilo-Saharan. As early as 1911, Westermann had joined the two together in his first synthesis of lexical data, *Die Sudansprachen* (Westermann, 1911). The outlines of an argument for the coherence of Niger-Congo may be traced to Westermann's (1927) *Die westlichen Sudansprachen*, while Nilo-Saharan was first recognised by Joseph Greenberg (1955). Edgar Gregersen (1972) put forward both morphological similarities and a series of lexical isoglosses as evidence for a macro-phylum for which he proposed the name 'Kongo-Saharan', to conjoin Niger-Congo and Nilo-Saharan.

Since then, the idea has gained ground although it would be an exaggeration to say it is widely accepted. Not all authors have agreed with the methods or evidence used to support the existence of such a large macrophylum. Boyd (1978) used the numerous overlapping glosses in languages from different phyla in northern Cameroun to question the methodology of classification. Cloarec-Heiss (1992), in a study of the shared isoglosses of Banda (Ubangian) and Central Sudanic has raised similar queries. Scholars such as Bender (1981) projected such a unification, although only hinting at the evidence. Blench (1995, in press a,b,c, d) has presented further lexical evidence as well as proposing shared phonological and morphological features. Since the publication of his 1995 paper there have been two publications that consider the Niger-Saharan hypothesis (Bender 1996; Boyd 1997)² as well as an important unpublished study Mikkola (*ined.*).

Niger-Congo and Nilo-Saharan are not themselves uncontroversial. The Nilo-Saharan languages stretch from Tanzania to Mauritania and isolated pockets of speakers are found in Upper Egypt. Nilo-Saharan has the distinction of being the 'youngest' of the world's language phyla to be identified; prior to Greenberg (1955, 1963a, 1971) there was no literature suggesting that a disparate group of languages stretching across Africa constituted a single phylum. Two competing reconstructions of its hypothetical proto-language have been published, Bender (1996) and Ehret (2001), which are strongly at variance with one another. There is no modern synthesis of Niger-Congo and no list reconstructions. We still depend on Westermann (1927) and the eccentric 'Western Nigritic' of Mukarovsky. Williamson & Blench (2000) is a defence of the unity of Niger-Congo but hardly a complete argument.

Two further issues are the implications for genetic classification of pan-African (or sometimes worldwide) roots. New research outside the Nilo-Saharan field has made possible more precise and wide-ranging transphylic comparison. One result of this has been the finding that a number of the proposed Niger-Saharan glosses are shared with Afroasiatic and even Khoisan and therefore cannot be used as evidence for a genetic connection. This suggests that proposals for large-scale language classification in Africa may be flawed by a failure to consider the transphylic distribution of many roots. The book gives some examples of such lexical items and argues for a more precise methodology of language classification in the light of this.

By the same token, the increase in availability of data on both phyla since 1972³ argues that it is now worthwhile to go beyond the merely speculative and make the project more concrete. Gregersen's

² Blench (1995) is referenced in these two sources but since neither author apparently read the paper in question their comments are of limited value and are not considered further here.

³ I am grateful to the participants at the VIth, VIIth and VIIIth Nilo-Saharan Conferences for helpful comments on preliminary versions of the papers synthesised here. Kay Williamson (†) was kind enough to read them before submission and suggested many helpful emendations. Lionel Bender, Bruce Connell, Didier Demolin, Chris Ehret, Nigel Fabb, Mikkola Pertti, Robert Koops, Ann Storch, Anbessa Teferra and Robin Thelwall have all made available unpublished data which is incorporated into the text of the book.

demonstration suggested that the lexical similarities in the case of certain basic items was more than could be accounted for by chance. However, he made no proposals for a genetic or historical schema to account for this situation. If Nilo-Saharan and Niger-Congo are to be put together then it should be possible both to list the common features at specific nodes that support the hypothesis. This in turn should provide a key to assigning one phylum to a specific place in the genetic 'tree' of the other.

In order to discuss the hypothesis, the text must refer to it before any proof is offered. This seems an appropriate point to propose a name for the macro-phylum, Niger-Saharan. Gregersen's 'Kongo-Saharan' has been occasionally used, but it joins together the two second terms in the conventional names and gives a misleading impression to non-specialists of the location of the families. Proto-Niger-Saharan would then be abbreviated PNGS to contrast it with Proto-Nilo-Saharan (PNS).

This book argues that Niger-Congo and Nilo-Saharan are genetically related and should be regarded as a single macrophylum. The working hypothesis is that Niger-Congo should be classified as a single branch of Nilo-Saharan. The evidence for this consists of phonological and morphological features common to both phyla, combined with lexical similarities. From these a genetic 'tree' for the proposed macro-phylum can be derived. Finally, some conclusions are drawn about the implications for prehistory. The lexical evidence is given in detail in Appendix 1. Appendixes 2-4 discuss certain glosses that have been proposed, but which have to be rejected for various reasons.

2. Methods

2.1 Introduction

Evidence for such a broad hypothesis comes in three forms, phonological, morphological and lexical. Gregersen discusses morphological similarities, especially t/k alternation, at some length, but without any compelling conclusions. This is partly because many of the particles and morphemes are extremely short; vowel correspondences are uncertain and the case becomes difficult to make. Nonetheless, the status of noun-class gender pairings in Niger-Congo has become clearer since Gregersen wrote, and there is a case for tracing the relevant affixes in Nilo-Saharan.

Morphology is often considered better evidence than phonological and lexical isoforms. Frequently, remnant morphologies are good evidence, as they are less likely to be borrowed. Arguments from phonology are the most problematic, since they depend on 'absence' arguments, i.e. phenomena deemed to be sufficiently rare in the world as to exclude or make unlikely their independent evolution in two adjacent phyla.

A major problem in the source material is the unevenness of available data. Niger-Congo is a far more coherent phylum with a useful number of lexical isoglosses and there is broad consensus among most researchers about its internal structure, as represented in Bendor-Samuel (1989). Nilo-Saharan is far more diverse and researchers have yet to clarify its exact membership, and are still far from agreeing on an internal subclassification. In the case of Niger-Congo, two major works of reconstruction, Westermann (1927) and Mukarovsky (1976-7) provide massive series of comparative data. No comparable published data series exist for Nilo-Saharan and there are no significant proposals for Proto-Nilo-Saharan forms.

A final methodological problem should be mentioned at this point; the probable existence of some pan-African isoglosses. To establish the status of the proposed lexical items they were also compared with Cushitic in the convenient form of Ehret's (1987) Cushitic reconstructions. There are a few striking isoglosses, most notably the word for 'fly/jump'. These are noted in the appendix and their methodological significance further discussed in section 5.

Trawling an immense number of languages for evidence of common roots, and often building on the suggestions of previous scholars, produces datasets that are essentially lookalikes. Critics of the type of datasets presented here (or indeed in similar enterprises) often misunderstand their function. The function of listing these is to suggest that the root is worthy of further investigation, not to claim that this is a historical reconstruction of a proto-form. For a start, no researcher compiling data for so many languages can be aware of all the potential loanwords that may obscure the picture. Similarly, it is easy to establish a principle that a

form should be representative of its group; but where the lexemes are diverse, the credibility of an individual citation is still an individual judgement. Schadeberg (1981a:294) in discussing Greenberg's assignment of the Kadu languages to Niger-Congo notes the problem of lexical diversity in even quite coherent linguistic groups in relation to the search for cognates.

2.2 Citing sources

Large-scale transphylic comparisons require large data tables, and inevitably draw on a wide range of materials. Earlier scholars, such as Westermann and Greenberg, did not cite a reference for specific lexical items and were in some cases cavalier about even giving a complete bibliography of sources. This is a long, tedious task, takes up considerable space and may have seemed unnecessary. Moreover, those who pioneer in a field need not heed the scholarly conventions of a less trustful age. But science is nothing if not about repeatability; we should be able to check the claims of historical linguists just as much as those of laboratory scientists. Language citations should therefore provide sources, and proto-languages, marked by starred forms, should be carefully evaluated. Where I have been unable to confirm other authors' cited attestations in the data tables below these are silently omitted. A recent volume on the reconstruction of the Nostratic macrophylum provides starred forms for the various phyla proposed as members of Nostratic (Bomhard 1994). These reconstructions are, however, those of the author and their justification is nowhere published although their similarities are essential to the Nostratic hypothesis being promoted.

2.3 Data selectivity

A serious accusation that can be lodged against this type of exercise is that of data selectivity. There are perhaps ninety languages within Nilo-Saharan and as many as 1600 in Niger-Congo. Critics can justifiably object that it would be surprising if lexical similarities could not be found across so wide a field especially if the latitude of semantic shifts is not constrained. This is particularly the case where borrowing may be a significant factor in lexical similarities. Cloarec-Heiss (1995) has demonstrated the intensive interchange between Central Sudanic and Ubangian languages and a similar pattern occurs in NE Zaire, where Central Sudanic and Bantu are common in bilingual situations. Kordofanian and Kadu languages have interacted over a long period, while Songhay and Mande have clearly undergone significant periods of overlap (Creissels 1981), and there may well be other cases in the past now obscured by population movement.

The consequence of this is that for a root to be arguably part of the common lexical fund of Nilo-Saharan and Niger-Congo it must be demonstrated;

- a) to be at least representative of the family it is representing
- b) to be widespread across families, especially in Niger-Congo and especially in families geographically remote from Nilo-Saharan

A common but problematic practice in this area is the citation of starred forms to represent families or even phyla. If such forms are based on the intensive reconstruction of a small group of well-studied languages this may have some validity, but generally these forms are quasi-reconstructions based on rapid inspection of purported cognates, and often the source is frankly mysterious. Thus Ehret (1998) cites starred forms for proto-Central Sudanic, the source of which is unclear. Only one reconstruction of Central Sudanic has been published (Bender 1992) but Ehret does not cite this and his forms do not agree with it. Bender (1996: 131 ff.) has a section titled 'items linking N-S and N-C' where he cites a number of forms for *N-C. These eschew the two major published sources (Westermann 1927; Mukarovsky 1976-77) and list forms not recognisable to scholars of Niger-Congo. Starred forms must therefore be treated with a considerable degree of scepticism unless their pedigree is well-established⁴.

⁴ Another common problem is that the 'Common Bantu' reconstructions of Guthrie (1967-1971) are frequently cited as Proto-Bantu. Guthrie did not intend this to be the case and many of these forms are demonstrably *not* Proto-Bantu.

2.4 Semantic credibility

Nilo-Saharan is probably the most fragmented language phylum in the world whose existence is generally accepted (Blench & Spriggs 1999). Beyond this lie only geographical (Australian, Papuan) and phonological groupings (Khoisan). A consequence of this is those who attempt reconstructions have few signposts as to credible semantic shifts, and the temptation to accept their own judgements is correspondingly greater. The consequence of this is that a high order of subjectivity creeps into cognacy judgements. Some examples of frankly mysterious semantics may be seen in Bender (1996) and Ehret (1998).

Bender

77 belly, inside, liver, outside, intestines, heart

79 follow, enter, exit, hunt, chase, dance, return, rise, turn

137 earth, country, land, ashes, down, dust, mud, sand, charcoal

Ehret

583 to drip, blood, sap, cold, cataract, tear, river, dew

551 to descend, to deflate, to be asleep, to trim lamp

550 husk, shell, fur, to slide under, to shovel up, hair pulled out in
fright, tweezers, hair, feather, to remove

A persistent theme of Bender's recent work on Nilo-Saharan classification has been the contrast with Ehret (e.g. Bender 1996) but to outsiders their approach to semantics seems quite similar. With semantic spreads of this order it is easy to imagine that large numbers of proto-forms can be reconstructed. Niger-Congo scholars have historically been much more conservative, allowing very limited semantic variability and this would appear to be a formula for creating reconstructions of more than ephemeral significance. It is useful to note, for example, that the coherence of almost none of the Niger-Congo sets established by Westermann (1927) have been questioned, although new evidence has suggested alterations to the reconstruction. This book will maintain the practice of extreme conservatism in permitted semantic changes.

2.5 Reconstructions upon reconstructions: houses of cards

The problematic nature of starred forms cited in phylum-level reconstructions is noted in §2.. This is compounded when such reconstructions are in turn built upon to produce an apical reconstruction. This is the case in Bomhard (1994) already noted, in Ehret (1995) and in Ehret (1998). Bender (1996) mixes individual language attestations, unsourced starred forms and morphologically analysed forms that seem to represent a common form rather than a reconstruction. This is of course acceptable if it based on published datasets; but these are missing in so many cases and we are asked to take the cited forms on trust. Without casting aspersions on individual linguists, the level of disagreement between researchers in both Afroasiatic and Nilo-Saharan reconstruction suggests that ensuring the quality of supporting evidence is paramount.

2.6 'Rules of engagement'

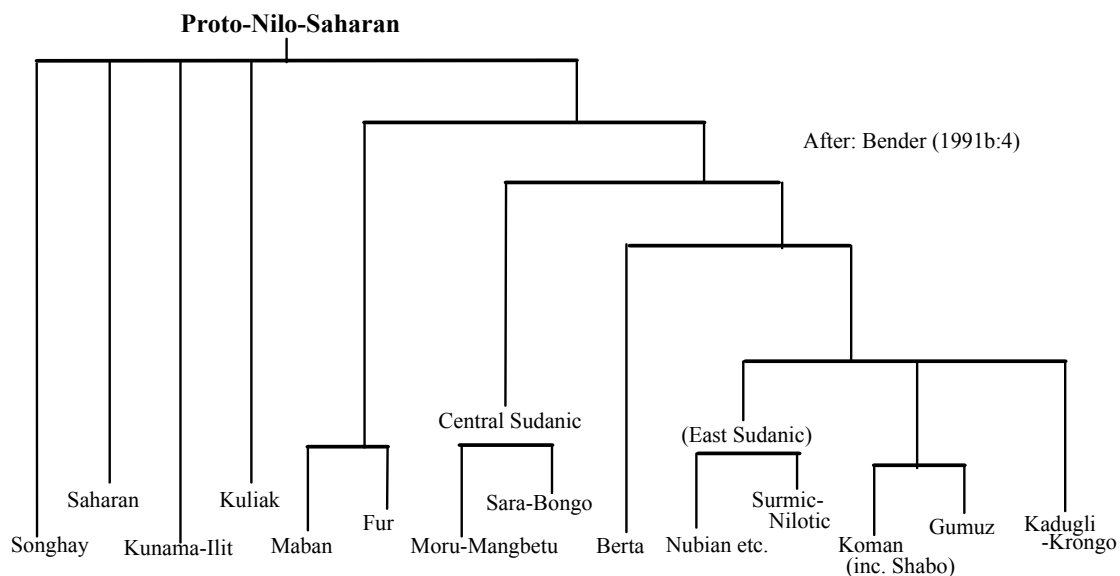
Niger-Congo is the largest and most complex language phylum on earth and satisfactory proposals both for its internal and external relationships depend on a secure grasp of the present state of its proposed subgrouping and the value of particular data sources. A feature of it that is perhaps perplexing to outside scholars is that no reliable (or indeed unreliable) list of proto-Niger-Congo reconstructions exists. Austronesianists, dealing with a phylum of nearly similar magnitude, can refer to Dempwolff (1938) or the massive electronic database maintained at Hawai'i by Robert Blust as well as databases for particular subgroups such as Polynesian, Micronesian or Oceanic. Although the details of Austronesian reconstruction remain the subject of scholarly debate, their outlines are sufficiently clear for them to be the focus of a consensus debate. But no such material exists for Niger-Congo, which presents a forest of data among which the unwary can pick and choose. It therefore seems useful to present some 'rules of engagement' as Benedict (1990) put it in the context of another phylum, Daic.

1. Since there are no published, justified reconstructions of Niger-Congo, any form cited should be treated with extreme scepticism. At best, such a form should be marked with # to mark 'quasi-reconstruction' and the * should be eschewed.
2. Most scholars consider Kordofanian to be the primary branching of Niger-Congo, but data on Kordofanian is exiguous at best and often old and/or unreliable. It is therefore unlikely that a credible Proto-Niger-Congo will appear in the near future.
3. Niger-Congo is extremely widespread and borders on all other African language phyla in a variety of socio-linguistic situations. Local cases of extreme bilingualism and hence borrowing in both directions should be treated as a likely scenario.

3. Existing Classifications

Westermann (1911) was content with demonstration of affinity and did not propose an internal structure for the 'Sudansprachen'. Greenberg (1966:130) sets out Nilo-Saharan with six co-ordinate branches. The most elaborate proposal for the subclassification of Nilo-Saharan is Bender (1991b, 1991c). Bender bases his classification on grammatical isomorphs and shared innovations. The details of the classification remain to be fully worked out, but the essential is a split between the outliers (Songhay, Saharan, Kunama-Ilit and Kuliak) and the remaining languages including the Sudanic languages, Nubian, Koman and the Kado (=Kadugli-Krongo) languages. Figure 1 shows Bender's proposed structure;

Figure 1. Conventional Subgrouping of Nilo-Saharan



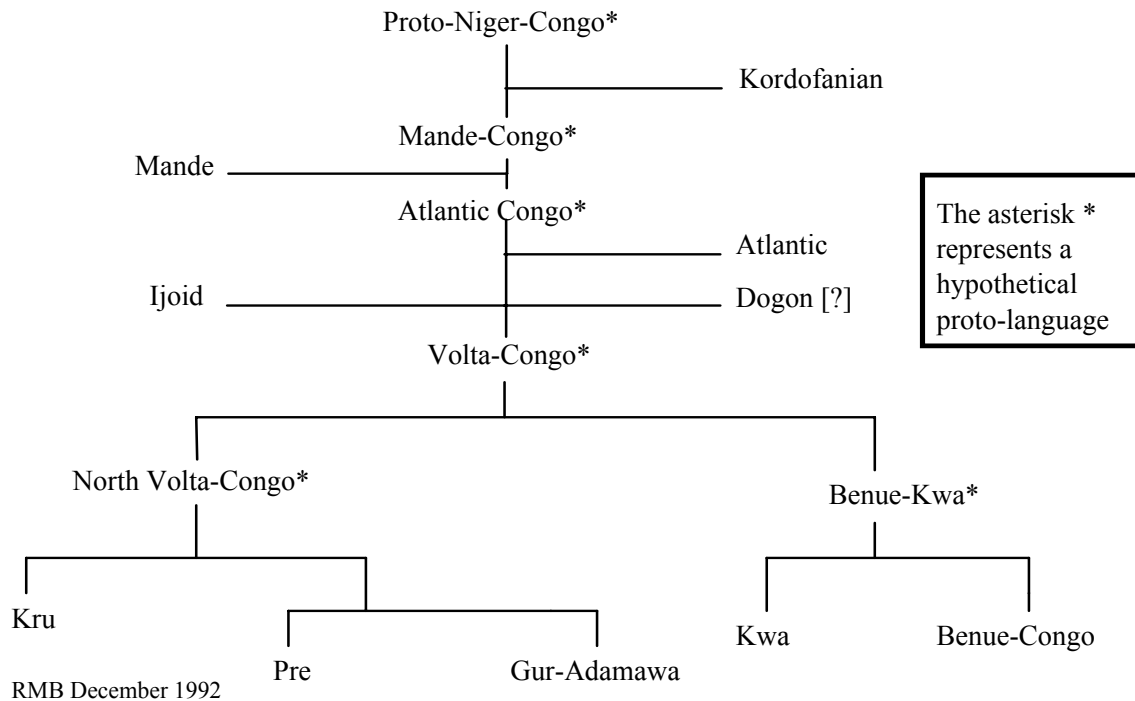
Bender includes the problematic Shabo in the Koman group following the arguments of Fleming (1991). A very different structure for Nilo-Saharan is proposed by Ehret (1989) but the evidence for this is still in the course of publication and is difficult to assess.

It is not the function of this book to consider the internal classification of Nilo-Saharan in detail but to try to show how it is related to Niger-Congo. To that end, the classification put forward (Section 6.) is definitely a minimalist hypothesis that leaves most of Nilo-Saharan unclassified and concentrates on the position of Central Sudanic.

One of the most interesting controversies in the history of classification relates to the Kado. Greenberg originally conjoined it with Kordofanian as the 'Tumtum' group but noted at the time that 'it shows considerable divergence'. In 1981, Schadeberg (1981a) questioned this classification and suggested a Nilo-Saharan affiliation. Matsushita (1984, 1986) was content to repeat Greenberg, but Dimmendaal (1987) argued this case in more detail after the publication of Reh's (1985) grammar of Krongo. Finally, Stevenson (1991) set out the case for Nilo-Saharan affiliation using unpublished lexical data. This argument is now generally accepted (i.e. in Bender, 1991b) although the closer affiliations of Kado are still uncertain.

The internal structure of Niger-Congo is broadly agreed, although doubt remains on the historical priority of several branches. Figure 2. shows the 'tree' of Niger-Congo, based on the contributions to Bendor-Samuel (1989) adapted and further developed on the basis of recent unpublished material.

Figure 2. The Principal Subdivisions of Niger-Congo



The most significant feature of this is that Kordofanian again becomes the primary branching of Niger-Congo, a reprise of Greenberg's original hypothesis. Although the links with the rest of Niger-Congo are still accepted, the weakness of much of the evidence presented by Greenberg has meant that Kordofanian is very much the Omotic of Niger-Congo.

4. Evidence

4.1 Phonology

There are two main pieces of evidence from the phonological inventory relating Nilo-Saharan and Niger-Congo; the presence of vowel harmony systems based on +/- ATR and the labial-velars /kp/ and /gb/. Both of these are sufficiently rare in the world's languages as to make their co-occurrence striking. However, it is also notable that they are strictly confined to particular sub-groups, suggesting that they can be reconstructed to proto-languages and that areal spread should not be invoked.

4.1.1 Vowel Harmony Systems

Vowel-harmony systems have been reported from a number of the language phyla of the world, most notably in Africa and in Ural-Altai languages (Comrie, 1981:59 ff.). In Africa, however, there is a very specific type of vowel harmony, usually characterised as Advanced Tongue Root (ATR) which contrasts with the labial harmony systems in Altaic. The phonetics of these systems have been described in some detail in Stewart (1967) and Lindau et al. (1972). The exact characterisation of these systems has been debated and Lindau argued that the feature would be better described as expanded pharynx.

It is not my purpose to discuss the phonetic interpretation of ATR but simply to observe that it is present in both Nilo-Saharan and Niger-Congo languages. The + or - ATR vowels most commonly form regular

parallel sets and these can usually be interpreted as erosion or reduction of an original 10-vowel set. The existence of original 5+5 systems is attested in both phyla which gives greater specificity to the claim that these systems are unique in the languages of the world.

The first attempt to compare the two phyla is Hall et al. (1974) which provides a useful table of examples of vowel harmony in Nilo-Saharan. However, their data was significantly defective, since they claimed these systems existed in various families where they are now known to be absent. In the case of Koman [Coman], the study by Bender (1983b) eliminates this possibility. Similarly, they suggest there are 'traces' of these systems in Saharan -recent work on Kanuri-Kanembu, such as Hutchison (1981) does not support this. Maba vowel harmony is not evident in work by Edgar (1989) or Nougayrol (1989). Finally, they say there is 'probably' harmony in Fur -again this now seems unlikely (Jakobi, 1990). After this slaughter of the innocents, three branches of NS are left with ATR vowel harmony, Central and Eastern Sudanic and Kadu.

Hall et al. (1974:258-9) and Williamson (1989a:23-4) have reviewed the evidence for ATR vowel harmony in the branches of Niger-Congo. In the case of Mande, there is now conclusive evidence for vowel harmony systems with nine vowels (Halaoui et al., 1983:39).

These are not recorded in this form elsewhere in the world⁵ and it would strain credibility to assume they arose independently. Their presence could be explained by areal diffusion except that their widespread attestation within specific branches of Nilo-Saharan makes it more likely that they should be reconstructed to the proto-phonologies.

Could a Vowel-Harmony System be Borrowed?

The short answer to this is that all aspects of language seem to be borrowable, but vowel harmony is relatively rare. Hall et al. (1974) cite the case of Somali (Cushitic), and note the vowel harmony in Tangale (Chadic), apparently recently adopted from Waja, a neighbouring Niger-Congo language (see Kleinewillinghöfer, 1991, for a more recent discussion). These cases are conspicuous by their rarity, however, and the general suggestion is that vowel-harmony systems are fairly resistant to borrowing.

Hall et al. (1974) argue for borrowing since they seem unwilling to entertain the hypothesis of unity between the two phyla. They posit the direction of borrowing was from Niger-Congo to Nilo-Saharan, although their argument is essentially historical and not linguistic. They point out that the period at which borrowing occurred must have been extremely remote and the effects would thus be synchronically indistinguishable from an ancient retention.

4.1.2 Labial-Velars

Two of the most striking phonemes characteristic of numerous African languages are the double articulations /kp/ and /gb/. A third, related phoneme, /ŋm/ is also found more sporadically in both phyla. These sounds are found throughout Niger-Congo⁶ and in Central Sudanic (but not in the rest of NS⁷) and they are absent from Afro-Asiatic and Khoisan and are otherwise extremely rare in the world's languages. Maddieson's (1984) compilation of the sound-systems of the world's languages lists only one example outside Africa, from the Pacific (although there are some others -see also Foley, 1986:61). Connell (forthcoming) has also reviewed the worldwide prevalence of labial-velars with similar results. In view of this, it seems to strain credibility somewhat to assume that the common presence of labial-velars in Nilo-Saharan and Niger-Congo is merely a coincidence and these very specific double articulations have simply turned up by chance in two adjacent language phyla.

⁵Hall et al. (1974:263) mention examples in Palaeosiberian and Nez Percé, but admit that these are not precisely comparable.

⁶Although in only one language, Katla, of the Kordofanian group (Schadeberg, 1989).

⁷One dialect of Songhay, Djougou, also has labial-velars (Zima, 1985) although these seem to be a local development from labialized velars, influenced by neighbouring Niger-Congo languages.

Apart from independent evolution, there are two possible explanations ;

- a) they were loaned into Central Sudanic at an early period from adjacent Niger-Congo languages (presumably Ubangian)
- b) they were formerly present in other NS groups but have been lost

It is unlikely that labial-velars were present in other branches but have all been lost without trace. An early loan from PNC into Central Sudanic cannot be discounted; only if there are other grounds for assuming that it is close to Niger-Congo can the explanation of a shared retention be adopted.

4.2 Morphology

4.2.1 Noun-Class Affixes

One of the principal reasons why Kadu (Kadugli-Krongo) was considered part of the Kordofanian cluster is the presence of alternating CV prefixes on nouns. Although Schadeberg (1981a) has argued that these cannot be compared directly with Niger-Congo since they play a role in a gender system, it is also true that some of them look remarkably similar to Kordofanian prefixes (op. cit, 299), especially to Talodi. However, the relatively low level of lexical similarity between Kado and Kordofanian and the absence of convincing parallels for the CV alternation elsewhere in Nilo-Saharan inevitably suggests the speculation that these arose from borrowing.

However, in Central Sudanic and possibly beyond there are distinctive traces of an affix system apparently similar to Niger-Congo. One of the most notable class affixes that surfaces almost throughout Niger-Congo is the *ma-* single gender for liquids or mass nouns (see Greenberg, 1966:10). In Kordofanian, the η - classes for mass nouns correspond to *ma-* classes in other branches of Niger-Congo (Black and Black, 1971:11, Schadeberg, 1989:72). For this reason, Williamson (1989a:42) proposed a labial velar as the original initial consonant of the affix. In the case of Niger-Congo class 6A, this would be * $\eta m\acute{a}$ -, giving the η - and *ma-* by different routes.

Gregersen (1972:75) discusses this point but provides no evidence for the *ma-* affix, mentioning only the presence of the velar nasal in some forms for water. However, Stevenson⁸ noted that the *ma-* is present as a affix in a number of Central Sudanic languages, as a marker of mass or as a collective. However, if the *ma-* is accepted as also present in Nilo-Saharan, then such a reconstruction of initial * ηm would seem to be problematic.

Table 1 compiles these examples from East Sudanic and some other branches of Nilo-Saharan;

⁸In an unpublished note found among his papers after his death. I am grateful to Roland Stevenson's daughter, Janet Ahmed, for access to his material. The forms cited have been checked where possible against published material, but some are clearly quoted from his own field data.

Table 1. Evidence for a ma- affix for mass nouns in Nilo-Saharan

| Language | blood | milk | water | beer | honey | oil | hair | salt |
|-----------------|---------|---------------------|--------|-------|--------|------|-------|------------------|
| CS | | | | | | | | |
| Bongo | tirama | màà | mìnì | | kamba | | | |
| Mödö | rómà | | mìní | | | | | mèlò |
| Yulu | máàs | | mèe(m) | | māāj | | | míl |
| Kresh | srámà | mbamba ¹ | | | imí | | | |
| Bagirmi | mosu | | man(e) | | | | | |
| Ngambay | mósə | mbà | màn | | | | | |
| ES | | | | | | | | |
| Majang | yéróm | | maw | | | | | mooi |
| Murle | | | maam | | | maal | iim | mele |
| Boya | | | mam | merte | | | | kóm ² |
| Shatt | taam-ic | mem | mma | | tum-ox | mit | | |
| Nyimang | | | | | | nyum | | |
| Temein | moniṭ | | muṭ | | | | | |
| Nuer | riem | | | mou | | | nhiem | |
| Bari | rímà | | | | | | | |
| Other NS | | | | | | | | |
| Gumuz | màhá | | | | | | | |
| Opo-Shita | c'əma | | | | | | | |

Notes:

1. The cognacy of forms with a prenasalised bilabial remains doubtful.
2. Probably an accidental resemblance, given the striking correspondence between Murle and Central Sudanic.

Examples of ma- outside Central and East Sudanic are somewhat thin and may perhaps be excluded as coincidence. The analysis of the m- as a remnant of a productive affix is its absence in cognates in closely related languages. For example, the Bongo word for water, *mìnì*, appears as *inì* in Baka. The attestations outside East and Central Sudanic may be genuine retentions, loans or accidental resemblances. If they are indeed regular cognates then this affix may be present through most of Nilo-Saharan.

4.2.2 Verbal extensions and plural verbs

A feature of certain branches of Nilo-Saharan that has frequently been noted is the existence of verbal extensions, particularly in East Sudanic. Although these are widely recognised to be a feature of Niger-Congo, and are presumed to reconstruct to Proto-Niger-Congo, an absence of recent work on these extensions has made it difficult to undertake transphylic comparisons. The section looks at verbal extensions in Niger-Congo and Nilo-Saharan and asks whether this is simply typological similarity or can cognate features be identified, and if so what implications this has for the structure of the Niger-Saharan macrophylum.

Niger-Congo is generally considered to have had verbal extensions that can be reconstructed to the proto-language (Williamson & Blench 2000). Verbs commonly end in suffixes that modify their meaning and often their valency, creating causatives, reciprocals, and the like. Voeltz (1977) claimed that some of these suffixes can be reconstructed to Niger-Congo level, and thus constitute evidence for its genetic unity. The evidence for this is less than perfect and depends largely on the existence of such systems in elaborate form in two branches, Atlantic and Benue-Congo (particularly Bantu). For other groups, there is clear evidence for an affix renewal process, making the elucidation of intra-phylum cognacy problematic at best. For Kordofanian, only a single language, Moro (Black & Black 1971) is known in any detail. Nonetheless, the widespread existence of extensions is generally accepted as evidence for their reconstructibility, despite the absence of the kind of detail that enables to accept Proto-Niger-Congo noun-classes.

Even this cannot be said for Nilo-Saharan; the two main sources that make claims for reconstruction do not focus on this area. Nonetheless, the clear presence of such forms in some Nilotic languages should alert us to

their likely more widespread presence. Bender (2000:63) sets out summary tables to support a verbal transitive/causative or factitive ('to cause s.o. to do s.t.') and a passive intransitive in his 'innovating group' (op. cit. 65). He points out that similar features can be established for Afroasiatic but argues that these are not cognate and thus the Nilo-Saharan features are evidence for genetic unity. Cyffer (1983) undertook to reconstruct Saharan verbal extensions which creates a useful precedent for a single branch of Nilo-Saharan.

A distinctive feature of Niger-Congo are plural verbs, i.e. verbs which require plurality in their subject or object, or which refer to multiple action. Such verbs are also widespread in Niger-Congo, either as part of the verbal extension system or as different lexical items. They are also present in Nilo-Saharan (e.g. Mbay see Keegan 1996 or Ma'di see Blackings 2000) but their distribution remains unknown. Khidir (2005) illustrates several examples of plural verbs in Beria (Zaghawa) a Saharan language. Newman (1990) has drawn attention to 'pluriactional' verbs in Chadic, and it would seem these are a metatypic borrowing from Niger-Congo.

All attempts to work with verbal extensions come up against a problem of fragmentary description. Unlike nominal affixes, which can often be elucidated through simple wordlist material, verbal extensions are unpredictable and often not used by the type of younger speaker who forms the typical informant. Therefore, they appear in more complete grammars, a monographic form that is in short supply for many branches of Nilo-Saharan. Nonetheless, in order to go beyond the merely lexical, an attempt will be made to pull together the material on verbal extensions that might support the case for Niger-Saharan.

4.3 The Lexicon

4.3.1 Shared lexical items

Establishing lexical isoglosses is essentially a matter of cross-comparing large compilations of data. There are three primary sources for suggestions, Westermann (1911), Gregersen (1972) and Creissels (1981). These have been checked, new materials added and compiled into data tables showing comparative series.

The situation for basic data in the case of the two phyla is very disparate. In the case of Niger-Congo there are two major works setting out comparative data tables, Westermann's (1927) *Westlichen Sudansprachen* and Mukarovsky's reconstructions of 'Western Nigritic' (Mukarovsky, 1976-7). Greenberg refers the reader to Westermann for the evidence of the unity of Niger-Congo. Both of these works have problems. Westermann excluded Ijò and Adamawa-Ubangian as well as Kordofanian, whereas Mukarovsky deliberately omits these languages and Mande (which he is alone in considering as related to Afro-Asiatic). Nonetheless, they represent major compilations of data which make possible comparisons of widespread roots.

Nilo-Saharan is much less well-served, despite a major expansion of publication in recent years. Greenberg's comparative series are inevitably the starting point, although his 'Chari-Nile' is now generally discounted. Bender (1981, 1989b) has begun the process of seeking out isoglosses, although only the case for pronouns is set out in full. There are, however, a number of individual studies that can be used to establish comparative series;

| | |
|-----------------|---|
| Songhay | Ducroz & Charles (1978), Creissels (1981), Nicolai (1984) |
| Kanuri | Lukas (1937), Hutchison & Cyffer (1990) |
| Maba | Edgar (1991) |
| Fur | Beaton (1968), Jakobi (1990) |
| Central Sudanic | Greenberg (1966), Bender (1992, ined.) |
| East Sudanic | Thelwall (1981), Dimmendaal (1988), Bender (ined.) |
| Kado | Matsushita (1984, 1986), Reh (1985) |
| Berta | Bender (1989) |
| Kunama | Castelnuovo (1950) |
| Komuz | Bender (1983) |
| Shabo | Fleming (1991), Teferra (ined.) |
| Kuliak | Fleming (1983) |

Creissels (1981) listed the many morphological and lexical similarities between Mande and Songhay to raise doubts about the division of Niger-Congo and Nilo-Saharan. These similarities are striking, numerous and clearly cannot be explained by chance convergences. However, Creissels' examples seem to conflate ancient loans and (assuming the hypothesis presented here is correct) shared retentions. For example, Creissels (1981:316) notes the similarity between Songhay *kúurú* and Mandinka *kùlu* for skin, hide. However, Gregersen pointed out in 1972 that similar forms were recorded widely through both phyla and that therefore this root is best regarded as reconstructed to a hypothetical proto-language (see Appendix 1).

This theme was further pursued by Nicolai (1984) whose study of the origin of Songhay listed many more 'rapprochements' between Mande and Songhay as well as systematically exploring the links with Saharan. More recently, Nicolai (1991) has established the comparison with Tamazhigt and claims that the language may have begun as Berber before being Mande-ised. The conclusion, that Songhay evolved as a creole used for intercommunication, certainly explains the deep penetration of loan-words, but the argument for dismissing the Nilo-Saharan affiliations is still opaque.

The lexical data is set out in Appendix 1. It is divided into two major sections; a series of general Niger-Saharan isoglosses and 'Congo-Sudanic' isoglosses. The evidence for Niger-Congo is generally presented in a more summary form, making use of existing reconstructions, *where these are supported by data tables*.⁹

4.3.2 Pan-African and global roots

There are certain words that have been previously suggested as possible isoglosses for Nilo-Saharan. However, these words are also spread in parts of Afro-Asiatic. They are therefore probable ancient loan-words and their tendency to 'jump' phyla argues that they cannot be used as evidence for genetic classification. Examples are 'fire', 'dog' and 'pig' (Appendix 2).

A comparison with reconstructions of Proto-Cushitic (Ehret, 1987) also produced a few common forms. The case of 'fly/jump' is especially striking as PC *pur- corresponds almost exactly to many NS and NC forms. There are two possible explanations, apart from coincidence;

- a) an early loan to or from PC
- b) a general tendency to form words for 'fly' in this way (cf. IE fly/volare) through sound-symbolism

The second explanation is more attractive in many ways, simply because of the extra-African parallels. Appendix 3 considers the evidence for words such as 'fly' and 'cough' in the perspective of external cognates. In the same way, Cushitic *fu 'blow' parallels forms in Niger-Congo, but it would clearly be dangerous to regard this as evidence for a macrophylum or even an early loan. The PNGS roots for 'knee' and 'tortoise' are also attested in Cushitic (see data tables). Since these do not appear to be Afroasiatic roots, they are most economically explained as loans into Cushitic, assuming that the dispersion and diversity of Nilo-Saharan is a reliable indicator of its antiquity.

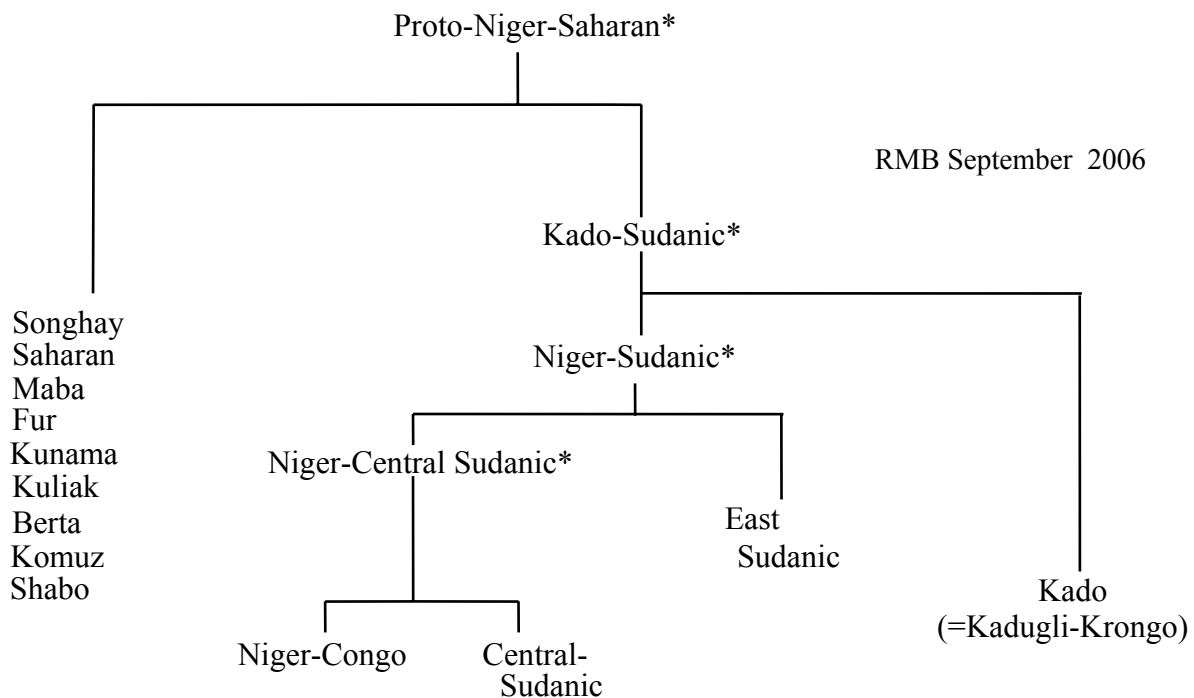
⁹As there are sometimes disagreements between scholars as to the correct reconstruction, reconstructed forms should not be used as direct evidence *unless* the data tables contain similar forms that can be consulted by the comparativist.

4.3.3 Semantic similarities

5. The Classification of Niger-Saharan

Assuming a Niger-Saharan phylum, Niger-Congo should then have split off from Nilo-Saharan at the same time as Central Sudanic which would then be the group closest to Proto-Niger-Congo. Excluding the branches further away from Niger-Congo, a minimal 'tree' of Niger-Saharan can be constructed as follows;

Figure 1. Proposed Niger-Saharan 'tree': Minimal Hypothesis



This tree makes no hypothesis about the internal classification of the left-hand (Songhai to Shabo) grouping.

6. Historical Implications

Two historical conclusions are implied by these hypotheses;

- a) the component families of Nilo-Saharan are significantly older than Niger-Congo
- b) the homeland of Niger-Congo is probably significantly east of its usual suggested site

Assigning dates to language phyla is notoriously problematic and certainly no mechanical method such as glottochronology is likely to yield significant results. Nonetheless, it is tempting to try to correlate major periods of language evolution with ecological change.

In the past 20,000 years, the two principal events in the eco-history of Africa have been the beginning and end of the Holocene, an epoch of prolonged aridity, usually dated 20-12,000 B.P (Street & Gasse, 1981). This probably implies a hunting economy based on highly dispersed populations and may well be reflected in the present-day scatter of Nilo-Saharan subgroups and the deep divisions between them¹⁰. Intractable

¹⁰The well-known 'Aqualithic' theory of Sutton (1974, 1977) fails because the evidence it uses is too late to apply to Nilo-Saharan.

remnant languages such as Ongota, Laal, Ndeewe, Kujarke, Hadza and Sandawe probably are all relics of this period.

Evidence for cultural practices from the PNGS reconstructions is fairly limited. 'Turtle' and 'frog' seem to be present at a deep time level, arguing the importance of riverine resources. Poor lexical data means that the potential to reconstruct pan-African fish species such as tilapia is limited. So far, it has not proved possible to reconstruct the names of any hunting implements into Niger-Saharan. However, there is the possibility that 'canoe' will reconstruct to Niger-Central Sudanic. If this is correct, then this node may be identified with the gradual improvement in the climate after 12,000 B.P. The bow and arrow, which appears in North Africa by 11,000 B.P., reconstructs convincingly back to Proto-Mande Congo and no further. Interestingly, there is no comparable reconstruction possible for the more scattered Nilo-Saharan, suggesting major dispersal took place before the technology spread south of the Sahara.

Previous writers, noting the concentration of families in West Africa, have tended to assume a location somewhere near the headwaters of the Niger and explained Kordofanian by the migration of a single group. If the present classification is accepted, it becomes far more likely that the homeland was in the centre of present-day Sudan and that Kordofanian represents the Niger-Congo speakers who stayed at home.

7. Conclusions

As more data become available, the case for Niger-Saharan is strengthened. However, the present lack of consensus on the internal structure of Nilo-Saharan makes it impossible to be sure that the roots which appear to be handed down to Niger-Congo are really PNS or simply a reflection of some internal branching. Similarly, there have been significant loans of fundamental vocabulary into Niger-Congo from Nilo-Saharan ('elephant' may be one of these) and these therefore do not constitute evidence for a macrophylum. Only further work on Nilo-Saharan will clarify these issues.

Evidence presented here further increases the likelihood of the Niger-Saharan hypothesis reflecting some facet of historical reality. Nonetheless, it also underlines a pervasive problem in historical linguistics, the impossibility of searching all external languages for cognates and the interpretation of such cognates if discovered. It is clear that some roots occur widely across the world's language phyla and that these either have a phonaesthetic source or reflect some deep historical relations as yet little suspected. There appear also to be Pan-African roots, scattered across African language phyla, whose sources are difficult to discern and which cannot therefore be used in the identification and classification of individual phyla. Some of these lexical items have been commonly cited in classificatory studies, and this therefore casts doubt on the volume of evidence supporting any given hypothesis.

The idea of a Niger-Saharan macro-phylum has been present in the background of African classification studies, but few scholars have made use of it, generally staying with the phyla proposed by Greenberg. However, the evidence for a Niger-Saharan now seems to be difficult to ignore. The argument of this book is Niger-Congo is the branch of Nilo-Saharan most closely related to the Central Sudanic languages. There is a parallel with Greenberg's placing of Bantu as a single branch of Benue-Congo and the initial resistance this excited from Bantuists. Researchers in both Niger-Congo and Nilo-Saharan must now consider the detailed implications of such a conjunction.

A wide-ranging hypothesis of this type should be viewed more as a stimulus to further research and revision than as a completed schema. There are still major gaps in the descriptive literature as well as an absence of detailed lexicons of some of the key languages. Moreover, as noted above, it is extremely difficult at this great time-depth to distinguish between true genetic affiliation and extensive borrowing. Nonetheless I hope this book will be considered a beginning.

Appendix 1. The lexical evidence

The following examples are set out to provide some justification for the tree proposed above. They are arranged in sets of Nilo-Saharan and Niger-Congo forms. Where a gloss has been discussed previously, I have referred to the authors in acronyms above the table. The table of acronyms preceding the introduction should be used with the glosses.

Where possible I have cited the reconstructions of Westermann (PWS) and Mukarovsky (PWN) as these direct the reader to a tabulation of numerous individual forms. I have tried to add forms from language families omitted by these authors -so for PWN I have tried to find Kordofanian, Mande and Adamawa-Ubangian attestations, whereas I have tried to add Kordofanian for PWS. I have also assigned their reconstructions to the relevant node on the Niger-Congo 'tree' -thus Westermann's PWS is assigned to PMC - Proto-Mande-Congo. Sometimes these authors did not uncover cognates in the families they did search and I have tried to add these. The references after each pseudo-reconstruction are to guide the reader to existing references -however, I have often replaced the citations proposed by these authors with more recent or more convincing examples.

Greenberg did not propose any speculative proto-forms and indeed it is sometimes difficult to imagine the shape of the item he proposes to link the individual forms. For ease of reference, I have proposed pseudo-reconstructions in the text, marked with a '#'.

Proposed Niger-Saharan roots are set out in the same fashion as published papers. Where a branch is not cited, it means either that I have been unable to find the lexical item in the sources available to me or that it does not appear to be cognate. All citations are referenced either directly or following the acronyms preceding the book. The entries are ordered by English gloss. The abbreviated references below, typically to Westermann and Ehret, simply indicate that a root of similar shape is noted by them, not that I in any way concur with their analysis. I have generally been very conservative with the semantics, and only admitted those shifts that are attested synchronically in present-day languages.

?C means I am doubtful of the cognacy of a particular item. The # reconstructions are definitely quasi-reconstructions meant to suggest the general shape of a root and subject to revision.

#-bV_kV 'arm, hand, shoulder'

| | | | | |
|----|---------|---------|--------|-----------|
| NS | Saharan | Zaghawa | ba | |
| NS | Berta | Berta | θa'bá | |
| NS | ES | Didinga | iba | |
| NS | CS | Bagirmi | boko | upper arm |
| NC | | *PWS | -buak- | |
| NC | Bantu | *PB | *-boko | |

Not apparently attested in Kordofanian where another root something like #-ŋin, identified by Greenberg (1966:153), is dominant. Creissels (1981:315) compares a set of words referring to a root #kamba which more commonly means 'shoulder', though these are probably distinct.

C.:315, Gr.:80, G:133)

#-bale 'two, twins' (Gr.:88,W.:204)

| | | | |
|----|----------|--------|------------|
| NS | Shabo | Shabo | bab(a) |
| NS | Komuz | Gumuz | mban |
| NS | Kunama | Kunama | baare |
| NS | ES | Nubian | bar (-si) |
| NS | ES | Teso | iba (-ɲit) |
| NS | Maban | Aiki | mbà |
| NC | Mande | Mwan | plɛ |
| NC | Atlantic | Nalu | bele |
| NC | Ijoid | Ijɔ | ma- |
| NC | | #PWS | #-bà- |

The persistence of the bVr/IV sequence through both phyla is especially striking. The prenasalised bilabial in C₁ position in both Gumuz and Aiki argues that this is an old NS feature. If the Ijoid forms are cognate then the nasality also survived into Niger-Congo. No attestation in Kordofanian at present. This is another term that seems to have been sporadically borrowed into Afroasiatic on both sides of the continent. Hoffmann (1970:4-6) notes that this seems to have been borrowed into proto-West Chadic with the lateral in C₂ position. Blažek (1990:37) in a tabulation of roots for numerals in Afroasiatic notes sporadic loans into Cushitic, for example, Saho *baray*. He also compares Osmotic words for 'other', such as Dime *bal* or Mocha *baro*, which is more questionable.

#buru. Hole, hollow.

| | | | | |
|----|---------|----------|-------------------|----------------|
| NS | Kunama | Kunama | aburr | |
| NS | Berta | Berta | ful | sound-hole |
| NS | CS | Mödö | 'bóró | hole in tree |
| NS | CS | Mangbetu | polo | |
| NS | CS | Ngambay | bòlò | hole in tree |
| NS | ES | Lango | bur | |
| NS | Saharan | Daza | bolo | |
| NS | Saharan | Kanuri | bururú | deep hole |
| NC | Ijoid | *PI | *opokolo | |
| NC | PAC | #PWN | -kholo- | 'hole, hollow' |
| NC | Gur | Buli | gor-o (-a) | |
| NC | BC | Nupe | gbòrǒ | |
| NC | BC | Lopa | ru-buuru | |

Greenberg cites 'boro' for Berta 'hole' a much more convincing cognate, but this finds no confirmation in Bender's (1989b) lexical data.

G.:122,140, G.:84)

#bulu 'white'

| | | | |
|----|-------------|--------|---------|
| NS | Saharan | Kanuri | b̄kl |
| NS | Berta | Berta | fuudí |
| NS | Fur | Fur | pota |
| NS | Maban | Maba | fàfàràk |
| NS | ES | *PD | *papaR |
| NS | ES | Nuer | bor |
| NS | Kado | Krongo | ofiro |
| NC | Kordofanian | Gom | abóré |
| NC | #PMC | #PWS | pù- |
| NC | Atlantic | Wolof | fur |
| NC | Mande | Mende | puru |

It is ironic that 'white' appears to provide a good PCS isogloss, while 'black' most certainly does not (see Appendix 3 'rejected forms'). Stevenson (1981:163) gives a number of useful comparative forms for Eastern Sudanic. Also used by Schadeberg (1981:297) in his discussion of the classification of Kadugli. Although Westermann does not reconstruct a second syllable a lateral in C₂ position his data shows it present in all branches of Mande-Congo.

G.:23,160, Gr.:88, W.:279

#deNe'tongue' (C.:316, G.:146, 159, Gr.:88)

| | | | |
|----|-------------|---------|----------|
| NS | Komuz | *PK | *let' |
| NS | Songhay | Songhay | dèenè |
| NS | Saharan | Kanuri | tá-lam |
| NS | ES | *PEN | *ŋa-dyɛp |
| NS | CS | Baka | ðèndèné |
| NS | Maban | Maba | delmi(k) |
| NC | Kordofanian | Talodi | loŋe |
| NC | Mande | Busa | léná |
| NC | | PWS | #-lima |
| NC | Bantu | *PB | *-deme |

The Koman forms are assumed to be a metathesis of the 'del' forms with d→t, whereas the initial laterals in Niger-Congo are presumably a weakening of d→l. The only confusing factor are the Saharan forms which raise the possibility of the deletion of the dV- prefix. This is one of the most satisfying PCS glosses as the word occurs in a remarkably similar form throughout both families.

#goro. Throat, voice, neck.

| | | | | |
|----|-------------|---------|------------------|----------|
| NS | Saharan | Kanuri | kówo | voice |
| NS | Fur | Fur | gɔrɔŋɔrɔŋ | throat |
| NS | CS | Aja | kɔrɔkɔ | |
| NS | CS | Logbara | ɔgɔrɔ | neck |
| NS | CS | PCS | #Gol~r | neck |
| NC | Kordofanian | Moro | lo-gor (pl. ŋo-) | throat |
| NC | BC | Gurmana | gɔrɔgɔrɔ | nape |
| NC | Adamawa | Mumuye | kórɔ̀ | windpipe |

Commentary: Reconstructed by Bender (1992:35) as an isogloss for Central Sudanic, but clearly a very widespread root. Williamson (1989b:253-254) gives a proliferation of forms within Benue-Congo.

#kaN- 'thorn' (D.:60, G.:126)

| | | | | |
|----|----------|----------|---------------|--------------------|
| NS | Songhay | Songhay | kardyí | |
| NS | Saharan | Kanuri | kalgî | |
| NS | Komuz | Anej | aak | |
| | | Twampa | káakà | 'sharp' |
| NS | ES | *PN | *ku-kua | |
| NS | CS | Mangbetu | koko | |
| NS | CS | Fer | kúŋ_ | épine |
| NC | Atlantic | Bedik | gɛ-kwósɿ | |
| NC | Gur | Seme | kəme | |
| | Gur | Gulmance | konkon-u (-i) | |
| NC | BC | Nupe | ekã | |
| NC | Bantu | *PB | -igua | (Bourquin,1923:45) |

This root was recognised by Greenberg as diagnostic for the Sudanic languages but not as a widespread NS root. Similarly, in Niger-Congo, there is no recognised reconstruction. Mukarovsky (1977, Root 171) has a somewhat different reconstruction #-ghwuni, which does however, retain the velar in C₁ position. There are scattered attestations of a nasal consonant in C₂ position in Niger-Congo as well as in Central Sudanic, making this a possible innovation at the Congo-Central Sudanic node.

#kaNa 'to count' (Gr.:81, D.:35, Williamson, 1989b:256)

| | | | | |
|----|---------|------------|--------|---------|
| NS | Songhay | Zarma | kabu | |
| NS | Kunama | Kunama | kala | |
| NS | Saharan | Zaghawa | kai | |
| NS | ES | Bari | ken | |
| NS | ES | Proto-Daju | *ŋgan- | |
| NS | CS | Fer | kílʼ | compter |
| NC | Kwa | Twi | -kàŋ | |
| NC | Ijoid | *PI | *kiẽ | |

This word later came to have the meaning 'read' in many languages.

#kili. Charcoal.

| | | | | |
|----|---------|---------|-----------|---------|
| NS | Komuz | Komo | k'is'is'i | ?C |
| NS | Saharan | Kanuri | kǎlgími | |
| NS | Maba | Maba | kikimi-k | |
| NS | Kadu | Tulishi | kiyâ | |
| NS | CS | Fer | kùl' | charbon |
| NS | CS | Bongo | kílílí | |
| NC | PMC | *PWS | *-kal- | |

This word clearly has a complex etymological history. Although the Maba forms are not necessarily directly cognate with the other #kili roots, the existence of the Kanuri form seems to link them. The probable history of this is that there are at least two separate roots in NS #kili and #gimi which were compounded in Kanuri. The Kanuri may also not be a true cognate, but have instead borrowed the first element from Niger-Congo. Westermann has attestations for the second syllable in almost every Niger-Congo family. This root also surfaces in Chadic, although it is likely to be a loan-word from Kanuri, on distributional grounds (Jungrathmayr and Ibrimiszow, forthcoming).

#ko 'to go' (C.:318, Gr.:83, W.:241)

| | | | | |
|----|---------------|----------|---------------|-----------|
| NS | Kuliak | *PK | *k'au or g'au | |
| NS | Songhay | Songhay | koy | |
| NS | Kunama | Kunama | ka | |
| NS | Maba | Kodoi | kəkɔ | |
| NS | Kado | Katcha | kɔlɔ | |
| NS | ES | Murle | akɔ | |
| NS | ES | Omotik | -kaawe | |
| NS | CS | Mangbetu | oku | 'go away' |
| NS | Saharan | Zaghawa | -ke | |
| NC | Mande | Sembla | kà | |
| NC | West Atlantic | Kissi | kɔ | |
| NC | PMC | #PWS | *kua, kualí | |

The set proposed by Westermann has almost exclusively a labial-velar in C₁ position and usually has a second lateral consonant. It may therefore be unconnected. Discussed by Fleming (1983:444) who adds additional Eastern Sudanic material.

#koro. Round, circle

| | | | | |
|----|-------------|---------|------------|------------------|
| NS | Saharan | Kanuri | korkór | circle |
| NS | Fur | Fur | kərola | round (pl.) |
| NS | ES | Nyimang | agwəɾɔŋ | circular |
| NS | ES | Murle | gorgor | round, spherical |
| NS | CS | Mödö | gúrúgúrú | in a circle |
| NC | Kordofanian | Moro | gereðeðo | to be round |
| NC | Kwa | Twi | kurukuruwa | round |
| NC | BC | Nupe | kuru | circular |

Stevenson (1981:157) first drew attention to the cognates of this form within East Sudanic languages.

#-kul-. House, single room (G.101,122, Gr.84, W.:244)

| | | | | |
|----|----------|---------|---------|----------------|
| NS | Komuz | Opo | ku | |
| NS | Maba | Mimi | kuluk | |
| NS | Saharan | Kanuri | kúrnuk | grass-roofed ~ |
| NS | ES | Dilling | kəl | |
| NS | CS | Yulu | gúù | |
| NS | CS | Kresh | koyo | |
| NC | PMC | #PWN | #-ku(a) | |
| NC | Mande | #PM | #koN- | |
| NC | Atlantic | Wolof | kör | |
| NC | Gur | Bariba | ku-ru | |

Both Greenberg and Gregersen put together the words for place and house into a single set. #ka for 'place' is certainly widespread in Nilo-Saharan, although there are no attestations in Niger-Congo. The two sets are provisionally separated in this reconstruction. The Proto-Koman *k^hub is confusing as a bilabial shows up nowhere else in C₂ position and suggests that this was added in Koman. Westermann (1927:244) did not reconstruct a lateral in C₂ but there are several dispersed examples in Niger-Congo that correspond to the Nilo-Saharan examples. I have added a nasal to Dwyer's Mande reconstruction as it is attested in various branches of Mande. Stevenson (1991:365) restricts his series to 'house' but reconstructs #-lá(k) and adds a set that is not necessarily related -Tama 'wal', Nyimang 'wel' etc.

#kulu 'knee' (B.:261, Gr.:82,84, G.:101,123, M.:II:223)

| | | | | |
|----|-------------|----------|-------------|-------|
| NS | Shabo | Shabo | hutu/kutti | |
| NS | Koman | Kwama | dugul | |
| NS | Koman | Opo | kwɔʝen | |
| NS | Berta | Berta | guʃuŋ | |
| NS | Kunama | Kunama | tùgà | |
| NS | Maba | Mesalit | kàdʝó | |
| NS | Fur | Fur | kùrù | |
| NS | ES | Kenzi | kur(ti) | |
| NS | CS | Mangbetu | kati | |
| | | CS | Aja | kuku |
| NS | Saharan | Zaghawa | kurru | |
| NS | Berta | Undu | guʃuŋ | |
| NS | Kadugli | Katcha | -kuge (nu-) | |
| NC | Kordofanian | Tima | kuruŋa | |
| NC | | #PWN | -kwudi- | |
| NC | Ubangian | Gbaya | gulu | |
| NC | Kwa | Ewe | kòlí | |
| NC | Bantu | *PB | -gudu | 'leg' |

Gregersen treats these as two distinct sets for leg and knee but they are probably to be put together and the more doubtful cognates discarded. Dimmendaal (1988:46) reconstructs Proto-Nilotic *kelı for leg, a semantic change that also took place in Bantoid (Blench and Williamson, in prep). Cf. also the Proto-Cushitic *gulb-/*gwilb- for 'knee' (Ehret, 1987:24) and also (more strikingly) *kuru for proto-Khoe (Khoisan) (Vossen et al. xx). Why this word should be so similar in so many parts of the continent is hard to explain. Even English 'knee' might be added -in other words a very widespread etymology.

#kum. Navel, belly.

| | | | | |
|----|-------------|---------|--------------|---------------|
| NS | Shabo | Shabo | j-ukuma (s-) | belly |
| NS | Kuliak | Tepes | gud | navel |
| NS | Komuz | Komo | kími | belly |
| NS | Fur | Biltine | duu pl. kutu | belly |
| NS | Saharan | Kanuri | kulók | hole of navel |
| NS | ES | Murle | keŋ | belly |
| NS | CS | Yulu | kūum | navel |
| NS | CS | Mödö | kúmú | navel |
| NS | Kadu | Katcha | kúllù | navel |
| NC | Kordofanian | Orig | kímí(sì-) | belly |
| NC | PMC | *PWN | -kwuna- | navel |

The Nilo-Saharan series is discussed in Stevenson (1991:365). One of the few series to include a possible Kuliak cognate. If Fleming (1991:395) is correct to connect this with liver in Shabo, as is suggested by the gloss for liver, 'cukuma', then Koman forms such as Opo c'okom also become part of the series. This is probably the same series as Westermann's (p.235) for 'belly' as many of his forms also have a nasal in C₂ position. Some Niger-Congo forms have a bilabial nasal, such as Diola e-kumfulot. Strangely enough, the other Koman lexemes giving Proto-Koman *buma more closely resemble the Niger-Congo root #pu (W.:258) although this is probably coincidence.

#-kan(d)i. 'firewood' (D.:41, M.:II:175, Williamson, 1989b:253)

| | | | | |
|----|---------|----------|---------|---------------|
| NS | Shabo | Shabo | konna | tree |
| NS | Kadu | Krongo | káádi | firewood |
| NS | Saharan | Kanuri | kəgəshi | (?C) firewood |
| NS | ES | Birgid | kan | tree |
| NS | ES | Surma | keən | trees |
| NS | ES | Pokot | kwəən | firewood |
| NS | CS | Ngambay | kír | firewood (?C) |
| NC | Mande | Kono-Vai | kon | tree |
| NC | PAC | #PWN | #-kuni | firewood |
| NC | BC | #PBC | #-kóni | firewood |

The Kadu form has /d/ in C₂ position throughout the group -assuming this form is cognate then a prenasalised dental must be reconstructed in this position. The gloss alternates between 'tree' and 'firewood' in both Nilo-Saharan and Niger-Congo. Williamson (1989b:253) observes that although this root is scattered through Niger-Congo as 'tree' it can mean 'firewood' or 'tree' within Benue-Congo.

#kur 'stone, hill' (D.:53, Gr.:87)

| | | | | |
|----|-------------|---------|-----------|-------|
| NS | ES | Nubian | kul, kur | stone |
| | ES | *PN | *kər | stone |
| | ES | Tama | kwura | stone |
| NS | Maba | Maban | kódó-k | stone |
| NS | CS | Fer | kòt | stone |
| | CS | Yulu | káj | stone |
| NS | Songhay | Songhay | guru | hill |
| NS | Saharan | Kanuri | kâu | stone |
| NC | Kordofanian | Ebang | k-əl (ɲ-) | stone |
| NC | Mande | Malinke | kulu | rock |
| NC | BC | Nupe | ta-kũ | stone |
| NC | Bantu | #CB | -gùe | stone |
| NC | Bantu | #CB | -gùdù | stone |

Neither Westermann nor Mukarovsky reconstruct the -ku element for Niger-Congo although Westermann remarked on it. In Benue-Congo it frequently appears compounded with the more common -ta. Ta- appears in at least one NS language, Fur, which has 'taru' for boulder. Gregersen (1972:87) appears to be the first to have collected the (admittedly scattered) attestations. Notice that the semantic association of stone and hill appears in Afro-Asiatic as well, e.g. Hausa *dutse*. Gregersen associates terms for 'testicle' with 'stone', a comparison also made in colloquial English.

#naN 'four' (D.:43, G.:18, Gr.:83, M.:II:283 ff.)

| | | | | |
|----|--------------|-----|------|----------|
| NS | | Fur | Fur | ɔŋal |
| NS | East Sudanic | | *PN | *(ɔ)ŋwan |
| NC | | PMC | *PWS | -nan- |

There appears to be no trace of this root in Kordofanian. C₂ in NC is sometimes a velar nasal.

#tum (G:136, W.:290) to build

| | | | | |
|----|---------|---------|----------|------------|
| NS | Songhay | Songhay | tyin [?] | |
| NS | Saharan | Kanuri | tando | |
| NS | Fur | Fur | tumu | |
| NS | Maba | Aiki | sim | construire |
| NC | | #PWS | tù | |
| NC | Bantu | #PB | #-tunga | |

A slightly uncertain root due to the small number of forms and their diversity in NS. Greenberg identified the Songhay form with a different NS root for build #-gana. This root acquired additional meanings such as 'push through' and 'sew' -perhaps connected either with sewing thatch or alternatively the construction of house-frames.

#-kub-. Bone (D.:33, G.:97[?])

| | | | |
|----|-------|--------|----------------|
| NS | ES | *PN | *kāw |
| NS | CS | Lokai | kwa |
| NS | CS | Kresh | kpɔkpɔ |
| NS | Kadu | Katcha | kùbà |
| NC | PVC | #PWN | -ku, kup, -kua |
| NC | Bantu | #CB | *-kupa |

The reconstruction of bone in Nilotic is discussed in Dimmendaal (1988:33) who notes that an alternative Proto-Nilotic reconstruction was proposed as *kyɔgɔ. Bender (1992:47) reconstructs bone for his Central Sudanic 'Core' group as #kpa, though some of his examples, such as Lokai, above, are very close to Nilotic. Stevenson (1991:363) also discusses this root and gives more examples of cognates in Nilo-Saharan. Kordofanian forms such as kús/sús (Orig) are probably not cognate.

Westermann (1927:238) proposes three separate proto-forms as labial-velars occur in root-initial position throughout all branches of Proto-Volta-Congo simultaneously with the #-ku(bi) forms. So far no attestations in Mande, Atlantic or Kordofanian, opening up the outside possibility of an ancient loan. Greenberg gives a cognate list for Eastern Sudanic with a dental in C₂ position, an improbable sound-change. However, the weakening of C₂ in Nilotic languages raises the possibility of a compounding process developing the 'new' root-form.

#mor- 'fat, oil, grease (D.:40,W.:257)

| | | | | |
|----|-------------|------------|-------|--------|
| NS | ES | Murle | more | |
| NS | ES | *PN | *mɔ-r | |
| NS | ES | Proto-Daju | *mwi- | |
| NC | Kordofanian | Talodi | ŋ-aag | (?C) |
| | Kordofanian | Moro | ŋela | grease |
| NC | PMC | #PWS | -mi | |
| NC | BC | Aten | mos | fat |

The analysis of this word is complicated by the fact that forms for mass nouns seem to turn up with m-affixes (see section 6). It seems uncertain that the Kordofanian forms are actually cognate. However, Kordofanian ŋ- classes for mass nouns seem to correspond to m- classes in other branches of Niger-Congo (Black and Black, 1971:11). The Moro form is thus more convincing as a possible cognate. Greenberg (1966:156) has another root for Proto-Mande-Congo, something like #-kpa, but his comparisons are only with Kadu languages.

#-doNa. to bite

| | | | |
|----|-------------|---------|-------|
| NS | Kadu | Tulishi | adɔŋâ |
| NS | CS | Ngambay | tó |
| NC | Kordofanian | Katla | lami |
| NC | Mande | Susu | dō |
| NC | PAC | PWN | #dum- |
| NC | Gur | Dagbane | dō |
| NC | Bantu | #CB | #dúm- |

This is a very widespread NC root, more commonly with a bilabial nasal in final position.

#nyi. tooth (B:258, G.:23, S.:1981, W.:267)

| | | | | |
|----|--|-------------|--------|--------------|
| NS | | ES | Birgid | jildi |
| NS | | Kadugli | #PKado | *-ini |
| NC | | Kordofanian | *PR | *-jɪŋ |
| NC | | | #PWS | *-ni, *-nin- |

Mimi 'nyain' (cited in Edgar, 1991:333) may be cognate, but the exact affiliation of Mimi is in doubt.

#(m)ba(CV). Female breast. (B:254, M.:II,25, W.:207-8)

| | | | |
|----|-----|-------|-------|
| NS | CS | Fer | kùmva |
| NS | CS | Ma'di | bà |
| NS | CS | Mödö | mbà |
| NS | CS | PCS | #-mba |
| NC | PMC | #PWS | #-bi- |

Found through most of Niger-Congo and throughout Central Sudanic. The restricted Nilo-Saharan distribution might be taken to show an early loan from Niger-Congo into Central Sudanic. Mukarovsky's citations show that there was a second syllable in the Niger-Congo root, perhaps with a lateral in C₂ position. Some forms, such as Limba hu-bili/ma- also hint at a nasal prefix, as in Central Sudanic.

#-pu 'ten'

| | | | | |
|----|--|-----|-------|-------------|
| NS | | CS | Yulu | kpúu |
| NS | | CS | Kresh | kpuu |
| NC | | PMC | #PWN | #-pi-, -pu- |

Stevenson (1991:367) proposes a set of NS cognates to connect with Kadu àdàbàgá but I do not think either that his series forms a set, nor are they cognate with this root.

#tarV word, to say (W.:283)

| | | | | | |
|----|--|-------------|------------------------|---------|--------|
| NS | | CS | Ngambay | tàr | word |
| NC | | Kordofanian | Moro | ata | to say |
| NC | | PAC | #PWS | tá- | sagen |
| NC | | Gur | 'Atjúló' ¹¹ | o-ta-re | word |

Not a very satisfactory root as there are limited Central Sudanic forms. Possibly just a coincidence.

¹¹Cited by Westermann -I am uncertain as to the modern name of this language.

#yetɪ. Canoe

| | | | |
|----|-------|-------|--------|
| NS | CS | Bongo | yéi |
| NC | PAC | PWN | #-yat- |
| NC | Bantu | CB | #-yátò |

This reconstruction is discussed by Williamson (1988:119) in connection with the prehistory of the Niger-Delta. If, however, canoe can be reconstructed still further back then the implications for aquatic dispersal are striking. It is curious that there are so few attestations in Niger-Congo, despite the convincing nature of the forms.

| 1. #bi | child | [give birth] | | | |
|--------|----------|--------------|-------------------------|------------|-------------|
| Phylum | Group | Language | Attestation | Comment | Source |
| NS | Kunama | Kunama | bi ¹² | beget | Gr |
| NS | ES | Daju Shatt | biei | small | RCS |
| NS | Saharan | Zaghawa | bùnù | seed | RCS |
| NS | Songhay | Zarma | búúnó | small | BWK |
| NS | Kadu | Talasa | ḡíḡa | child | Sch94 |
| NC | Mande | Guro | bi | child | P |
| NC | Atlantic | Serer | bi | child | W |
| NC | Gur | Mõõre | bíi-gá /-si | child | Man |
| NC | Ubangian | Ndunga-le | bíá- | child | Mo |
| NC | Kwa | Gonja | ébi | child | Rytz (n.d.) |
| NC | EBC | Reshe | ú-bi/ bá- | child | BCCW |
| NC | WBC | Edo | òvì | child | Ag |
| NC | Bantu | CB | bíad- | give birth | G |

Commentary: Although these semantic shifts are widely attested in Nilo-Saharan and Niger-Congo this root remains uncertain. No trace of this root has yet been uncovered in East-Benue-Congo with the single exception of Reshe (see commentary in BCCW, I). Since the Bantu form is apparently cognate, some further distributional work is clearly required. The Mande citation for Guro is exceptional, but –bi is commonly found in Mande for ‘small’.

Ref: Gr:81; M:20a; W:207.

¹² Not in Bender (ms.)

2. #biŋ to dance, sing, play

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|------------------|-----------|------------------------|-----------------------|----------------|
| NS | Gumuz | Sese | ḡeŋ | to dance | B79 |
| NS | Kunama | Kunama | b-¹³ | to dance | Ehret (ms.) |
| NS | ES | Lotuxo | bal-a | to play | RCS |
| NS | ES | Dese | bílá | to play, dance | RCS |
| NS | CS | Mangbetu | nð-ḡè | pl. kù- dance | Demolin (p.c.) |
| NS | Saharan | Teda | abi | pl. abea dance | Le Cœur (1950) |
| NS | Kadu | Talasa | aḡála | dance | Sch94 |
| NC | Mande | Ngain | bèō | dance | ALMCI |
| NC | Atlantic | Bedik | ḡulú | song | Ferry (1991) |
| NC | Kru | Neyo | ḡlī | sing | ALKrCI |
| NC | Senufo | Nabaj | vele | dance | ALGCI |
| NC | Ubangian | ‘Dongo-ko | ḡè- | dance | Mo |
| NC | Kwa | Baule | āblé | dance | ALKCI |
| NC | West Benue-Congo | Degema | ḡene | dance, play | Elugbe (1989) |
| NC | East Benue-Congo | Mambila | bene | dance | PMo |
| NC | Bantu | PB | #bín | dance | Me |

Commentary: #bin was originally proposed as an innovation by Bennett & Sterk (1977) to distinguish the non-Mambiloid Bantu languages. However, Williamson (1989b:258) noted a series of forms suggesting that it was probably BC. In both phyla this can often be the same word as ‘play’. Bender (1996:95) proposes a reconstruction #bUUŋ- that unites glosses for ‘run, go, jump, dance, descend’ but this is not adopted here.

Ref: Bennett & Sterk (1977); Ehret (ms. 279); Williamson (1989b:258); Bender (1996:95)

3. #ḡwoN come

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|----------|---------------|-----------------------|----------------|---------------------------|
| NS | ES | proto-Daju | *ḡoN | | RCS |
| NS | ES | proto-Nilotic | *ḡun | pl. *pḡ | D |
| NS | ES | Nuer | ben | | RCS |
| NS | ES | Padang Dinka | bḡ | | RCS |
| NS | ES | Mabaan | bēed | | RCS |
| NS | Fur | Fur | bo- | reach | Jakobi (1990) |
| NC | Mande | Guro | ḡo⁺ | | ALMCI |
| NC | Atlantic | Serer | bya | | W |
| NC | Ijọ | Proto-Ijọ | *ḡó | | KW |
| NC | Dogon | Ireli | ve | | Be |
| NC | Gur | Deg | bà | | ALGCI |
| NC | Adamawa | Waja | ba- | | Kleinewillinghöfer (1991) |
| NC | Kwa | Twi | bà | | Chr |
| NC | WBC | Igbo | -bīa | | Williamson (1972) |
| NC | EBC | Tarok | ḡá | | RMB |
| NC | EBC | Pe | bén | | RMB |

Commentary: Westermann (p. 209) noted that this word frequently shows up as a future auxiliary in Niger-Congo languages. Dimmendaal (1988:35) notes that the irregular plural *pḡ must be reconstructed to PN and forms with initial p- do appear elsewhere, hinting at a still greater time-depth. Palatalisation is scattered throughout Niger-Congo but nowhere forms a consistent pattern. Also in Chadic: Yiwom **bèl**, Kulere **bo**, Tsagu **bàà**, Tera **ḡa**.

¹³ Not in Bender (ms.)

Ref: Ehret (1998) 283; W:209

| 4. #deŋ- | | to cut, split | | | | |
|----------|-------------|---------------|-----------------------|----------|--------|--------|
| Phylum | Group | Language | Attestation | Comment | Source | |
| NS | ES | Maasai | a-dúŋ | | | RCS |
| NS | ES | Nuer | daäk | split | | RCS |
| NS | CS | Sara Ngambay | táⁿ | spit | | Bo93 |
| NS | Maban | Aiki | dèm | cut | | E |
| NS | Kadu | #PK | #deŋ | | | Sch94 |
| NS | Saharan | Kanuri | ré- | split | | Cy |
| NC | PWS | | #tèN | | | W |
| NC | Kru | Koyo | dè | | | ALKrCI |
| NC | Gur | Deg | téŋó | cut | | ALGCI |
| NC | Ubangian | Ngbaka | dē | with axe | | Mo |
| NC | Benue-Congo | Cara | tem | cut down | | RMB |

| 5. #-fil- | | rat/mouse | | | |
|-----------|--------|------------|-----------------------|-------------------|--|
| Phylum | Group | Language | Attestation | Source | |
| NS | Kunama | Kunama | fii'lá | Bender (ms.) | |
| NS | ES | Nera | fe | RCS | |
| NS | Kadu | Krongo | ní-fi | Reh (1985) | |
| NC | Kru | Tepo | plēp | ALKrCI | |
| NC | WBC | Edo | ò-fě | Ag | |
| NC | WBC | Igbo Etiti | ś-pà | Williamson (p.c.) | |
| NC | EBC | Buru | è-fyìn /e-fyín | Koops (p.c.) | |

Commentary: Discussed by Greenberg (1963:156) under 'mouse'.

Ref: G:156

| 6. #kVnV | | one | | | |
|----------|----------|-------------|------------------|-----------------------|--|
| Phylum | Group | Language | Attestation | Source | |
| NS | Kuliak | Ik | kɔn | Heine (1975) | |
| NS | Berta | Berta | killín | Bender (1989) | |
| NS | CS | Fer | kàl | Bo | |
| NS | CS | Mangbetu | kàná | Demolin (p.c.) | |
| NS | ES | Temein | kíḍoŋ | RCS | |
| NS | ES | Tama | kwur | RCS | |
| NS | ES | Maiak | kèl | RCS | |
| NS | Saharan | Zaghawa | lakò | RCS | |
| NS | Kadu | Mudo | kóttok ?C | Sch94 | |
| NC | Mande | Bambara | kélén | Ba | |
| NC | Atlantic | Diola-Fogny | yekon | Carlton & Rand (1993) | |
| NC | Ijò | P-Ijoid | *kàní | KW | |
| NC | Ubangian | Nzakara | kílí | Mo | |
| NC | Kwa | Twi | èkś | Chr | |
| NC | BC | Fyem | kèŋ | Nettle (1998) | |
| NC | BC | Gaa | akina | RMB | |

Commentary: Not identified by Westermann, but proposed in Armstrong (1964:52) and expanded in Williamson (1989b:255) for Benue-Congo.

Ref: Armstrong (1964:52); Williamson (1989b:255);

7. #kui die, kill

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|----------|--------------|-------------|----------|---------------|
| NS | CS | Fer | kùr | death | Bo |
| NS | CS | Sara Ngambay | kui | die | RCS |
| NS | Fur | Fur | kusa | die | Beaton (1968) |
| NC | Mande | Ligbi | kpā | kill | W |
| NC | Kru | Dida | kú | die | Ma |
| NC | Senúfo | Fodonon | kpóo | kill | ALGCI |
| NC | Senúfo | Palaka | ku | kill/die | ALGCI |
| NC | Ubangian | Sango | kúi | die | Mo |
| NC | Kwa | Ewe | kú | die | Ro |
| NC | BC | Yoruba | kú | death | A58 |
| NC | BC | PB | kó | death | Me |

Commentary: Alternations between velar and labial-velar occur in Mande, Gur and Ubangian (see W:236). See also commentary under 13. #wu. Williamson (p.c.) expresses a doubt as to whether these two roots are really distinct as it is conceivable that the velar regularly weakens to w- independently.

Ref: Armstrong (1964:55); Gr:84; M:325; Mikkola (ined.); W:237

8. #la buy, sell

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|-------------|----------|---------------------|-----------|---------------|
| NS | Kunama | Kunama | -taa | buy | RCS |
| NS | Maban | Maba | rak- | buy | RCS |
| NS | ES | Nera | tol, dol | buy, sell | RCS |
| NS | ES | Murle | taal/a | buy | RCS |
| NS | ES | Nyimang | ṭàrì | buy | RCS |
| NS | CS | Bagirmi | ndug ^w o | buy | RCS |
| NS | Fur | Fur | -la | buy, sell | Beaton (1968) |
| NS | Saharan | Zaghawa | là | buy | RCS |
| NS | Songhay | Kaado | dèi | buy | DC |
| NC | Kordofanian | Katla | la | buy | RCS |
| NC | Mande | Mwa | lo | sell | P |
| NC | Ijoid | PI | *dèrɪ | sell | KW |
| NC | Kru | Guéré | dē | buy | ALKrCI |
| NC | Gur | Mōōre | dà | buy | Man |
| NC | Kwa | Avatime | dāp | sell | ALKCI |
| NC | EBC | Yoruba | rà | buy | A58 |
| NC | BC | CB | #dand- | buy | Gt |

Commentary: There are clear traces of nasalisation or a nasal in C₂ position at the level of Benue-Kwa. Mande forms have back vowels throughout but otherwise show the same alternations between l/d that characterise other branches of Niger-Congo.

References: Gr:81; M:91; W:248

| 9. #nyiN- | | to give | | | | |
|-----------|----------|----------|--------------|---------|-------------------|--|
| Phylum | Group | Language | Attestation | Comment | Source | |
| NS | Maban | Maba | nyo-k | gift | E | |
| NS | Fur | Fur | aní | give! | RCS | |
| NS | ES | Nera | nin | | RCS | |
| NS | ES | Didinga | nya | | RCS | |
| NS | Saharan | Teda | nin- | | Le Coeur (1950) | |
| NS | Songhay | Zarma | nó | | DC | |
| NS | Kadu | Talasa | ná | | Sch94 | |
| NC | Mande | Mwan | nāā | | ALMCI | |
| NC | Atlantic | Balanta | nyaha | | M | |
| NC | Kru | Wobe | ᵑᵑᵑ | | ALKrCI | |
| NC | Kwa | Ewe | na | | Ro | |
| NC | BC | Igbo | -nyé | | Williamson (1972) | |
| NC | BC | Buji | nyaka | | BCCW | |
| NC | BC | Okoyong | ᵑᵑ | | BCCW | |

Commentary: Many scattered forms also with initial n- and ᵑ-, especially in Benue-Congo.

Refs: B:96; BCCW,I:45; G:139; Gr:81; PWN:398; PWS:259

| 10. #papa | | moon | | | | |
|-----------|-------------|----------|-----------------------|-------------|---------------|----------------|
| Phylum | Group | Language | Attestation | Attestation | Comment | Source |
| NS | Koman | Uduk | ape | | àppéé (Ehret) | Bender (1983) |
| NS | Maban | Masalit | | áyè | ? C | E |
| NS | ES | Kakwa | yápà | | | Vo82 |
| NS | ES | Maasai | ol-ápà | | | Vo88 |
| NS | ES | Mabaan | paan | | | RCS |
| NS | CS | Baka | pe⁺ | | | Brisson (1975) |
| NS | CS | Yulu | | ᵑᵑᵑ | | Bo |
| NS | Songhay | Kaado | hàndù | | ?C | DC |
| NC | Kordofanian | Moro | u-βwa /n- | | ?C | Sch81b |
| NC | Atlantic | Bullom | i-pan | | | W |
| NC | Kru | Bete | | nape | | ALKrCI |
| NC | Gur | Kulango | fᵑᵑ | | | ALGCI |
| NC | Ubangian | Mbanza | | ᵑᵑᵑ | | Mo |
| NC | Kwa | Ebrie | pè | | | ALKCI |
| NC | WBC | Kupa | epa | | | RMB |
| NC | EBC | Horom | u-fel | | | RMB |

Commentary: Westermann (276) reconstructs this for PWS (proto-Atlantic-Congo on his evidence) as **#pian-**. In both Nilo-Saharan and Niger-Congo forms corresponding to **#ᵑVpV-** recur; these are listed in second column. Either these represent independent inversions of the syllables or else they represent an old variant derived through compounding. The Eastern Nilotic forms strongly suggest a reconstruction with initial l-; Voßen (1982:395) proposes ***-lʷapatʷ-**, but this may arise through the incorporation of the determiner into the stem (see cognate Maasai form). Although common in East Benue-Congo there appears to be no corresponding PB form.

Ref: Ehret (1998) 444; Gr:85; W:276

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| 11. #-shishi | sand | | | | |
|--------------|----------|----------|-------------|------------------------|--------|
| Phylum | Group | Language | Attestation | | Source |
| NS | Kunama | Kunama | ʃiɪʃa | | RCS |
| NS | Koman | Uduk | asib | | RCS |
| NS | Berta | Undu | ʃééʔè | | RCS |
| NS | ES | Birgid | ʃeeʃi | | RCS |
| NS | ES | Gaam | sasáá | Bender and Ayre (1980) | |
| NS | ES | Bari | sese | | RCS |
| NS | CS | Fer | wīṣā | | Bo |
| NS | CS | Kenga | késé | | RCS |
| NS | Kadu | Yegang | sesek | | Sch94 |
| NS | Saharan | Teda | aneʃe | Le Coeur (1950) | |
| NC | Ubangian | Mbanza | zǎɪ | | Mo |
| NC | Kwa | Ga | ʃia | Kropp-Dakubu (1973) | |
| NC | EBC | Horom | ʃiʃal | | RMB |
| NC | EBC | Tarok | ashishiri | | RMB |
| NC | EBC | Pe | afifey | | RMB |
| NC | EBC | Gaa | afemfemta | | RMB |

Commentary: The absence of a Bantu form is somewhat surprising. The similarity of forms may include a phonaesthetic component.

Ref: B:93

| 12. #soN- | snake | (generic) | | | |
|-----------|----------|------------|-------------|---------------------|--------|
| Phylum | Group | Language | Attestation | | Source |
| NS | Koman | Koma Ciita | zo | | RCS |
| NS | CS | Lendu | su | | RCS |
| NS | ES | Nyimang | sòm | | RCS |
| NS | ES | Nera | woso | | RCS |
| NC | Mande | Bambara | sǎ | | Ba |
| NC | Atlantic | Wolof | jaan | Munro & Gaye (1991) | |
| NC | Ijoid | Nkoro | ásákí | | KW |
| NC | Kru | Dewoin | sewe | | ALKrCI |
| NC | Adamawa | Mumuye | sòkò | Shimizu (1983) | |
| NC | WBC | Nupe | etsù | | Ban |
| NC | EBC | Kambari | ṣṣ' súsò | Hoffmann (1965) | |
| NC | EBC | Abinsi | bu-su | | BCCW |
| NC | EBC | Yamba | sòṅ | | BCCW |

13. #wu(Ru) kill, die

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|----------|--------------|-----------------------|---------|-----------------|
| NS | Koman | Uduk | wu | kill | Beam & Cridland |
| NS | ES | Debri Nubian | wur- | kill | RCS |
| NS | Fur | Fur | wi | wi | B |
| NS | Songhay | Kaado | wí | kill | DC |
| NC | Atlantic | Bullom | wu | die | W |
| NC | Dogon | Humbebe | wɔ | kill | Be |
| NC | Kru | Oubi | wɔɓ | kill | Ma |
| NC | Ubangian | Langbasi | wo | kill | Mo |
| NC | Kwa | Ewe | wù | kill | Ro |
| NC | BC | Nupe | wu⁺ | die | Ban |
| NC | BC | Takum Jukun | wu⁺ | die | Welmers |

Commentary: See also 7. ‘kill’. Gregersen (1972:84) puts together a number of Nilo-Saharan roots that seem to be unconnected with #wu(Ru). The vowel shift u~i seen in Songhay is also attested in Niger-Congo e.g. Bullom **wu** against Kissi **wi**. Westermann collates #wu- roots separately from #ku roots but puts them under a reconstructed #gu-. It seems that more likely that #wu- is a distinct root and that forms with g- are simply part of the larger set #ku-. However, independent weakenings are also possible (see comment under 7.). No convincing Proto-Bantu reconstruction has been proposed linked to #wu-.

Refs: Armstrong (1964:55); B:156, 185; Gr. 84; M. 325; W. 225

14. #bulV(k) belly, stomach

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|----------|--------------|--------------------------------|----------------|------------------|
| NS | Shabo | Shabo | ɓaɓu | liver | Teferra (1991) |
| NS | Kuliak | Ik | bubú | stomach | Heine (1999) |
| NS | Gumuz | | | | |
| NS | Koman | Anej | a-buun | belly | Bender (1983) |
| NS | ES | Burun | huri | | |
| NS | ES | Bari | ɓur pl. ɓurön | stomach? | |
| NS | ES | Daju (Shatt) | ɓilek | belly | RCS |
| NS | CS | Yulu | mbèekō | <i>ventre</i> | Boyeldieu (1987) |
| NS | Maban | Mimi | bok | belly | Edgar (1991) |
| NC | PWS | | #-pu- | | W. 278 |
| NC | Mande | Bambara | fūru | <i>estomac</i> | Bailleul (1996) |
| NC | Atlantic | Kissi | pùléí | | Childs (2000) |
| NC | Gur | Moore | puu-gà /-se | | |
| NC | Ubangian | Nzakara | vūlū | | Monino (1988) |
| NC | Kwa | Gonja | è-pún | | |
| NC | WBC | Igala | efu | | |
| NC | EBC | Yala | dī-pu | | |
| NC | Bantu | CB | #-pù | | |

Commentary: One of the most striking and widespread Niger-Saharan roots. The variation between front and back vowels suggests either that both were present in the original form or that a now-vanished palatal was present. The reduplication in Shabo and Ik are treated as local developments. Some NS forms suggest a -k in C₂ position although this is not widespread enough to reconstruct to PNS with confidence. The absence of front vowels in the Niger-Congo forms suggests that by the time Proto-Niger-Congo evolved, front vowels were definitively absent. Westermann's PWS form is somewhat surprising since his own evidence suggests strongly the presence of a lateral in C₂ position and even paired high back vowels.

Ref: W. 278; M. 458; Ehret (293 + 298)

15. to bite

#nduma

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|----------|------------------|-------------|---------------|------------------|
| NS | Gumuz | | | | |
| NS | Kunama | Kunama | ‘nínà | to bite | Bender (2001) |
| NS | ES | Gaam | nōm | to eat, chew | |
| | | Temein | lam | to eat | |
| NS | CS | Sara | dùùn | to bite | |
| NS | Saharan | Kanuri | nànd- | to bite | Cyffer (1994) |
| NS | Songhay | | nàmà | to bite | |
| NS | Kadu | Tulishi | a’dōnâ | | RCS |
| NC | PWS | | #lum- | | |
| NC | Mande | Bambara | dumu-ni | eating | Bailleul (1996) |
| NC | Atlantic | Joola Kujamutay | -rum | to bite | Sapir (ined.) |
| NC | Atlantic | Bijogo (Bubaque) | -num | to bite | Seegerer (ined.) |
| NC | Kru | Nyabwa | nūmū | | ALKCI |
| NC | Gur | Degha | dómó | <i>mordre</i> | ALGCI |
| NC | Ubangian | Mba | nómó- | | Monino (1988) |
| NC | Kwa | Lelemi | dū | | |
| NC | WBC | | | | |
| NC | EBC | Efik | dum | to bite | |
| NC | Bantu | CB | dúm- | | G. 70:696 |

Commentary: Although the Niger-Congo roots for ‘bite’ are fairly consistent and certainly distinct from the ‘eat’ series (#ri) in Nilo-Saharan the widespread ‘eat’ form, #na, thought to be connected with Niger-Congo ‘meat’ may well be intertwined with ‘bite’. The persistence of initial d- from CS to Bantu makes it likely that forms with nd- initials go back to at least PCS and perhaps further.

Ref: Ehret p. 337, 369, 370; M. 110

16. #mbora breast

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|----------|-------------|---------------------|-------------|-----------------|
| NS | Gumuz | | | | |
| NS | Fur | Fur | bòrà | milk | |
| NS | ES | Sungor | mbol | | |
| NS | CS | Mödö | mbà | | P & P |
| NS | Songhay | Gao | fafa | | Prost (1956) |
| NS | Kadu | Kurondi | oba | | RCS |
| NC | #PWS | | #-bi- | | W.:207-8 |
| NC | Mande | Boko | bi | <i>lait</i> | Prost (1953) |
| NC | Atlantic | Diola-Fogny | fiil | | Segerer (ined.) |
| NC | Atlantic | Pepel | pile | | Segerer (ined.) |
| NC | Gur | Dagaare | bir / bire | | |
| NC | Ubangian | Manza | bèrè | | Monino (1988) |
| NC | Kwa | Kposo | è-ví | | Heine (1968) |
| NC | WBC | Nupe | ebé | | Banfield (1914) |
| NC | EBC | Toro | bene | | RMB |
| NC | Bantu | CB | -béedè (5/6) | | |

Commentary: First discussed in Blench (1995) but later found to have a wider distribution than claimed there. Perhaps not be reconstructed to PNS but to some intermediate level of NS. There is a clear division between Nilo-Saharan (back vowel) and Niger-Congo (front vowel) as well as the loss of the prenasalised initial unless forms such as Limba **hu-bili/ma-** hint at a nasal prefix, as in Central Sudanic.

Ref: (B:254, M.:II,25, W.:207-8) Ehret p.296

17. buffalo
#ɲara

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|---------|----------|------------------------|---------|-----------------|
| NS | Kuliak | Ik | gasar | | |
| NS | Koman | Madin | gwas | | |
| NS | Kunama | Kunama | gàu'gà | | Bender (2001) |
| NS | ES | Nilotic | anyaar | | |
| NS | Maba | Masalit | gurei | | Edgar (1991) |
| NS | Saharan | Kanuri | ngàrà̀n | | Cyffer (1994) |
| NC | Gur | Lamba | nyar | | |
| NC | WBC | Nupoid | eya⁺ | | Banfield (1914) |
| NC | EBC | Plateau | gyà̀r | | RMB |
| NC | EBC | Mambilo | ɲar | | Co |
| | | d | | | |
| NC | Bantu | PB | #-ɲáti | | |

Commentary: Evidence for this reconstruction is rather sparse compared with some other items, but the similarities of this root across a large geographic area suggest that it should be considered. The absence of the root in some higher nodes of Niger-Congo suggests the possibility of a loan into Niger-Congo from Nilo-Saharan, for example from Saharan into Adamawa and thence to Benue-Congo. The weakening of ɲ to ɲ in Nilotic is presumed to be independent of this same process in BC. Also in Chadic: Daffo **yà̀t**, although probably a loan.

Ref: BCCW, I, 12; Ehret p. 411

18. #bwiro earth, ground

| Phylum | Branch | Group | Language | Attestation | Comment | Source |
|--------|----------|---------|----------|---------------|--------------------------|-----------------|
| NS | Shabo | | Shabo | boka | earth, ground | Fleming (1991) |
| NS | Gumuz | | | | | |
| NS | Koman | | Uduk | p'én | down | |
| NS | Berta | | Fadasi | emboro | earth | Bender (1989) |
| NS | Fur | | Fur | bōru | earth | Beaton (1968) |
| NS | ES | Nilotic | Lokoya | a-ǫórò | | Vossen (1982) |
| NS | ES | Surmic | Me'en | bwi | ground | |
| NS | Tama | | Aiki | baɲa | earth | |
| NS | Maba | | Masalit | abíí | earth | RCS |
| NS | CS | | Moru | vurú | earth | RCS |
| NS | CS | | Mödö | bèrí | down | P & P |
| NS | CS | | Sara | borr | | |
| NS | Saharan | | Daza | bi | world | Le Coeur (1950) |
| NS | Saharan | | Zaghawa | èbir | dust | |
| NS | Saharan | | Berti | bira | mud | |
| NS | Songhay | | Zarma | làábú | <i>terre</i> | BWK |
| NS | Kadu | | Miri | butulu | earth | RCS |
| NC | Mande | | Bisa | bela | <i>argile blanchâtre</i> | Prost (1953) |
| | | | Bambara | bògò | <i>terre</i> | Bailleul (1996) |
| NC | Atlantic | | Bassari | bār | | Ferry |
| NC | Gur | | Lorhon | burko | <i>terre</i> | ALGCI |
| NC | Kwa | | Krobu | gbē | <i>terre</i> | ALKwCI |
| NC | WBC | | | | | |
| NC | EBC | Plateau | Tarok | m̀bin | earth, soil | L & B |
| NC | Bantu | | | | | |

Commentary: PNS must have had a form that allows the development of both front and back vowels. If C₁ was labialised, this would account for the different vowels. Bender permits semantic shifts to 'swamp' and 'charcoal' which is not accepted here. Evidence for this root in Niger-Congo is rather weak. Sudan Arabic **barr** is perhaps borrowed from Nilo-Saharan languages?

Ref: Bender (1996:78); Ehret (289, 292, 440)

19. #kV- egg

guri

| Phylum | Group | Family | Language | Attestation | Comment | Source |
|--------|-------------|-----------|-----------|------------------|---------|--------------------|
| NS | Kuliak | | Soo | kebc-at pl. kebe | | Carlin (n.d.) |
| NS | Gumuz | | | | | |
| NS | CS | | Gula Mere | kwó'bù | | Boyeldieu (1993) |
| NS | Saharan | | Kanuri | ngówúl | | Cyffer (1994) |
| NS | Songhay | | Zarma | gùùrí | | BWK |
| NS | Kadu | | Tulishi | kunzule | | RCS |
| NC | Kordofanian | | Jomang | j-îŋ /m- | | Schadeberg (1981b) |
| NC | Mande | | Lebir | gyir | | Prost (1953) |
| NC | Mande | | N. San | dyiri | | Prost (1953) |
| NC | Atlantic | | Serer | gin (li) | | Segerer (ined.) |
| NC | Kru | | Dida | jiè | | ALKCI |
| NC | Gur | | Gurma | dyen-li /-a | | |
| NC | Kwa | | Ewe | àzi | | Rongier (1995) |
| NC | Kwa | | Avatime | li-dze /é- | | Heine (1968) |
| NC | WBC | Nupoid | Nupe | ezi | | Ba |
| NC | EBC | Mambiloid | Ba | gi | | Co |
| NC | Bantu | | CB | #-gí | | G.70:809 |

Commentary: It is difficult to determine the original shape of the root. The KV- prefix is quite widely attested although it clearly did not survive into Niger-Congo. Alternations of g/b in Nilo-Saharan almost suggest a labial-velar although this is not attested synchronically. The nasals in Niger-Congo are held to derive from the C₂ laterals.

Ref: Westermann (1927:214), Mukarovsky (1976: 89-90); Ehret p. 396

20. # elephant, rhino

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|----------|----------|-------------|------------|------------------|
| NS | Kuliak | Ik | oŋor | | Heine (1999) |
| NS | Gumuz | | | | |
| NS | Koman | Anej | gəl | | Bender (1983) |
| NS | Maba | Maba | ŋòon | | Edgar (1991) |
| NS | ES | Murle | aŋəl | | RCS |
| | | Temein | lɔŋɔl | | RCS |
| NS | Tama | Tama | ŋór | | RCS |
| NS | CS | Fer | ngòy | | Boyeldieu (1987) |
| NS | Fur | Fur | àŋgír | | Jakobi (1990) |
| NS | Saharan | Kanuri | gargardán | rhinoceros | Cyffer (1994) |
| NS | Kadu | Katcha | mɔŋɔ | | RCS |
| NC | PWS | | #-ni- | | |
| NC | Atlantic | Pulaar | nyiiwa | | Segerer (ined.) |
| NC | Ubangian | Mba | ngiá | | Monino (1988) |
| NC | Kwa | Avatime | ó-nyi /bé- | | Heine (1968) |
| NC | WBC | Bini | èníp | | Agheyisi (1986) |
| NC | EBC | Anaang | é-nì:n | | Co91 |
| NC | EBC | Mada | ji | | RMB |
| NC | Bantu | CB | -nyi | | |

Commentary: The link with rhinoceros suggested by Ehret is far from certain but as the word is poorly represented in the sources and such as semantic shift can be left open at present. Despite clearly being a

Niger-Congo root, it is unaccountably absent in several branches. The original shape of the word must have been something like #**ɲoro** with regular weakening of the /r/ to a nasal. The velar nasal in turn became a palatal and the back vowel became fronted under the influence of the palatal. It would have appeared in this form in Proto-Niger-Congo. The shift back-vowel, Nilo-Saharan to front vowel, Niger-Congo is almost a pattern (see 'breast' above).

Ref: Ehret p. 401

| 21. #duri | to fall | (as rain) | | | | |
|--------------|----------|-------------|---------------|--------------------|---------------------|------------------|
| | Group | Family | Language | Attestation | Comment | Source |
| NS | Shabo | Shabo | Shabo | dīm | rain | Fleming (1991) |
| NS | Kuliak | Kuliak | Ik | rúḅ-(ét)-on | to fall (as a tree) | Heine (1999) |
| NS | Gumuz | | Gumuz | dama | rain | Fleming (1991) |
| NS | Kunama | Kunama | Kunama | dùd'dà | to fall, descend | Bender (2001) |
| NS | Berta | Berta | Undu | rɔ | rain | Bender (1989) |
| NS | ES | | Nera | lɔ | to rain | RCS |
| NS | ES | | Temein | lèè | to rain | RCS |
| NS | ES | | Bari | kudú | to rain | Vossen (1982) |
| NS | CS | | Mödö | ùlörù | to fall (trees) | P & P |
| NS | CS | | Gula Mere | è'dì | to rain | Boyeldieu (1993) |
| NS | Maba | | Masalit | teer | falling | Edgar (1991) |
| NS | Saharan | | Kanuri | dùr | to fall as rain | Cyffer (1994) |
| NS | Kadu | | Krongo | aadí | to rain | RCS |
| NC | Mande | | Dan | dā | | ALMCI |
| NC | Atlantic | | Joola | -lub | to rain | Segerer (ined.) |
| | | | Kujamutay | | | |
| NC | Kru | | | | | |
| NC | Ubangian | | 'Bofi | lo | fall | Monino (1988) |
| NC | Gur | | Proto-Gurunsi | *du | rain (n.) | |
| NC | Kwa | | Ega | edú | rain (n.) | ALKwCI |
| NC | WBC | Yoruboid | Yoruba | rɔ | fall as rain | |
| NC | WBC | Edoid | Uneme | rho | | |
| NC | WBC | Igboid | Owere | dò | | |
| NC | WBC | Nupoid | Nupe | du | | Ba |
| NC | EBC | Tarokoid | Tarok | ru | to fall in general | L & B |
| NC | EBC | Jukunoid | PJC | *tù | rain (n.) | |
| NC | EBC | Cross River | Ibibio | dùs | | Co91 |
| NC | EBC | Dakoid | Daka | dùrí | rain (n.) | |
| NC | Bantu | | CB | *-dùmbj | 'continuous rain' | G |

Commentary: One of the most widespread and best attested roots in Niger-Saharan.

Ref: Greenberg (1963:117); Ehret (321)

22. fat

#mora

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|-------------|------------|---------------|-----------------|------------------|
| NS | Shabo | Shabo | mat | fat (a.) | Fleming (1991) |
| NS | Gumuz | | | | |
| NS | Koman | Kokit | moo ‘a | | |
| NS | Kunama | Kunama | (h)apa | fat (?C) | Bender (2001) |
| NS | Berta | Fadasi | mórfí | fat (of person) | Bender (1989) |
| NS | ES | Anywa | màaà | fat | Reh (1999) |
| NS | ES | Acoli | mðð | | RCS |
| NS | ES | Daju | mwid- | fat | |
| NS | ES | Murle | more | | |
| NS | ES | *PN | *mɔ-r | | |
| NS | ES | Proto-Daju | *mwi- | | |
| NS | Tama | | mɿ | oil | RCS |
| NS | Maba | Masalit | ɟámi | | Edgar (1991) |
| NS | Saharan | Daza | mbi | <i>huile</i> | Le Coeur (1950) |
| NS | Songhay | Zarma | máaní | fat (n.) | BWK |
| NC | Kordofanian | Talodi | ɿ-aag | (?C) | |
| NC | Kordofanian | Moro | ɿela | grease | |
| NC | #PWS | | -mì | | W. 257 |
| NC | Mande | Gban | ɿwú | <i>huile</i> | ALMCI |
| NC | Atlantic | Temne | maro | <i>huile</i> | Seegerer (ined.) |
| NC | Ubangian | Ngbaka | mó | | Moñino (1988) |
| NC | Kwa | Abbey | mòñõ | oil | ALKCI |
| NC | Kwa | Ewe | amì | | |
| NC | WBC | Nupe | emi | | |
| NC | EBC | Gure | mani | oil | |
| NC | EBC | Gure | manai | | RMB |

Commentary: The analysis of this word is complicated by the fact that forms for mass nouns typically have m- affixes (see Blench 1995). The Kordofanian forms are probably cognate, as ɿ- classes for mass nouns usually correspond to m- classes in other branches of Niger-Congo (Black and Black, 1971:11). The Moro form is thus more convincing as a possible cognate. Greenberg (1966:156) has another root for Proto-Mande-Congo, something like #-kpa, but his comparisons are only with Kadu languages. The V₂ in ES was probably subject to raising and is responsible for the shift high front vowels in most of Niger-Congo.

Ref: D. 40; W. 257; Ehret p. 312

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23. #turu five

| Phylum | Group | Family | Language | Attestation | Comment | Source |
|--------|----------|-------------|----------|---------------|------------|-------------------|
| NS | Shabo | | Shabo | tuul | ? < Surmic | Fleming (1991) |
| NS | Kuliak | Ik | | tud-on | to be five | Heine (1999) |
| NS | Gumuz | | | | | |
| NS | ES | | Tama | tər | six ?C | |
| | | Surmic | | *tur | | E! |
| NS | CS | | Ma'di | tòú | | Blackings (2000) |
| NS | Maba | | Masalit | tóor | | Edgar (1991) |
| NS | Kadu | | Mudo | túmmu | | Schadeberg (1994) |
| NC | Mande | | Yauri | solu | | Prost (1953) |
| NC | Atlantic | | Temne | tamath | | Segerer (ined.) |
| NC | Gur | | Lorhon | tə' | | ALGCI |
| NC | Kwa | | Avatime | ò-tú | | Heine (1968) |
| NC | WBC | Nupoid | Nupe | gutsũ | | Banfield (1914) |
| NC | EBC | | Idun | etón | | BCCW |
| NC | Bantoid | Grassfields | Meta' | tàn | | BCCW |
| NC | Bantu | | CB | -táanò | | G.1662 |

Commentary: Long recognised as a Niger-Congo root it is also widespread in Nilo-Saharan.

Ref: M. 562, Ehret p. 473

24. #neli to know

| Phylum | Family | Subgroup | Language | Attestation | Comment | Source |
|--------|-------------|-------------|------------|----------------------|---------|------------------|
| NS | Kuliak | | Ik | ífyé-és | | Heine (1999) |
| NS | Gumuz | | | | | |
| NS | ES | | Gaam | nel | | Bender & Malik |
| | | Tama | Sungor | nyel | | |
| | | Nilotic | Lopit | hí-yén | | Vossen (1982) |
| NS | CS | | Ma'di | nì | | Blackings (2000) |
| NS | Saharan | | Kanuri | noŋ- | | Cyffer (1994) |
| NC | Kordofanian | Tagoi | Orig | -ŋini | | S&E |
| | | Koalib | Koalib | iligidhi | | RCS |
| NC | PWS | | | ni-, nia- + N | | W.266 |
| NC | Atlantic | | Biafada | yan | | Segerer (ined.) |
| NC | Kru | | Tepo | yì | | ALKCI |
| NC | Gur | | Palaka | yõ | | ALGCI |
| NC | Ubangian | | Gbanzili | ɲì | | Monino (1988) |
| NC | Kwa | | Adele | ɲĩ | | Rongier (ined) |
| NC | Kwa | | Twi | nyim | | |
| NC | WBC | Edoid | Urhobo | niɛ | | Elugbe (1989) |
| NC | EBC | Upper Cross | Iyongiyong | yín | | Sterk (ined) |

Commentary: It is assumed that the -l- in C₂ position in Nilo-Saharan became -n- in Niger-Congo. Mukarovsky reconstructs #mi- which seems likely to be a distinct root characteristic of Gur, though possibly reflected in Bantu. The Koalib form may well not be cognate as the **liŋ-** element appears as a detachable element in some languages of the group.

Ref: Ehret p. 339; W. 266; M. 375

25. #kombu navel

| Phylum | Family | Group | Language | Attestation | Comment | Source |
|--------|----------|-----------|-------------|------------------|-------------|------------------|
| NS | Kuliak | | Ik | ƙɔb pl. ƙɔb-ítɪn | | Heine (1999) |
| NS | Gumuz | | | | | |
| NS | Fur | | Fur | ombul | | Beaton (1968) |
| NS | ES | Nubian | Kadaru | kemndu | | RCS |
| NS | ES | | Nyimang | kwúrè | | RCS |
| NS | CS | | Kenga | kúmú | | RCS |
| NS | CS | | Bagiro | kūmū | | Boyeldieu (1993) |
| NS | Songhay | | | humu | | |
| NC | Mande | | Yauri | kone | | Prost (1953) |
| NC | Atlantic | | Sua | kɔn /mkɔn | | Seegerer (ined.) |
| NC | Kru | | Aizi | múko | ?metathesis | ALKCI |
| NC | Senufic | | Tenyer | ɣkunu | | |
| NC | Ubangian | | Proto-Gbaya | kɔn | | Monino (1988) |
| NC | Kwa | | Lelemi | lè-kú | | |
| NC | WBC | Edoid | Edo | ù-xǔ | | Ag |
| NC | EBC | Plateau | Nindem | ikom | | Ge83 |
| NC | EBC | Mambiloid | Cambap | kúmbūn | | Co |
| NC | EBC | Jukunoid | Kuteb | u-kóm | | Sh |
| NC | Bantu | Bantu | CB | #-kóbù | | G.70:1098 |

Commentary: A very conservative root, to judge by the similarities between Ik and Bantu. Also in Chadic: Mwaghavul **kúm**, Tangale **kúmbi**

Ref:

26. #moro(k) neck, to swallow

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|----------|-------------|------------------|-------------|------------------|
| NS | Kuliak | Ik | morók | throat | Heine (1999) |
| NS | Gumuz | | | | |
| NS | Kunama | Kunama | ‘méénà | neck, voice | Bender (2001) |
| NS | ES | Daju | amice | neck | |
| | | Bari | murut | neck | |
| | | Anywa | mūɔŋ | to swallow | Reh (1999) |
| | | Shilluk | muno | neck | RCS |
| NS | CS | Mödö | mùgù | neck | P & P |
| | | Kulfa | míndī | <i>cou</i> | Boyeldieu (1993) |
| NS | Saharan | Daza | moroŋar | to swallow | Le Coeur (1950) |
| NC | PWS | | #mi, min- | | |
| NC | Mande | Mana | mani | to swallow | Prost (1953) |
| NC | Atlantic | Sua | dimij | | Segerer (ined.) |
| | | | /idimij | | |
| NC | Kru | Dida | mnā | to swallow | ALKCI |
| NC | Gur | S. Toussian | mōyo | to swallow | Prost (1964) |
| NC | Ubangian | Amalo | -mɛ- | <i>cou</i> | Monino (1988) |
| NC | Kwa | Twi | mene | to swallow | |
| NC | WBC | Yoruba | mi | to swallow | |
| NC | EBC | Horom | mara | to swallow | |
| NC | Bantu | Mambila | mèl | | PM |

Commentary: With the exception of Anywa, it seems that Nilo-Saharan 'neck' became Niger-Congo 'to swallow'. This root is intertwined with another for 'throat' discussed elsewhere (Blench 1995). This root has been argued by Greenberg and Ruhlen to be a candidate for proto-World.

Ref: Boyd (1994:62), Williamson (1989b:253-4); Ehret p. 304

27. #tabar pool, water

| Phylum | Group | Language | Attestation | Attestation | Comment | Source |
|--------|-------------|----------|-------------------|--------------------|---------------------|-------------------|
| NS | Kuliak | Ik | tabarr | | pool | Heine (1999) |
| NS | Gumuz | | | | | |
| NS | Kunama | Kunama | dàà'ḡà | | lake | Bender (2001) |
| NS | Kunama | | bia | | water | Bender (2001) |
| NS | Fur | Fur | bàù pl. | | pool | Beaton (1968) |
| | | | bauta | | | |
| NS | ES | Lopit | táḡár | | lake | Vossen (1982) |
| NS | ES | Gaam | bāi | | marsh | Be |
| NS | ES | Anywa | thàar | | flooded area | Reh (1999) |
| NS | CS | ECS (E) | *mbi | | small body of water | |
| NS | CS | Mödö | tà'búlú | | deep pool | P & P |
| NS | CS | Ma'di | apārā | | pool | Blackings (2000) |
| NS | Saharan | Zaghawa | bi | | water | |
| NS | Songhay | | | | | |
| NS | Kadu | Tolibi | ṭumbəlśólɔ | | lake | Schadeberg (1994) |
| NC | Ijoid | PI | ḡápá | | swamp | KW |
| NC | Kordofanian | Heiban | libuṅ | ṅugubuṅ | lake | Guest |
| NC | Mande | Ngain | | yí-báṅ | river | ALMCI |
| NC | Mande | Guro | | yi-bari | <i>marigot</i> | Prost (1953) |
| NC | Atlantic | Temne | | ra-boṅ /te- | river | |
| NC | Kru | | | | | |
| NC | Gur | Gurma | | bùṅ-u | river | |
| NC | Gur | Degha | pòlú | | <i>marigot</i> | ALGCI |
| NC | Ubangian | | | | | |
| NC | Kwa | Akposo | | i-bu /à- | pool | |
| NC | Kwa | Krachi | | ś-bôṅ | river | |
| NC | WBC | Nupe | | ewō | lake | Banfield (1914) |
| | | Nupe | lebú | | puddle | |
| NC | EBC | | | | | |
| NC | Bantu | CB | dìbà | | pool | |
| NC | Bantu | CB | | -búṅgò | beach | |

Commentary: Poorly attested in the sources. If this is a cognate set then Bantu has remained astonishingly conservative, retaining the same two syllables as Ik. I have divided the attestations into two columns and the #bVnV set in Niger-Congo may either be distinct or have become distinct within Niger-Congo. Anywa is assumed to have lost the intervocalic –b–.

Ref: M. 54; Williamson (1995:391)

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28. #bire(n) red

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|----------|----------|-------------|---------|-------------------|
| NS | Koman | Komo | p'el- | | Bender (1983) |
| NS | Gumuz | | | | |
| NS | Berta | Fadasi | beeŋí | | Bender (1989) |
| NS | Kunama | Kunama | bii'bà | | Bender (2001) |
| NS | Fur | | | | |
| NS | ES | Gaam | bèrle(n) | | |
| | | Daju | pir | | |
| | | Surmic | Zilmamu | bire | |
| | | | Mudo | ɔbbé | Schadeberg (1994) |
| NS | Kadu | | | | |
| NC | PWS | | *pia | | W. 276 |
| NC | Mande | Bobo | pené | | Prost (1953) |
| NC | Atlantic | Manjaku | u-Lund | paw | Segerer (ined.) |
| NC | Gur | Sisaala | fia | be red | |
| NC | Ubangian | Mayogo | mbé | | Monino (1988) |
| NC | Kwa | Abidji | bèné | | ALKCI |
| NC | WBC | Edoid | Epie | baa | Elugbe (1989) |
| NC | EBC | | | | |

Commentary: Niger-Congo is characterised by the loss of -r- in C₂ position.

Ref: W. 276; Ehret p. 439

29. #fya roast, burn

| Phylum | Family | Branch | Language | Attestation | Comment | Source |
|--------|----------|---------|----------|-------------|----------------|-----------------|
| NS | Kuliak | | Ik | fa- | | |
| NS | Kuliak | | Soo | pey | to roast, burn | |
| NS | Gumuz | | | | | |
| NS | ES | Nilotic | Naath | pet | to burn | |
| NS | CS | | Mangbetu | nòpè | brkler intr. | Demolin (ined.) |
| NS | Kadu | | Kadugli | afaana | to burn | RCS |
| NC | Atlantic | | Pepel | pessó | brûler tr. | Segerer (ined.) |
| NC | Gur | | Degha | fúù | brûler tr. | ALGCI |
| NC | EBC | Idomoid | PId | *fá | | |
| NC | EBC | Plateau | Horom | fwas | | |
| NC | EBC | Jukunoi | PJ | *fwaP | | |

Commentary: Poorly attested in Niger-Congo. Given in BCCW as #-pap-. Also in Chadic: e.g. Daffo fâʃ, probably a loan from BC languages.

Ref: Williamson (1989:259); E. 423

30. #tara spread out to dry, stretch out

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|----------|-----------|----------------|---------------------|------------------|
| NS | Kunama | Kunama | ibatala | dry in sun | Bender (2001) |
| NS | CS | Mödö | ilèré | to dry | P & P |
| NS | CS | Gula Mere | ndùtù | to dry | Boyeldieu (1993) |
| NS | Saharan | Kanuri | tár- | spread out, lay out | Cyffer (1994) |
| NS | Songhay | Songhay | tendèr | spread out to dry | |
| NC | Atlantic | Diola | tal | | |
| NC | Gur | Dagbane | ta | | |
| NC | Kwa | Baule | sà | spread | |
| NC | WBC | Idoma | tá | stretch out | |
| NC | WBC | Bini | tá | spread | |
| NC | WBC | Yoruba | tàn | | |
| NC | EBC | | | | |
| NC | Bantu | CB | tànd- | spread | |

Commentary: Clearly reconstructible for PMC, but poorly represented in the Nilo-Saharan sources.

Ref: Ehret p. 459

31. #tV(rV) to pour

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|---------|----------|------------------------|--------------------|------------------|
| NS | Kuliak | Ik | ot-és | | Heine (1999) |
| NS | Koman | Twampa | t^hēr | to pour off liquid | |
| NS | Gumuz | | | | |
| NS | Berta | Undu | k'iθá | to pour | Bender (1989) |
| NS | Kunama | Kunama | 'todà | to pour out water | Bender (2001) |
| NS | ES | Anywa | thīrw | | Reh (1999) |
| NS | CS | Mödö | òti | | P & P |
| NS | CS | Ma'di | sù pl. tū | to pour | Blackings (2000) |
| NS | Maba | Kibet | ateyin | | Edgar (1991) |
| NS | Saharan | Kanuri | tá(b)- | | Cyffer (1994) |
| NC | Mande | Gben | li | <i>verser</i> | Prost (1953) |
| NC | Gur | Dugubere | le | <i>verser</i> | ALGCI |
| NC | Kwa | Ikpòsò | dɛ | | |
| NC | WBC | | | | |
| NC | EBC | Horom | tɛ | | RMB |
| | | Berom | tè | | Ku |
| NC | Bantu | | | | |

Commentary: There is some evidence that this word was CVCV in Nilo-Saharan but reduced to CV in Niger-Congo. C₂ might have been -r-, if the -d- in Kunama and the -θ- in Undu are cognate.

Ref: Ehret p. 471

32. #togo to pound

| Phylum | Group | Family | Language | Attestation | Comment | Source |
|--------|---------|--------|----------|---------------|------------------|---------------|
| NS | Kuliak | | Soo | toŋ | to pound | Carlin (n.d.) |
| NS | Gumuz | | | | | |
| NS | Kunama | | Kunama | tokko- | to knock | Bender (2001) |
| NS | Fur | | | | | |
| NS | ES | | Acoli | tək | to pound | |
| NS | CS | | | | | |
| NS | Maba | | | | | |
| NS | Saharan | | Kanuri | təgás- | to pound lightly | Cyffer (1994) |
| NS | Songhay | | | | | |
| NS | Kadu | | | | | |
| NC | Mande | | Bobo | tugo | <i>piler</i> | Prost (1953) |

Commentary: Poorly attested in the sources. Westermann reconstructed this to PWS.

Ref: Ehret p. 474

bV(n)t- white

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|-------------|-------------|----------------|------------|--------------------|
| NS | Kuliak | Ik | βets' | 'be white' | Heine (1999) |
| NS | Koman | Opo | pata | | Bender (1983) |
| NS | Gumuz | Gumuz | mpuma | | |
| NS | Kunama | Kunama | à'rà | | Bender (2001) |
| NS | Berta | Undu | fùdí | | Bender (1989) |
| NS | Fur | Fur | futa | | Beaton (1968) |
| NS | ES | Gaam | pǝǝ(n) | | |
| NS | ES | Nyimang | ṭabar | | |
| NS | ES | Anywak | tàr | | Reh (1999) |
| NS | ES | Naath | boye | | |
| NS | ES | Mayak | ḶḶḶ | | RCS |
| NS | ES | Sila | fafaára | | |
| NS | ES | Murle | ovor | | |
| NS | CS | Asua | kúbúè | | Demolin (ined.) |
| NS | Maba | Aiki | furr | | |
| NS | Saharan | Kanuri | bûl | | Cyffer (1994) |
| NS | Kadu | Krongo | òfíró | 'be white' | Reh (1985) |
| NC | Kordofanian | Tegem | bùli | | Schadeberg (1981b) |
| NC | | PWS | -pu | | |
| NC | Mande | Bobo | furo | | Prost (1953) |
| NC | Atlantic | Diola | fur | | |
| NC | Kru | Krao | pulu | | ALKCI |
| NC | Gur | Degha | pùlòmú | | ALGCI |
| NC | Ubangian | Proto-Gbaya | *pu | | Moñino (1988) |
| NC | Kwa | Ewe | fù | be white | |
| NC | WBC | Yoruba | fu | | |
| NC | EBC | | | | |
| NC | Bantu | | | | |

Commentary: Early in Nilo-Saharan, the shape of this root was something like bVt-, perhaps with a nasalised vowel. Forms such as Nyimang **ṭabar** would represent a metathesis of this and would then reduce to Anywak **tar** with loss of the intervocalic C₂. However, in Maba, Saharan, etc. there is no trace of an alveolar in C₂ position and it is assumed the nasal has become a lateral. It is this form which is inherited by Niger-Congo. There has clearly also clearly been interchange with Afroasiatic languages, witness Hausa **farii** and Coptic **fori**.

Ref: W. 279; Ehret (290)

Appendix 2. Widespread roots that do not contribute to the establishment of genetic relationship.

The following words have been suggested by various authors as evidence of genetic affiliation. They are, however, too widespread in Central African languages to produce any useful results and correspond to Westermann's 'Wanderworte'.

#isi. Fire.

| | | | |
|----|-------------|------------|--------|
| NS | ES | Meidob | ussi |
| NS | Kadu | Miri | issi |
| NS | CS | Miza | a(t)si |
| NS | CS | Shemyar | dufu-n |
| NC | Kordofanian | Moro | isia |
| NC | Dakoid | Nnakenyare | yísi |
| NC | Tivoid | Tiv | wufu |
| AA | Semitic | Akkadian | iʃaat- |
| AA | Chadic | Karekare | ?èsî |

Unlike 'pig' and 'dog' it is surprising to find 'fire' in the category of wandering words, as it should be a very basic root. Nonetheless, its Central African distribution leaves no doubt that it is an areal loan, although it is difficult to establish the source language. If the Akkadian form is genuinely related, then it is tempting to assume this an old AA root loaned into NS and thence into eastern NC. Discussed in Bender (1991c:5). Bender (1992:43) reconstructs Proto-Central Sudanic #co, but as an areal loan, reconstruction is probably not a meaningful exercise.

#-kutu. Pig. (Wild types)

| | | | | |
|----|-------------|--------------|-----------------------|---------------|
| NS | Koman | Anej | kuturu | |
| NS | ES | Nyimang | kudur | |
| NS | Maba | Aiki | girwà | wart-hog (?C) |
| NS | Saharan | Kanuri | godú | warthog |
| NS | Kadu | Kamdang | b-oḍuruk pl. k-aḍuruk | |
| NC | Kordofanian | Orig | kàdirú | |
| NC | Bantu | #CB | #-gùdú | wild pig |
| AA | Semitic | Sudan Arabic | kadruuk | |
| AA | Chadic | Hausa | gàduu | |

This root appears both in NS, NC and Chadic and can apply both to the warthog and the bush-pig (*Potamochoerus porcus*). Cited by Gregersen (1972:86) who also mentions Greenberg's suggestion that the Saharan form was loaned into *PB. Schadeberg and Elias (1979:84) mention that this root has been loaned into Sudanese Arabic to give *kadruuk*.

#-si. Dog.

| | | | |
|----|---------|------------|--------|
| NS | Fur | Fur | asà |
| NS | ES | Proto-Daju | *iise |
| NS | CS | Baka | ísi |
| NS | CS | Lugbara | atsí |
| NS | CS | Lendu | kazǝ |
| NS | Koman | Anej | kas |
| NS | Maba | Masalit | wasi |
| NS | Kadu | Katcha | is(s)i |
| NC | Dogon | Tabi | ifí |
| NC | BC | E. Ogbia | isið |
| NC | BC | Nupe | efi |
| NC | Bantoid | Ndoro | sie |

This is a fascinating root as it is widespread in Central Africa and yet does not form a convincing pattern. In Central Sudanic, for example, it is attested in almost every language (Bender, 1992:40,48). Bender separates the roots with initial b-, but it is likely that the two forms go together. Afroasiatic forms such as Sidamo *waffa* and Beja *yas* presumably represent independent weakenings. Although originally cited by Greenberg (1966:120), more complete evidence was marshalled by Bender (1981:258) with attestations in Fur, Sudanic, Kordofanian and possibly Ari [Omoti]. It is also found in Benue-Congo (Blench, in prep) but there is no evidence for it in other parts of West Africa. The domestic dog is not native to Africa (Epstein, 1971) and these wandering words may reflect the diffusion of the dog itself.

Some of the lexical items presented in Blench (1995) as evidence for Niger-Saharan turn out to have a still wider distribution in Africa. Examples are #kulu 'skin, hide', #kulu 'knee', #kuru 'tortoise, turtle'. Blench (1997) argued that the similarity in form of these widespread roots was no accident but rather a result of as yet only partly understood phonaesthetic processes. Whatever the explanation, the consequence is that such roots do not constitute evidence for the existence of a macrophylum and should only be used in lexical reconstruction in tightly controlled circumstances.

It is important to emphasise that not all words with a transphylic distribution in Africa belong to a marked conceptual set or have an evident phonaesthetic element. The tables presented in this section represent some preliminary datasets intended to identify common forms encountered in the search for Niger-Saharan roots.

33. #keri to split, cut, break

| Phylum | Group | Language | Attestation | Comment | Source |
|--------|------------------|-----------------|-------------|----------------------|-------------------|
| NS | Kuliak | Ik | ɲkr | break, cut (?C) | Heine (1975) |
| NS | Koman | Uduk | kwal | split | Bender (1983) |
| NS | Berta | Undu | ‘kffrà | split hard substance | RCS |
| NS | ES | Dongola Nubian | gor | cut grass | RCS |
| NS | ES | Nyimang | kir | cut | RCS |
| NS | Fur | Fur | karr- | split | Jakobi (1990) |
| NS | Saharan | Daza | kør | cut | Le Coeur (1950) |
| NS | Songhay | Gao | körtù- | tear, split | BKW |
| NC | Mande | Bambara | kárí | cut | Ba |
| NC | Kru | Nyabwa | cei | cut | ALKrCI |
| NC | Ubangian | Ndunga-le | -kèlé- | cut | Mo |
| NC | WBC | Yoruba | ǰá | slash | A58 |
| NC | WBC | Ọ̀nịca Igbo | -cà | cut | Williamson (1972) |
| NC | WBC | Nupe | sá | cut | Ban |
| NC | EBC | Tarok | ca+ | break, cut | RMB |
| NC | EBC | Hone | káp | break (stick) | Storch (p.c.) |
| AA | Agaw | Bilin | kør | break | LS |
| AA | South Cushitic | Dahalo | k’eer- | chop | LS |
| AA | Central Cushitic | Arbore | k’uur- | cut | LS |
| AA | Chadic | Ngas | can | but | JI |
| KS | Central | Proto-East Khoe | *kade | cut flesh in strips | Vo97 |

Commentary: This word has almost certainly been loaned very widely in Africa. The occurrence in Chadic is almost certainly a very localised loan, but in Cushitic and Omotic these forms are very widespread (see examples under **k’er** ‘split’ and **kaal-ta** ‘axe’ in Lamberti & Sottile 1997:411, 435).

Ref: B: 133; Gr:80; G:97, 135, 154

34.#kulu ‘skin, hide’

| Phylum | Family | Language | Attestation | Comment | Source |
|--------|----------|----------|-------------|---------|------------------|
| NS | Kunama | Kunama | agala | | RCS |
| NS | ES | Nuer | kul | | RCS |
| NS | ES | Murle | kween | | RCS |
| NS | Saharan | Teda | koro-ta | | Le Coeur (1950) |
| NS | Songhay | Songhay | kúurú | | DC |
| NC | Mande | Kpelle | kolo | | Creissels (1981) |
| NC | Atlantic | Gola | koro | | W |
| NC | Kru | Kuwaa | kũ | | ALKrCI |
| NC | Ubangian | Mundu | kɔ̀nɔ̀ | | Mo |
| AA | Chadic | Tala | kuur | | JI |
| KS | Central | Naro | khò | | Vo97 |

Commentary: Greenberg (1963:21) initially identified this root for Niger-Congo. He later (p. 157) quotes Krongo, but his form does not correspond to that in Reh (1985) which is not evidently cognate. Creissels (1981:316) points out the Songhay cognate adds further citations for Niger-Congo. Blench (1997) represents a preliminary compilation of this gloss for Africa.

Refs: (C.:316,G.:21,Gr.:84, N.:93)

35.#kulu knee

| Phylum | Family | Language | Attestation | Comment | Source |
|--------|----------------|--------------|-----------------------|--------------|-----------------|
| NS | Shabo | Shabo | hutu/kutti | | Teferra (p.c.) |
| NS | Kuliak | Ik | kutuŋ | | Heine (1975) |
| NS | Koman | Kwama | dugul | | RCS |
| NS | Berta | Berta | gufuŋ | | RCS |
| NS | Kunama | Kunama | tùgà | ?C | Bender (ms.) |
| NS | Maba | Mesalit | kàdíńó | | E |
| NS | Fur | Fur | kùrù | | Jakobi (1990) |
| NS | ES | Kenzi | kur(ti) | | RCS |
| NS | CS | Mangbetu | nè-kááti | pl. è- | Demolin (p.c.) |
| NS | Saharan | Beria | kurru | | G |
| NS | Kadugli | Katcha | kúúgé | pl. nu-gúúgi | Sch94 |
| NC | Kordofanian | Tima | kurufa | | RCS |
| NC | Ubangian | Yakoma | li-kūrũ | | Mo |
| NC | Kwa | Ewe | kòlí | | Ro |
| NC | Bantu | *PB | -kónò | leg | Me |
| AA | Omotiic | Wolaytta | gulba-ta | | LS |
| AA | Cushitic | *PC | *gulb-/*gwilb- | | Ehret (1987:24) |
| AA | South Cushitic | Dahalo | gilli | | LS |
| AA | Agaw | Bilin | gərəb | | LS |
| AA | Chadic | Sukur | kırım | | Jl |
| AA | Chadic | Tera | xulukti | | Jl |
| KS | Southern | !Xóǀ | g xúũ | | Traill (1994) |
| KS | Central | Kxoe- / Anda | kúdu | | Vo97 |
| KS | Central | Shua-Cara | (kú)kúdu | | Vo97 |
| KS | Northern | Ju ’hoan | g!xòà | | Dickens (1994) |

Commentary: A preliminary version of this dataset appears in Blench (1997). Gregersen (1972) treats these as two distinct sets for ‘leg’ and ‘knee’ but they are probably to be put together and the more doubtful cognates discarded. Bender (1996:133) pursues linkages that includes a purported PNC root ***k^hon** for ‘knee’ and brings in Mende **kon** ‘head’ because the ‘knee as head of the leg’. This analysis is not used here.

Refs: (B:133; B81:261, Gr.:82,84, G.:101,123, M.:II:223)

| 36.#kuru | Tortoise, turtle | | | | | | | | |
|----------|------------------|-----------|------------------|-------------|----------------------|----------------|------------------|----------------------|--|
| Phylum | Family | Language | Attestation | | Gloss | Source | | | |
| — | Sandawe | Sandawe | k ^h ú | rú | tortoise | Sands p.c. | | | |
| — | Hadza | Hadza | k'õ | ló | tortoise | Sands p.c. | | | |
| — | Hadza | Hadza | k'ú: | | turtle | Sands p.c. | | | |
| — | Laal | Laal | kú | | <i>petite tortue</i> | Boyeldieu ms. | | | |
| NS | Koman | Kwama | k' | u | turtle | RCS | | | |
| NS | Songhay | Songhay | ń | kúú | r | small tortoise | BWK | | |
| NS | Saharan | Kanuri | | kó | ro | tortoise | Cy | | |
| NS | Maba | Maba | fa | k | ruu | tortoise | E | | |
| NS | Surmic | Didinga | bo- | ko | l | tortoise | RCS | | |
| NS | ES | Dinka | le- | ku | r | tortoise | RCS | | |
| NS | CS | Asua | ùn | gú | lú | tortoise | Demolin (p.c.) | | |
| NS | CS | Ma'di | o | kù | | tortoise | RCS | | |
| NS | Kadu | Krongo | | -kó | ò | tortoise | Reh (1985) | | |
| NC | Kordofanian | Masakin | | (k)ə | rə | tortoise | RCS | | |
| NC | Mande | Yaure | | kú | lú | tortoise | ALMCI | | |
| NC | *PWN | | | - | lu | tortoise | M | | |
| | | | | kwú | | | | | |
| NC | ? | Pre | | k | ru | wɛ | tortoise | Creissels (p.c.) | |
| NC | Senufo | Nabaj | | xu | ru | | tortoise | ALGCI | |
| NC | Ubangian | Geme | | kú | lō | | turtle | Mo | |
| NC | Kwa | Mbatto | ómó | k | rō | é | tortoise | ALKCI | |
| NC | Kwa | Ewe | | k | lo | | tortoise | Ro | |
| NC | WBC | Işekiri | ólu | kú | rú | mè | tortoise | BCCW | |
| NC | EBC | Doka | a- | ku | l | | tortoise | BCCW | |
| NC | Bantu | CB | | kó | dù | | tortoise | Gt | |
| AA | Cushitic | Burji | | ko | | c'áa | tortoise, turtle | Sasse (1982) | |
| AA | Beja | Beja | se | ku | ur | | tortoise | Hudson (n.d.) | |
| AA | W. Chadic | Hausa | kùŋ | ku | ruu | | tortoise | A49 | |
| AA | W. Chadic | Mwaghavul | | kú | r | | tortoise | Jl | |
| AA | C. Chadic | Huba | kwà | kú | rù | m | tortoise | Kraft (1981) | |
| AA | Masa | Lame | | gù | rè | i | tortoise sp. | Sachnine (1982) | |
| AA | E. Chadic | Toram | kùn | gù | rù | | turtle | Jungraithmayr (p.c.) | |
| AA | Berber | Kabyle | tafe | k | ru | rt | tortoise | Dallet (1982) | |
| KS | North | Auen | | !gu | ru | | tortoise-shell | Bleek (1956) | |
| KS | Central | Naro | | go | e | | tortoise | Traill (1986) | |
| KS | Central | Mohissa | | cu | ru | | tortoise | Bleek (1956) | |
| NS | Komuz | Kwama | | k'ukif | | | turtle | | |
| NS | Songhay | Songhay | | nkura | | | | | |
| NS | Saharan | Kanuri | | kórowú | | | tortoise | | |
| NS | Maba | Aiki | | káb(ú)rùdà | | | tortoise | | |
| NS | ES | Dinka | | le-kur | | | | | |
| NS | CS | Bongo | | kándá | | | small turtle | | |
| NS | CS | Ma'di | | okù | | | tortoise | | |
| NS | Kadugli | Krongo | | -kóòŋ (ní-) | | | | | |
| NC | Kordofanian | Masakin | | (k)əɾə | | | | | |
| NC | Mande | Mandinka | | kùtu | | | | | |
| NC | | *PWN | | -kwúlu | | | | | |
| NC | Bantu | *PB | | -kulu | | | | | |

Commentary: The diversity of the forms attested may reflect the fact that different species may have compound names (see the Kanuri and Aiki forms). It is of some historical significance that turtle/tortoise is

the only item of fauna to be widely attested in Niger-Saharan. Greenberg cites parallels from Kordofanian and also Keiga, now classified as NS. Hoffmann (1970:15-16) points out that this word was also borrowed into Chadic from Benue-Congo, occurring throughout West Chadic and sporadically in Central Chadic. Ironically, he concluded that this might be evidence that these attestations were unconnected. Cushitic languages also have similar forms: compare Beja *sekuur* 'tortoise'. Since Afroasiatic cognates seem only to be recorded in languages near to Niger-Saharan, it is reasonable to conclude that they are ancient loans.

#kuru. 'Tortoise, turtle' (C.:321, Gr.:88, G.:159)

Refs: (C.:321, Gr.:88, G.:159)

| 37.#kala | crab | | | | |
|----------|--------------|----------|--------------------------|-----------------------------|--|
| Phylum | Family | Language | Witness | Source | |
| — | Hadza | Hadza | goma: | Sands (p.c.) | |
| NS | C. Sudanic | Mbay | kó-bàr | Keegan (1997) | |
| NC | Mande-Congo | PWS | -ka(l)- | W | |
| NC | Unclassified | Pre | kamu | Creissels (p.c.) | |
| NC | Atlantic | Temne | a-kara | W | |
| NC | Ijoid | Nembe | à-kàngà | Kaliai (1964) | |
| NC | Gur | Mõõre | gará-ga | Canu (1976) | |
| NC | Kwa | Ewe | à-gálà | Ro | |
| NC | WBC | Nupe | kara⁺ | Ban | |
| NC | Mambiloid | Mambila | kaab²¹ | PM | |
| AA | W. Chadic | Hausa | káágwáá | A49 | |
| AA | C. Chadic | Mafa | tsakaɓam | Barreteau & Le Bleis (1990) | |

Commentary: Westermann (1927:230) considered 'crab' to be Proto-West Sudanic and proposes a root of the form -ka(l)-. Mukarovsky (1976:144) adds further Niger-Congo cognates. The Niger-Congo roots are discussed in Williamson & Shimizu (1968:92).

Refs: M:144; W:230

The interest of 'crab' is that it appears to have truly worldwide cognates (Blench 1997). The table below sets out some attestations and reconstructions that have been proposed for 'crab' in Old World language phyla.

| Phylum | Family | Language | Witness | Source |
|---------------|----------------------|-----------------|-------------------|-----------------------------|
| Japonic | | Modern Japanese | kani | |
| Altaic | | Modern Korean | ke | |
| Austroasiatic | Proto-Mon-Khmer | | *kə(n)taam | Diffloth (1994) |
| | Proto-North Bahnaric | | *katam | Smith (1972) |
| Austronesian | Proto-Austronesian | | *kaRang | Mahdi (p.c.) |
| | Proto-Nuclear | | *karika | Marck (p.c.) |
| | Micronesian | | | |
| Andamanese | Great Andaman | Aka Biada | kátta-da | Portman (1887:22) |
| | Little Andaman | Onge | tekandue | Dasgupta & Sharma (1982) |
| Sino-Tibetan | Proto-Tibeto-Burman | | *d-ka'y | Benedict (1972:25) |
| Dravidian | Common Dravidian | | kup(p)i | Burrow & Emeneau (1984:158) |
| Indo-European | | Greek | karkinos | |
| Basque | | Basque | karramorro | Trask (p.c.) |

Appendix 3. Possible Isoglosses with Ideophonic Derivations

Some words do seem to constitute good isoglosses for NGS but the presence of apparently good cognates outside these two families suggests either that they are very ancient, or more likely, that they are derived via sound symbolism.

#kpa 'to cough' (Gr.:81, W.:245)

| | | | |
|----|-----|------|---------------|
| NS | Fur | Fur | kuluŋɔla |
| NS | CS | Moru | äkpö |
| NS | CS | Mödö | ikàhi |
| NC | | #PWS | #kual-, kuan- |
| NC | BC | Nupe | kpa |

Central Sudanic forms generally have /kp/ (Bender, 1992:47) and it is likely that Westermann's reconstruction should be amended to include a labial-velar. Like #pur, to fly, sound-symbolism may produce comparable forms in otherwise unrelated phyla. For example, Proto-Australian for cough is *kuntul and Proto-Eastern Highlands [Papuan] *kutu (Foley, 1986:275). Even English, /kɒf/ could be added without stretching the set too far.

#pur- 'to fly, jump' (Gr.:83,D.:42, W.:275)

| | | | | |
|----|-------------|---------|-----------|-------------------|
| NS | Songhay | Songhay | firi | |
| NS | Saharan | Kanuri | fàr | 'to jump, fly' |
| NS | Maba | Mesalit | fir | |
| NS | Berta | Berta | hɔ' rəŋ | |
| NS | ES | Nubian | fire | 'to flutter' |
| NS | ES | *PN | *pär | |
| NC | Kordofanian | Moro | abəro | to fly |
| NC | | *PWS | *pi, pil- | 'to fly, flutter' |
| NC | Mande | Samo | pere | |

Notice that the meanings of 'fly' and 'jump' are regularly intertwined in both NS and NC. Ehret (1987:26) notes a striking set of cognates in Cushitic;

| | | | |
|---------------------|-------|-------------------|------|
| *PC | | *par-/*pir-/*pur- | |
| Beja | Beja | biir | fly |
| Agaw | Awngi | pərr- | jump |
| Proto-East-Cushitic | | *bar(ar) | fly |
| South Cushitic | Ma'a | -puru | fly |

As noted above, since the English 'fly' could also in principle be seen as cognate, this word may develop through some ideophonic process. Swadesh (1971) included a similar form as a world gloss, derived ideophonically, although he spreads the net over a wider set of glosses than is included here. However, compare forms such as Tibetan -phir, to fly.

Appendix 4. Suggested forms rejected

#bi 'be black' (Gr.:80,W.:206,G.:15)

| | | | |
|----|---------|---------|------|
| NS | Songhay | Songhay | bibi |
| NC | PMC | *PWS | -bi- |

This was suggested as a Kongo-Saharan isogloss by Gregersen (1972:80) but his evidence for Nilo-Saharan is weak. The Kanuri citation appears to be wrong and the Moru form somewhat remote. It is therefore suggested that the Songhay form is simply a loan from a Mande language such as Bozo.

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