

hominid. Important evidence of early bipedalism was discovered by the associates of Mary Leakey at Laetoli in the late 1970s. Through the fortunate occurrence of ash falls from a nearby volcano upon the soft muddy surfaces near the Laetoli water hole, a series of foot trails remained. As a result, eight sets of tracks made by hominids, living more than 3.6 million years ago, were preserved. In the welter of animal tracks making their way down to the lakeshore may be clearly seen the imprint of an upright, bipedal gait similar to that of modern man.

### The Search Continues

Whether the Laetoli footprints were left by an early *Homo* or a representative of the australopithecines is less important than the realization that 3.5 million years ago there were individuals, with physical attributes and a rudimentary foraging lifeway, drawn to the shore of this lake and identifiable as the precursors of modern humans.

The history of palaeoanthropology in Africa is replete with colorful tales of the eccentricities of the searchers—Dart's willingness to demonstrate brachiation by swinging over the heads of undergraduates, Broom's habit of surveying the African bush in the nude, and Louis Leakey's illnesses at the time of important discoveries by his associates or the playful tossing of elephant dung, which led to the discovery of the first footprints at Laetoli. These many anecdotes lend color to, but do not detract from, the quality of the evidence found or the conclusions reached.

Some time in the past, humans began to use tools, and identifying these early tools is a difficult endeavor. As one proceeds back through the archaeological record, tools become more primitive and are more difficult to distinguish from randomly procured and used objects. By the same token, when we push back the curtain of time to uncover the oldest kinds of mankind, we also draw closer to the point where the earliest human most resembles its nearest "nonhuman" relative. As a result, we reach a point where convenient differentiation between the various lineages of hominids is both difficult and the cause of new debate.

### BIBLIOGRAPHY

- Gowlett, J. A. J. 1990. Archaeological studies of human origins and early prehistory in Africa. In *A history of African archaeology*, ed. P. Robertshaw, 13–38. London and Portsmouth: James Currey Ltd. and Heinemann.
- Johanson, D., and M. Edey. 1981. *Lucy: The beginnings of mankind*. New York: Simon and Schuster.
- Leakey, R. F., and R. Lewin. 1992. *Origins reconsidered: In search of what makes us human*. New York: Doubleday.
- Lewin, R. 1987. *Bones of contention: Controversies in the search for human origins*. New York: Simon and Schuster.
- Reader, J. 1988. *Missing links: The hunt for earliest man*. London: Penguin Books.
- Sampson, C. G. 1974. *The Stone Age archaeology of southern Africa*. New York: Academic Press.

Joseph O. Vogel

## LANGUAGE STUDIES IN AFRICA

Prehistorians of Africa who use linguistics to interpret archaeological data are generally dependent on the work of J. H. Greenberg. It is certainly true that his publications represent a sort of fulcrum of the century's research and a truly continental synthesis. However, recent research on the principal language phyla (groups of languages related more remotely than those of a family of stock) of Africa has modified his conclusions, in some cases quite dramatically. This article presents a historical overview of the research that led to Greenberg's results and summarizes developments since the 1960s. The phylum names he established are used to simplify the presentation.

### Changing Methodologies in the Genetic Classification of African Languages

To understand the conclusions of individual researchers, some knowledge of their methods is essential. Early scholars tended to rely on simply identifying words that seemed alike and were

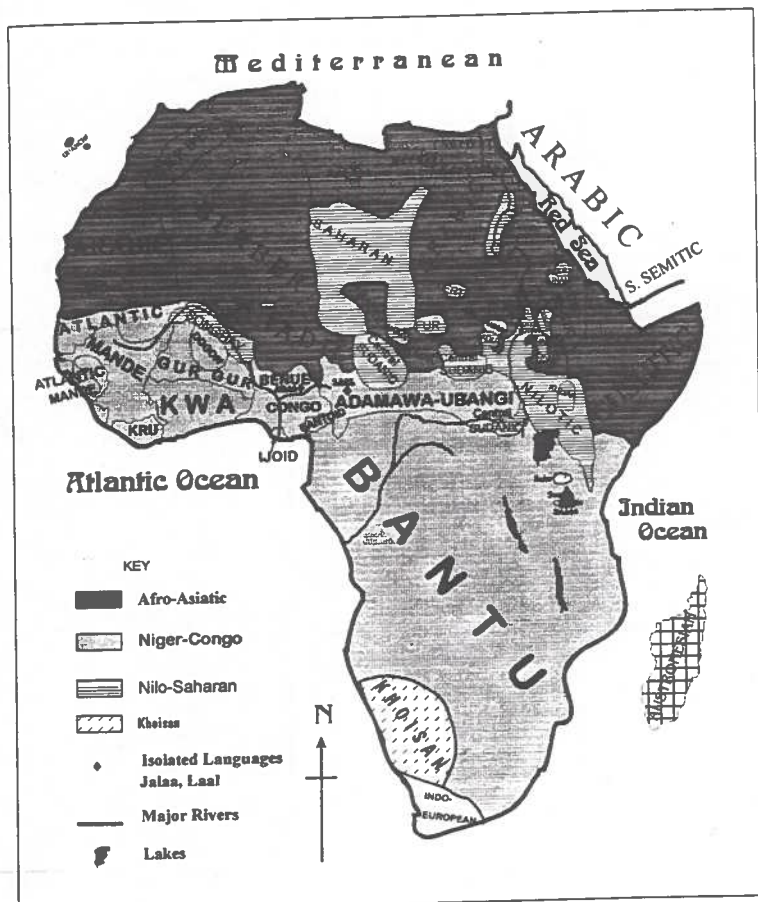


Fig. 5 Outline map of African language families

generally unable to distinguish borrowed words from basic vocabulary. In his studies, Greenberg used mass-comparison, the alignment of compa-

table lexical and grammatical elements in numbers thought to be convincing. In the 1960s, however, lexico-statistics was a more common technique

to assign individual languages to families or phyla. Lexico-statistics proposed to establish the relationship between languages through counting cognates on a standard 100-word list, often known as a *Swadesh list*. With its sister-discipline, glotto-chronology, which converted these cognate percentages into estimates of historical time depth, lexico-statistics seemed to provide a scientific, quantifiable methodology for developing genetic classifications.

Although lexico-statistics has not been entirely discarded, linguists now add so many restrictions and qualifications as to limit its usefulness. Glotto-chronology has almost entirely disappeared, at least in Africa. The tighter correspondences that are available between lexico-statistics and archaeological data in the Pacific have highlighted the problems of uneven decay in particular items on the *Swadesh list*.

Although the situation at present is far from a consensus, most scholars prefer some version of "shared innovations" to determine subgroupings. Once borrowed phenomena have been eliminated, shared lexical, phonological, or morphological elements can be used to define subgroups. Even this technique is not easy to apply as such innovations often appear to crosscut one another.

More promising for the prehistorian is the technique pioneered by Christopher Ehret in the 1960s, the cross-comparison of words of cultural significance. N. Skinner has used this technique to reconstruct names for mammals in Chadic and Afro-Asiatic languages to situate their possible centers of origin. The hypothesis is similar to that adopted by scholars of Indo-European: the reconstruction of specific lexical items to various levels of protolanguage is taken as evidence that speakers of that language had the item in their cultural repertoire. Similarly, loanwords between subgroups or phyla can be taken as evidence for contact between speakers of the languages in question.

Negative evidence, the inability to reconstruct particular lexical sets, can also be used for historical purposes. For example, if no words associated with cultivation can be securely reconstructed, we can infer that the primary divisions of the phylum were in the preagricultural phase.

The classic problem of the origin and expansion of the Bantu was one of the earliest arenas

in which archaeologists, prehistorians, and linguists attempted to reconcile their findings. The fruitless debates that followed M. Guthrie's wayward interpretations of his data and consequent disagreement with Greenberg were poor prehistory but acted to throw the area of methodology into sharp relief. Syntheses such as those of L. Bouquiaux and J. T. Vansina have presented the linguistics-archaeology interface in a more focused way, but the debate continues. Others, for example John Sutton, Kay Williamson, and Roger Blench, have attempted to mesh archaeological and linguistic data in the reconstruction of broader aspects of African prehistory.

The most recent trend has been the exploration of links between genetic findings, especially mitochondrial DNA, and linguistic groupings. The agenda for this "emerging synthesis" has been set out on a global basis by Colin Renfrew and for Africa by L. P. Excoffier, B. Sanchez-Mazas, A. Simon, and C. and A. Langaney and by L. Cavalli-Sforza, P. Menozzi, and A. Piazza.

### The Language Phyla of Africa

Figure 5 shows the present-day distribution of the language families of Africa. It is essentially a "homeland" map—that is, it shows languages in their core areas. Pastoralists with long-distance grazing orbits, such as the Fulbe, Tamachek, or Teda, have undergone major simplification. Similarly, a family such as Afro-Asiatic with an extinct branch (Ancient Egyptian) and major regions of distribution outside Africa inevitably appear foreshortened.

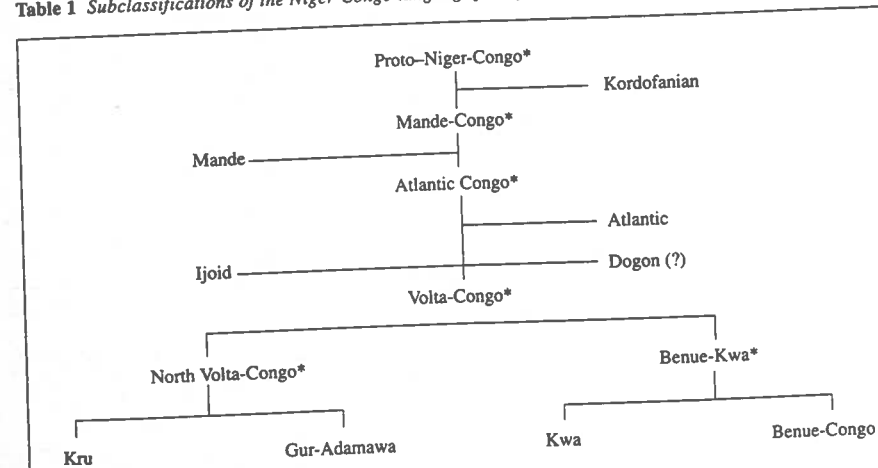
#### Niger-Congo

Niger-Congo is the most widespread of Africa's language phyla and includes the majority of its languages—in excess of 1,500. The concept of Niger-Congo has its roots in D. Westermann's *Sudan-Sprachen*, and many of the families recognized today were first established there. Westermann was the first to illustrate the strong links between the Bantu languages and those spoken in West Africa, and later scholars have generally accepted his demonstrations. Greenberg's original analysis of Niger-Congo set up six coordinate branches:

West Atlantic (Fulfulde, Wolof, Temne, etc.)  
Mande (Bambara, Vai, Kpelle, Busa, etc.)  
Gur (Dogon, Mossi, Dagari, Bariba, etc.)  
Kwa (Kru, Ewe, Akan, Yoruba, Igbo, Ijo, etc.)  
Benue-Congo (Kamberi, Birom, Jukun, Efik, and Bantu)  
Adamawa-Eastern (Mumuye, Chamba, Gbaya, Zande, Banda, etc.)

In the same volume, Greenberg also argued the case for including the Kordofanian languages, renaming the phylum *Niger-Kordofanian*. This name has not been retained, and the whole phylum, including Kordofanian, is now called *Niger-Congo*. Historically speaking, it is unlikely that a language family would have such a large number of coordinate branches, implying that a single

Table 1 Subclassifications of the Niger-Congo language family



\* = a hypothetical nodal protolanguage

#### Notes:

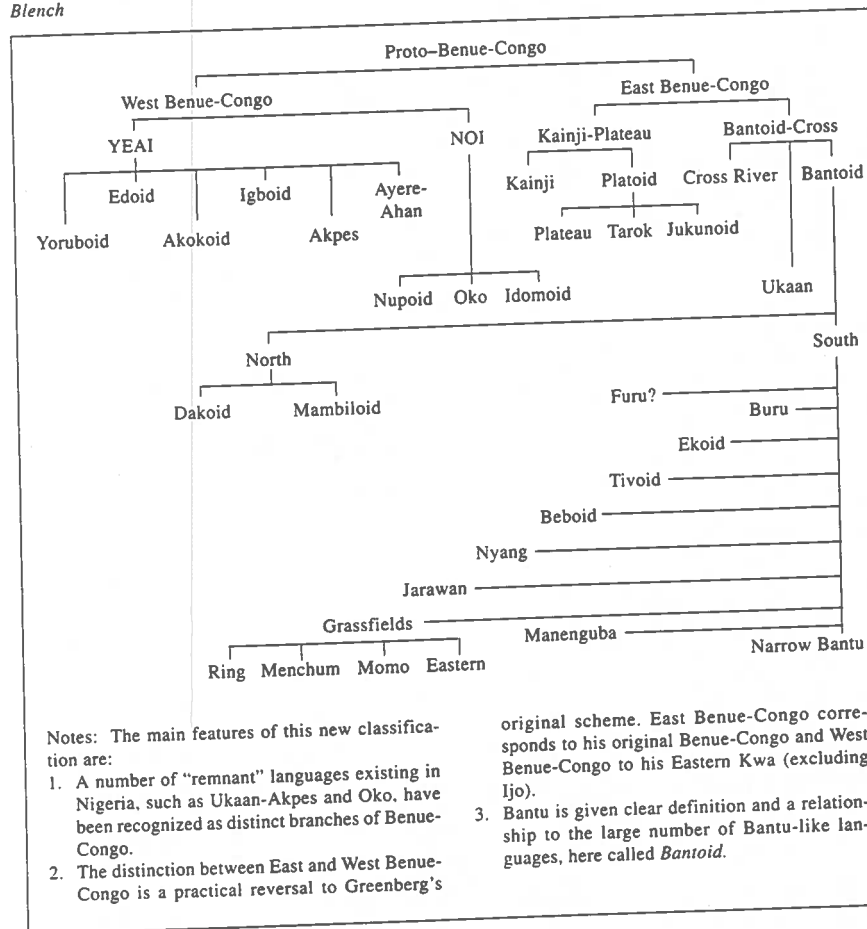
1. Greenberg included Kadugli (Tumtum) in the Kordofanian languages, but it is now regarded as Nilo-Saharan.
2. Dogon is distinct from Gur, and its position remains uncertain.

In comparison with Greenberg, the most important developments are:

1. Mande is the second principal division of Niger-Congo, confirming its status as the most separate of the West African branches.
2. Atlantic (formerly West Atlantic) has been promoted to an almost comparable level of distinctiveness.
3. Ijoid (originally part of Greenberg's Kwa) has been expanded to include the divergent Defaka and assigned to a separate branch.

4. Bennett and Sterk first proposed in 1977 that Gur, Adamawa, and Kru be treated as a coherent unit, which they called *North-Central Niger-Congo*. Although the lexical evidence is not conclusive for this grouping, the close relationship between Gur and Adamawa is generally accepted.
5. The terms *Kwa* and *Benue-Congo* have been retained, but their application has been radically revised. Kru and Ijo have been expelled from Kwa, and many of the language branches of western Nigeria, in particular, Yoruba, Nupe, Idoma, Edo, and Igbo, have been transferred to Benue-Congo.
6. Benue-Congo has consequently taken on a new appearance and now occupies virtually the whole of present-day southern Nigeria (see table 2).

**Table 2** Subclassifications of the Benue-Congo language family showing the place of Bantu according to Blench



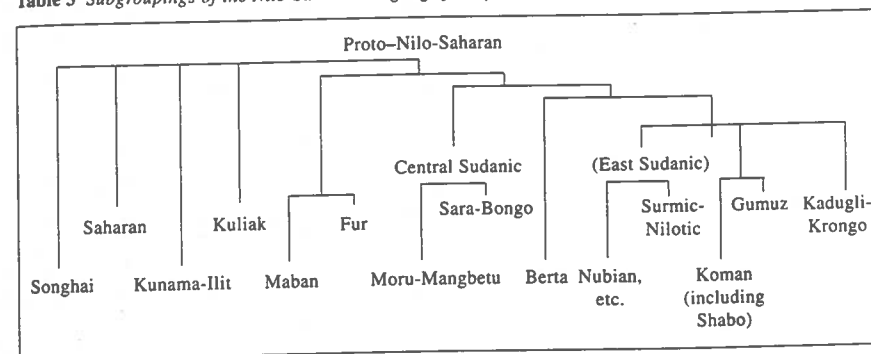
protolanguage split into six distinct groups at one time. P. R. Bennett and J. P. Sterk undertook a complete revision of the internal structure of Niger-Congo to suggest the sequence of language splits. Although not all their suggestions have been retained, current models reflect their innovative approach. Table 1 shows the subclassifications of Niger-Congo developed from

Kay Williamson's work on the basis of a consensus among the contributing linguists. Table 2 shows the further subclassification of Benue-Congo.

#### Nilo-Saharan

Although Nilo-Saharan comprises only a relatively low number of languages, it is generally

**Table 3** Subgroupings of the Nilo-Saharan language family according to Bender



agreed that, with the exception of Khoisan, it is the most internally diversified of the African language phyla. Before Greenberg's work, the classification of many of the languages of Sudan and adjacent regions of central Africa was in doubt. The major handbook of A. N. Tucker and M. A. Bryan, published in 1956, simply left many speech forms in isolated groups. Nilo-Saharan was first characterized by Greenberg, and recent work by M. L. Bender and Ehret has confirmed Greenberg's basic hypothesis as to its overall unity. Greenberg treated Nilo-Saharan as having six coordinate branches:

Songhai  
Saharan  
Maban  
Fur  
Chari-Nile  
Koman

Many more languages have been described since Greenberg's work, and the exact membership of the phylum is still in doubt. Table 3 shows the subgroupings of Nilo-Saharan languages according to Bender.

The membership of Kadu (also known as *Kadugli-Krongo*), Kuliak, and Shabo in the Nilo-Saharan language phylum is not accepted by all researchers. Moreover, the relationship between the members is still uncertain, and no overall "tree" is yet agreed upon by scholars.

#### Afro-Asiatic

Afro-Asiatic (also known as *Hamito-Semitic*, *Afrasian*, and *Lislahk*) is almost certainly the earliest African language phylum to be the subject of genetic hypotheses. The kinship of Hebrew, Arabic, and Aramaic was recognized as early as the 1530s, and Hiob Ludolf pointed out the affinity of Ethioposmitic with the Near Eastern languages in 1702. The name *Semitic* was proposed in 1781 by Ludwig von Schläzer. Berber and some of the Chadic languages, notably Hausa, were added during the course of the 19th century. The earliest version of Afro-Asiatic as presently understood probably appears in the work of F. Max Müller, who linked Egyptian, Semitic, Berber, Cushitic, and Hausa, the only known Chadic language at the time.

Greenberg's work "dethroned" Semitic from its formerly central position and emphasized its relations with the languages of Black Africa. He proposed the term *Afro-Asiatic* to replace the term *Hamito-Semitic* with its slightly bizarre, racist undertone. His original classification included five coordinate branches:

Semitic  
Berber  
Ancient Egyptian  
Cushitic  
Chad(ic)

The most significant development since Greenberg's work has been the establishment of

Table 4 Internal classifications of the Afro-Asiatic language family according to Fleming

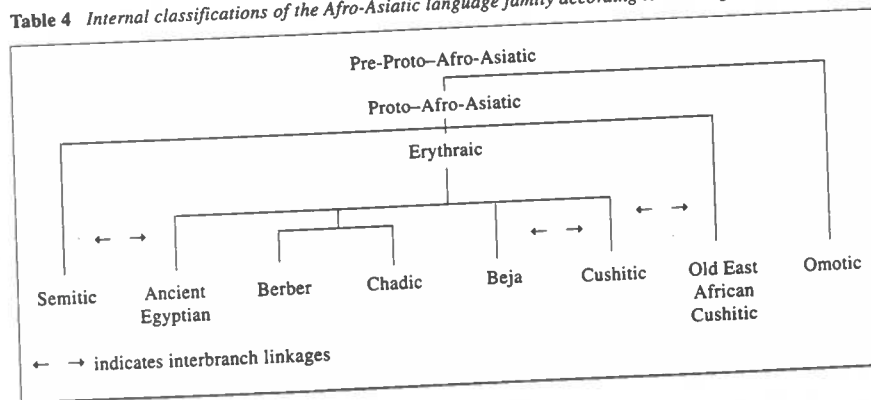
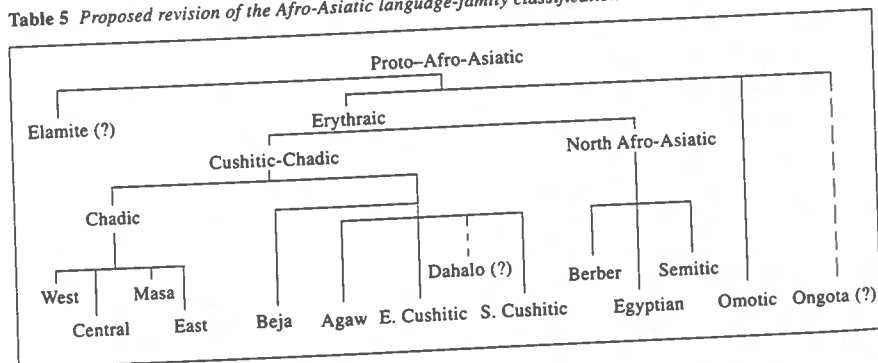


Table 5 Proposed revision of the Afro-Asiatic language-family classification



a sixth branch of the Afro-Asiatic languages: Omotic, a family confined to Ethiopia and consisting of little-known languages such as Nao, Ghimira, Hamar, and Dizi. There has also been considerable discussion about whether Cushitic really constitutes a family, and Beja, Ethiopian Cushitic, and Southern Cushitic are now often treated as distinct branches.

More recently, V. Blazek has proposed that Elamite, an extinct language of the ancient Near East, either constitutes a seventh branch of Afro-Asiatic or is a coordinate with it. Elamite is usually classified with Dravidian, spoken in southern India, but does show clear cognates with Afro-Asiatic.

The structure of Afro-Asiatic languages proposed by H. C. Fleming is shown in table 4.

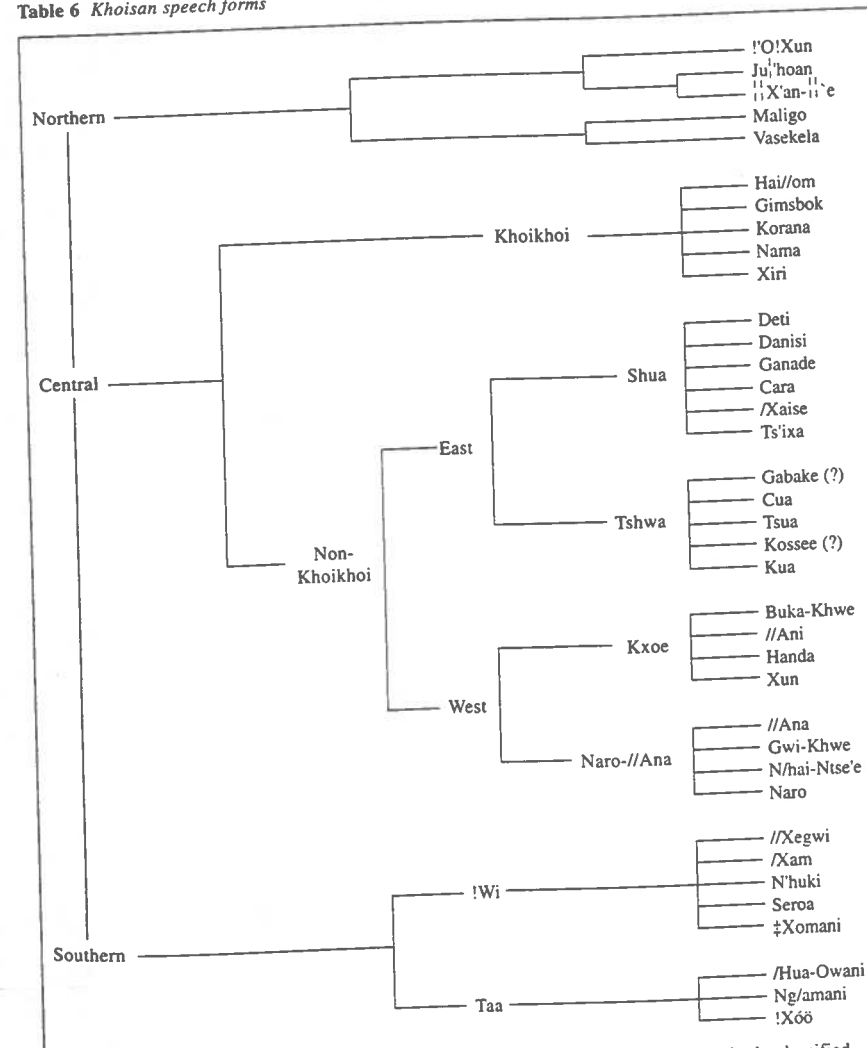
Afro-Asiatic has been the subject of a number of overviews. Historically, the most important of these were done by M. Cohen and I. M. Diakonoff. Most recently, Christopher Ehret has proposed both reconstructions and an internal structure for Afro-Asiatic. His schema is fairly similar to the models proposed formally or informally by other researchers. Table 5 shows a composite view of Afro-Asiatic incorporating my own views and some recent proposals made concerning Elamite and Ongota.

The composite in table 5 adopts the similar names for nodes (points from which subsidiary

branches depend) proposed by Ehret, Erythraic and North Afro-Asiatic. Ehret does not claim a special relation between Cushitic and Chadic but

does have Chadic branching off directly after Cushitic. A radically different view is taken in the *Hamito-Semitic Etymological Dictionary* by

Table 6 Khoisan speech forms



Note: There are two languages, Kwadi and Eastern ‡Höä, that remain to be convincingly classified.

V. Orel and O. Stolbova, who consider that Cushitic and Omotic are not genetic groupings at all but an ancient *Sprachbund* (unrelated languages in a region).

### Khoisan

Khoisan languages are primarily defined by a phonological feature, clicks, rather than by an evident common lexicon. Although the Khoisan languages, properly speaking, are confined to southern Africa, two isolates, Hadza and Sandawe in Tanzania, also have clicks. Various authors have advanced arguments for links between all the Khoisan languages, but no one schema is generally accepted. Research into Khoisan began in the mid-19th century with the work of Wilhelm and Dorothea Bleek, who also advanced the hypothesis of the unity of all Khoisan languages. Most recent classifications follow the extended study of O. Köhler who proposed a series of isoglosses (divisions separating different languages) linking the major Khoisan families.

The classification and, indeed, the inventory of Khoisan speech forms remain in doubt. One recently published classification was done by J. E. and B. F. Grimes. This has been combined and corrected in consultation with Rainer Vossen to produce the tree shown in table 6.

### Isolated Languages

The existence and classification of language isolates in Africa remain controversial. Table 7 shows some of the languages proposed as isolates.

In addition, Malagasy should be mentioned, since it is isolated on the African continent. Mala-

gasy is an Austronesian language, brought to East Africa from insular Southeast Asia less than 2,000 years ago.

### Macrophylum Proposals and External Links for African Language Phyla

More speculative proposals have recently been advanced for "deep-level" relationships of African language phyla.

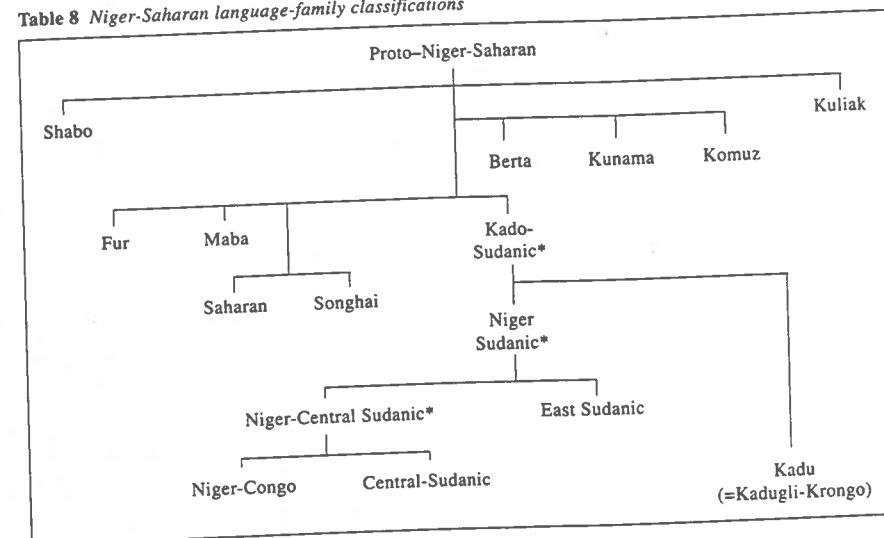
THE LOST LANGUAGE OF THE PYGMIES. The question of the origin of the Pygmies of the African rain forest and their relative antiquity has remained controversial. The Pygmies appear to be the ancient inhabitants of the forest, partly displaced by the incoming Bantu, but they speak no distinctive languages comparable to Khoisan. S. Bahuchet has recently presented a challenging view of the history of the Pygmy populations, in particular the Aka and the Baka. Despite speaking languages of quite different genetic affiliation, these groups prove to have a number of words in common, concerned especially with food gathering in the rain forest. If Bahuchet is right, then this vocabulary constitutes a trace of the lost language of the Pygmies.

AFRO-ASIATIC AND PROPOSALS FOR EXTRA-AFRICAN LINKS. Afro-Asiatic is the African language phylum that has been most commonly proposed as being related to the phyla of Eurasia. Afro-Asiatic is frequently connected to Indo-European and more broadly to Nostratic, a broad and variable grouping including most of the major language phyla of Eurasia. M. Ruhlen provides a useful summary of these debates in *A Guide to the World's Languages*.

Table 7 African language isolates

Language Name	Location	Source	Comments
Jalaa (=CuN Tuum)	Nigeria	Kleinwillinghöfer (1996)	Perhaps Khoisan
Hadza	Tanzania	Elderkin (1983)	Perhaps Chadic
Kujarke	Sudan	Doornbos and Bender (1983)	
Laal	Chad	Boyeldieu (n.d.)	
Ongota	Ethiopia	Fleming et al. (1992)	Existence unconfirmed
Oropom	Uganda	Wilson (1970)	Perhaps Khoisan
Sandawe	Tanzania	Elderkin (1983)	

Table 8 Niger-Saharan language-family classifications



NIGER-SAHARAN. Although Greenberg considered Nilo-Saharan to be a wholly distinct phylum, several scholars have put forth evidence for its close link with Niger-Congo. A. Gregersen originally proposed a Kongo-Saharan superfamily, and Roger Blench has presented a detailed case for a unification of Nilo-Saharan and Niger-Congo, suggesting that Niger-Congo is most closely related to the central Sudanic languages. The proposed macrophylum would be named *Niger-Saharan*, of which Niger-Congo would then become one branch. A minimal "tree" of Niger-Saharan in provided in table 8.

Substantial advances have been made in both the genetic classification and characterization of African language phyla since the 1960s. A problematic aspect of much of this work for prehistorians has always been the fluidity of linguists' classifications. The availability of improved data has historically been responsible for changes in both the internal classification and external relations of such families. Prehistorians can therefore legitimately question linguists concerning

the reliability of their results. If there have been such major revisions since the 1960s, will not future revisions render present interpretations void?

The only realistic response that can be made is that although further changes may well occur, they are more likely to be matters of detail rather than broad continent-spanning revisions. It is more practical for prehistorians to work with smaller-scale groupings. Every phylum is divided into manageable units, most of which are commonly accepted by the linguistic community. Examples of these would be Mande, Bantu, Nilotic, Omotic, and Central Khoisan. Although a satisfactory model of the expansion of these families is yet to be worked out, they are neither so ancient nor so vast that such a task is, in principle, unachievable.

Macrophylum hypotheses are stimulating. They extend debate on broad connections and similarities between languages at a very great time depth. However, at a certain level, they are only linguistic hypotheses, and their conclusions cannot be easily extended to other disciplines. The results of this type of inquiry are much less well founded than the low-level reconstructions

and classifications. They are more tools to help linguists think than representations of the past.

The question of the genetic classification of the language phyla of the world, from being a marginal study outside mainstream linguistics, has again begun to command considerable attention from both professional linguists and researchers in related disciplines. In Africa, where the density of archaeological sites of all periods remains low, linguistics has been a fruitful source of both testable hypotheses and explanatory models. The potential for correlation with genetics, notably mitochondrial DNA, combined with the expansion of field data and the shaking off of underlying currents of racial theories formerly attached to this type of speculation, has been important in returning credibility to this area.

#### BIBLIOGRAPHY

- Bender, M. L. 1975. *Omotic: A new Afroasiatic language family*. Carbondale: University Museum, Southern Illinois University.
- , ed. 1983. *Nilo-Saharan language studies*. East Lansing: Michigan State University Press.
- , ed. 1991. *Proceedings of the Fourth Nilo-Saharan conference*. Bayreuth, 1989. Hamburg: Helmut Buske Verlag.
- Bendor, S. J., ed. 1989. *The Niger-Congo languages*. Lanham: University Press of America.
- Blench, R. M. 1993. Recent developments in African language classification and their implications for prehistory. In *The archaeology of Africa: Food, metals and towns*, eds. T. Shaw, P. Sinclair, B. Andah, and A. Okpoko, 126–138. London: Routledge.
- Diakonoff, I. M. 1988. *Afrasian languages*. Moscow: Nauka.
- Ehret, C. 1993. Nilo-Saharans and the Saharo-Sudanese Neolithic. In *The archaeology of Africa: Food, metals and towns*, eds. T. Shaw, P. Sinclair, B. Andah, and A. Okpoko, 104–125. London: Routledge.
- Ehret, C., and M. Posnansky, eds. 1982. *The archaeological and linguistic reconstruction of African history*. Berkeley: University of California Press.
- Fleming, H. C. 1983. Chadic external relations. In *Studies in Chadic and Afroasiatic linguistics*, eds. E. Wolff and H. Meyer-Bahlburg, 17–31. Hamburg: Helmut Buske.
- Greenberg, J. H. 1963. *The languages of Africa*. The Hague: Published for Indiana University by Mouton.
- Grimes, J. E., and B. F. Grimes. 1993. *Ethnologue language family index*. Dallas: SIL.
- Guthrie, M. 1967–1971. *Comparative Bantu*. 4 vols. Farnborough: Gregg International Publishers.
- Köhler, O. 1981. Les langues Khoisan. In *Les langues de l'Afrique subsaharienne*, ed. G. Manessy, 455–615. Paris: CNRS.
- Nicolai, R., and F. Rottland, eds. 1996. *Proceedings of the Fifth Nilo-Saharan Linguistics Colloquium, Nice, 1992*. Köln: Rudiger Köppe.
- Orel, V., and O. Stolbova. 1995. *Hamito-Semitic etymological dictionary*. Leiden: Brill.
- Perrot, J., ed. 1988. *Les langues chamito-sémitiques*. Vol. 3 of *Les langues dans le monde ancien et moderne*. Paris: CNRS.
- Ruhlen, M. 1991. *Classification*. Vol. 1 of *A guide to the world's languages*. London: Edwin Arnold.
- Skinner, N. 1984. Afroasiatic vocabulary: Evidence for some culturally important items. *Africana Marburgensia*, Special Issue.
- Tucker, A. N., and M. A. Bryan. 1956. *The non-Bantu languages of north-eastern Africa*. Vol. 3 of *Handbook of African languages*. London: IAL.
- Westermann, D. 1927. *Die Westlichen Sudansprachen und ihre Beziehungen zum Bantu*. Berlin: De Gruyter. Berlin.
- Williamson, K. 1989. Linguistic evidence for the prehistory of the Niger Delta. In *The early history of the Niger Delta*, eds. E. J. Alagoa, N. Anozie, and N. Nzewunwa, 65–119. Hamburg: Helmut Buske Verlag.

Roger Blench

# TECHNOLOGY