

Archaeology and Language: methods and issues

ROGER BLENCH

Introduction

The relationship between linguistics and archaeology reflects both the internal dynamic of the disciplines themselves and external political and social trends. Many archaeologists have asserted that archaeology and linguistics do not share much common ground; some for reasons internal to archaeology, while others may be traced to the sometimes startling misuse of the conjunction of disciplines by earlier scholars. Linguistics is in many ways more internally diverse than archaeology; a much greater proportion of its practitioners are engaged in high theory and fieldwork is often perceived as a low prestige activity. The great majority of linguists are engaged in an enterprise that really does have no relevance for archaeology, whilst the reverse is not true. However, among the subset of linguists interested in historical topics, few have not at least glanced at archaeology, in the light of its potential to provide interpretative tools for their findings.

The argument from the linguists' point of view is simply put; languages were spoken by real people in the past and indeed form striking patterns in the present. This must have been the consequence of distinct strategies of movement and diversification of peoples and somehow reflect their changing social and economic conditions. Historical linguistics appears to tell us that we can plot the development of language families, and reconstruct particular lexical items of economic significance, such as hunting gear or food crops. It therefore seems that we should be able to map archaeological findings against these. Although dating algorithms, notably glottochronology, have been developed by historical linguists, few now subscribe to them and a radio-carbon date for the first settlement of a

Polynesian island is on the whole much more satisfying than a calculation from an equation developed for Indo-European.

Things are much different on the other side of the divide. Most archaeologists spend their entire careers without giving any thought to comparative linguistics. There are two distinct reasons for this; either because it is evident what language was spoken by the people who occupied the sites they excavate, or because they have actively rejected linguistics. In the case of medieval, classical, Egyptian or Mayan archaeology such questions do not usually arise; although epigraphy may play an active role in the interpretation of their data, archaeologists do not engage with the findings of historical linguistics. The rejection of the opportunity to identify speech-communities is more interesting but also more problematic as it seems to arise from a barely articulated background ideology. Glyn Daniel, for example, wrote:

“We must alas, for the most part, keep the builders and bearers of our prehistoric cultures speechless and physically neutral. This may seem to you an unsatisfying conclusion. And so it is but then much of our prehistory is unsatisfying and difficult, tantalisingly meagre and sketchy. We can appreciate this and accept the limitations of prehistory along with its excitements”.

(Daniel 1962, 114-115)

There are two things going on here; on the one hand, a fear of being identified with the sort of nationalist archaeology characteristic of Nazi Germany and Soviet Russia, or with the crackpot theorising that has blurred the serious study of prehistory from the seventeenth century onwards (Blench & Spriggs 1999). In more recent times, with the growth of the nation-state, a more diffuse and less threatening nationalist archaeology has developed. The past is hauled in to underwrite the present, most notably in countries where a major tourist income derives from that past, such as Mexico or Egypt. Although avoiding any engagement with this more recent agenda may also be an implicit strategy, there is a more general feeling that archaeology is a discipline with its own highly positivist and empiricist traditions and that speculation about ‘peoples’ and ‘cultures’ is simply irrelevant to, say, the classification of lithics. Trigger (1989, 356) comments:

“Yet there is little general awareness of the value of combining the study of archaeological data with that of historical linguistics, oral traditions, historical ethnography and historical records, although it is clear that many archaeological problems can be resolved in this way....the resistance seems to come from the view, widely held by processual archaeologists, that their discipline must be based as exclusively as possible on the study of material culture”.

For very different reasons, then, only ten percent of archaeologists engage with a similar proportion of linguists. Nonetheless, the engagement has been largely fruitful and continues to be so. The rest of this chapter¹ looks at the major issues in this engagement, both methodologically and practically, and considers some particular topics that have been the recent focus of debate.

The genesis of an idea

Historical linguistics, like many another discipline, has a slightly disreputable past. Some of its early practitioners developed models of world prehistory by arguing for links between geographically remote languages in the context of Biblical references, such as the location of the lost tribes of Israel (Wauchope 1962). This type of scholarship is often broadly referred to as Voltairean linguistics, from a famous apothegm attributed by Max Müller (1871:238) to Voltaire: ‘Etymology is a science in which the vowels count for nothing and the consonants for very little’².

Historical linguistics in the modern sense began as a comparison of written languages and textbooks; Sir William Jones’ famous lecture in 1786 is typically cited as demonstrating the links between Sanskrit and the Classical languages of Europe. Precursors to historical linguistics existed, both among the Sanskrit grammarians and in the works of rabbinical scholars. For example, Yehuda Ibn Quraysh, who lived in Fez, Morocco in the tenth century, was the first to compare the phonology and morphology of Hebrew, Aramaic and Arabic in his book *‘Risāla* (Téné 1980). However, Van Driem (2001: 1039 ff.) has shown that the conventional accounts (Bonfante 1953; Muller 1986) of the predecessors of Jones, notably Marcus van Boxhorn, are highly inaccurate³. Boxhorn’s

(1647) published study of 'Scythian' [comparative Indo-European], represents the first discussion of the methodological issues in assigning languages to genetic groups. He observed that to use lexical cognates, loanwords must be first eliminated and he placed great emphasis on common morphological systems and on irregularity, *anomalien*, as an indicator of relationship. Even the expression *ex eadem origine*, 'from a common source' first appears in a book by Johann Elichmann (1640:iii), who served as a doctor at the Persian court, which uses morphology to relate European languages to Indo-Iranian. Indeed, these earlier accounts were significantly more accurate than Jones, who erroneously believed that Egyptian, Japanese and Chinese were part of Indo-European while Hindi was not, which suggests that his method was seriously flawed.

The concept of reconstructing an Indo-European proto-language appears as early as 1713 in the works of the English divine William Wotton:

"My argument does not depend on the difference of Words, but upon the Difference of Grammar between any two languages; from whence it proceeds, that when any Words are derived from one Language into another, the derived Words are then turned and changed according to the particular Genius of the Language into which they are transplanted. [...] I can easily suppose that they might both be derived from one common Mother, which is, and perhaps has for many Ages been entirely lost".

(Wotton 1730 [1713], 57)

Wotton showed Icelandic ('Teutonic'), the Romance languages and Greek were related, which is certainly as convincing a demonstration of Indo-European affinities as Jones' links between classical languages and Sanskrit.

Although earlier scholars worked principally with written languages, most historical linguistics today is used to illuminate the evolution of unwritten or recently written languages, and it is this which has been of greatest interest to archaeologists. The recognition of the major language families is often surprisingly early. The outlines of the Austronesian family were first recognised in the early eighteenth century by the Dutch scholar Adriaan van Reeland, who compared Malay, Malagasy and Polynesian (Relandus 1708). Remarkably, the earliest sketch of an entirely unwritten language phylum appears

to be Arawakan, the languages spoken in the pre-Columbian Caribbean, but stretching into today's SE Colombia, which dates from 1782 (Gilij 1780-1784). Gilij's insights were remarkable for their time; he recognised sound-correspondences as a key tool in classifying languages, focussed on the importance of word order patterns and discussed the diffusion of loanwords.

The earliest phase of historical linguistics was then essentially classificatory, as linguists discovered the tools that were available to assign individual languages to specific groups. If there was any interpretation of these findings it was in terms of a vague migrationism, unanchored in specific historical events. However, by the nineteenth century, scholars had begun to turn to the analysis of language to establish historical results. Donaldson (1839, 12) observed in the 1830s:

“There is in fact no sure way of tracing the history and migrations of the early inhabitants of the world except by means of their languages; any other mode of enquiry must rest on the merest conjecture and hypothesis. It may seem strange that anything so vague and arbitrary as language should survive all other testimonies, and speak with more definiteness, even in its changed and modern state, than all other monuments, however grand and durable”.

At the same time, both the analogy with biological speciation and the identity of language with supposed human race began to be developed. Darwin (1859, 405) commented:

“If we possessed a perfect pedigree of mankind, a genealogical arrangement of the races of man would afford the best classification of the various languages now spoken throughout the world; and if all the extinct languages, and all intermediate and slowly changing dialects had to be included, such an arrangement would, I think, be the only possible one...this would be strictly natural, as it would connect together all languages extinct and modern, by the closest affinities, and would give the filiation and origin of each tongue”.

Almost simultaneously, Pictet (1859-63) had begun to develop the notion of 'linguistic palaeontology', the idea that prehistory can be reconstructed from specific evidence

drawn from modern spoken languages and the transformation of individual words. That he used the data to evolve convoluted and highly suspect theories of the migrations of the Aryan race should not distract attention from the significance of the enterprise.

Another development in the same era was lexicostatistics, the counting of cognate words between two or more languages in a standardised list (Hymes 1983). Dumont d'Urville (1834) compared a number of Oceanic languages (which would today be called Austronesian) and proposed a method for calculating a coefficient of their relationship. When he extended his comparison to a sample of Amerindian languages he correctly concluded that they were not related to Oceanic. Lexicostatistics is associated in more modern times with the work of Morris Swadesh, and was a key tool in the armoury of historical linguists in the 1960s and 1970s, before some of its methodological problems began to surface.

A sister discipline to lexicostatistics is glottochronology, the notion that if the differentiation between languages can be assigned numerical status then it might be regularly related to the time-depth of the split between languages (Swadesh 1952). Wotton (1730) had early had the idea of calculating how rapidly languages change, by comparing ancient texts of known date with the modern form of those languages, while Latham (1850) first sketched the possibility of assigning a precise date to the divergence of two languages through the application of a mathematical algorithm.

The attractive aspect of both lexicostatistics and glottochronology is quantification; they seem to represent a scientific approach to the dating and genetic classification of languages. However, few historical linguists now accept these approaches⁴, in part because they have signally failed to tie up with archaeology where the result was not known in advance. More important, improved understanding of sociolinguistics and the reporting of a wide variety of case-studies of language creolisation and mixture, have contributed to the realisation that language interactions are complex and diverse and lead to a wide variety of end-results (e.g. Thomason and Kaufman 1988). Mathematical methods must assume a standard of lexical purity that does not exist in the real world. The generally accepted methods of historical linguistics make possible only relative dating; for absolute dating linguists inevitably turn to archaeology.

Testable hypotheses

One of the attractive aspects of linking historical linguistics with archaeology is that it is possible to generate testable hypotheses. Linguists are usually far in advance of archaeologists in their speculations. Finding an informant for a language is easier and far less costly than mounting an archaeological expedition to search, for example, for the origins of food production. An experienced linguist can often elicit a range of basic and cultural vocabulary in a few hours, whereas excavations often take many years and require a team of researchers combining very different skills. Historical linguists are often tempted to throw off hypotheses on the origins of food production far more quickly and perhaps more casually than would be permissible within another academic framework.

However, when a prediction is made then it can at least be tested. So for example, if a historical linguist claims that certain species of domestic animal can be reconstructed back to the proto-language of a particular phylum, and at the same time makes a proposal for the homeland of the speakers of the proto-language, then excavations should ideally be able to confirm the presence of those species. A striking example of such a correlation is presented by Green and Pawley (1999) where linguistics is used both to pinpoint the homeland of Oceanic languages and to suggest the features of house-forms that should be present. Excavation suggests that structures of the predicted type *are* indeed present. Such correlations are rare in practice especially when only a small number of sites have been identified, but as the density of well-investigated sites increases, hypotheses can be subjected to more rigorous tests.

The geography of interdisciplinary traditions

To engage with other disciplines, especially those with traditions as different as archaeology and linguistics, requires a positive institutional background. This in turn reflects the intellectual climate and the organisation of research in particular countries or regions. It turns out that the system of assigning all research in these areas to universities has often created a major block, probably because of the competitive nature of funding

within national systems. Countries with national research centres that unite scholars from different intellectual areas, such as France with the CNRS & IRD, the former Soviet Union with its many Institutes and Australia with RSPAS, have been far more likely to produce interdisciplinary scholarship than England and America, where researchers must also teach in departments of universities. Generally speaking, where careers depend on publications, and only publications in a specific discipline are highly valued, there is every incentive to concentrate in one intellectual area to the exclusion of others.

The consequence has been that the conjunction of linguistics and archaeology has developed very different outcomes in different regions. Eurasia and the Pacific lead the field; Eurasia because of the Indo-Europeanist tradition and its remarkable survivals in the former Soviet Union, and the Pacific because of the fortunate support for these approaches in a few key institutions. North America represents a particular paradox, because its all-embracing tradition of anthropology usually brings together archaeology, cultural anthropology and linguistics in single departments. One might expect, therefore, a whole series of rich syntheses; it seems likely that Boas and Kroeber would have seen this as the end result of their labours. However, their virtual absence rather suggests that the reality has been academic isolationism, a tradition that has been replicated in the literature of the New World as a whole. Within Africa, research traditions are highly variable. A lack of dedicated institutions has meant that most archaeological and linguistic research is either by outsiders or funded by them, and inevitably they bring their own agendas. In addition, a shallow time-depth has meant that consolidated approaches of any type have yet to develop.

What drives language dispersals?

Given that the world shelters a finite and quite small number of language phyla, it is reasonable to ask by what process these have spread. The modern era has seen the expansion of Indo-European, notably Spanish, English and Russian, and the consequent disappearance of many small language groups. We assume that the spread of Arabic, Chinese and Hindi were responsible for similar past vanishings and that indeed this process has occurred many times prior to recorded history. What we cannot assume is

that the reasons for the expansion of particular languages or language families were similar. The expansion of Indo-European through 'guns, germs and steel' (Diamond 1998) may be a misleading model for much of the past. Indeed it is hard to eliminate the suspicion that Diamond's account is a celebration of American technological triumphalism rather than a description of the diverse patterns of cultural change.

Debate about the process of expansion has centred on a key opposition; that between migration and cultural shift. The modern spread of Indo-European was a physical expansion, in other words, individuals moved to new regions, notably America and Australia, and their offspring came to dominate those regions numerically. Such physical movements undoubtedly occurred in the past as well. The Austronesian migrations out of Taiwan, for example, seem to have been a population movement, pushing the existing Negrito populations of insular SE Asia into refuge areas. But languages can also spread by processes of assimilation and language shift; one ethnolinguistic group persuading others to switch languages through force or prestige. The expansion of Hausa in West Africa is probably a good example of this; today many minority groups on the fringes of Hausaland are switching to Hausa for prestige reasons and Hausa clan names suggest strongly that this process can be read back into the past. It seems likely that the spread of Pama-Nyungan in Australia was similar (see below). In the end, though we are likely to have to resort to 'mixed' models; people move, but sometimes quite small numbers of people can persuade much larger groups to their way of doing things.

In recent years, the broader process of model-making has been intertwined with what may be called the 'farming-dispersals' hypothesis. Originally developed by Renfrew (1987) as a challenge to the conventional 'horse-warrior' view of Indo-European origins, it has evolved into a much more general characterisation of the dispersals of individual language phyla and particular types of archaeological culture. In particular the notion has arisen that many language groupings were a consequence of agricultural origins, an idea that has been taken up in particular by Peter Bellwood and promoted in a number of places (e.g. Bellwood 1991, 1996, 1997). Versions of Renfrew's classification of language phyla by modes of dispersal have been published in many places but Table 1 provides a convenient useful recent statement;

Table 1. Language phylum dispersals and their stratification

CLASS A: MOSAIC ZONE (PLEISTOCENE)

- I. *Initial colonization prior to 12,000 BP:*
 'Khoisan', 'Nilo-Saharan' (plus later 'aquatic' expansion,) Northern Caucasian, South Caucasian, 'Indo-Pacific' (plus later farming changes), North Australian, 'Amerind' (with subsequent spread zone processes), Localized ancestral groups of II and III (below)

CLASS B: SPREAD ZONE (POST-PLEISTOCENE)

- II. *Farming dispersal after 10,000 BP:*
 Niger-Kordofanian (specifically the Bantu languages), Afroasiatic, Indo-European, Elamo-Dravidian, Early Altaic, Sino-Tibetan, Austronesian, Austroasiatic.
- III. *Northern, climate-sensitive adjustments after 10,000 BP:*
 Uralic-Yukaghir, Chukchi-Kamchatkan, Na-Dene, Eskimo-Aleut
- IV. *Élite dominance:*
 Indo-Iranian, Later Altaic, Southern Sino-Tibetan (Han)
- V. *Long-distance maritime colonization since 1400 AD (Élite dominance plus farming dispersal)*
 Mainly Indo-European (English, Spanish, Portuguese, French).

(Renfrew, in press)

There is much detailed comment that could be made about this modelling process but some more general points emerge;

- a. The classification adopts a 'tidy' view of world language phyla, derived mainly from Ruhlen (1991) who in turn reproduced whole many of Greenberg's controversial

macrophyla hypotheses, notably Indo-Pacific and Amerind. It should be noted that *no* specialised scholars of these regions accept these hypotheses and that both Melanesia and the Americas seem destined to remain highly complex.

- b. It mixes very different levels of genetic classification. For example, ‘Niger-Kordofanian (specifically the Bantu languages)’. Bantu is a small subgroup of Niger-Congo despite its geographic dispersal and this formulation makes it unclear whether the other eight hundred languages in Niger-Congo can be said to take part in this process.
- c. Most importantly, it does not engage with the actual linguistic evidence. Published evidence that any type of farming technology can be reconstructed for Sino-Tibetan, Austroasiatic, ‘Early Altaic’ or Elamo-Dravidian (itself a controversial grouping) is non-existent.

This last is probably the most important point; language phyla are intellectual constructs of a very different order of empirical reality from potsherds. If we are to interpret their distribution, then the phyla themselves *must* contain internal linguistic evidence for the engine of their proposed dispersion. In other words, if you are to assert that the Niger-Congo phylum spread following the adoption of agriculture, then vocabulary in the actual languages must support this assertion, otherwise the identity amounts to little more than a statement that early farming coincides with the present-day distribution of languages. In the case of Niger-Congo, even the archaeological evidence hardly supports this, since recent archaeological data from West Africa all indicate a relatively late adoption of farming (Neumann, Ballouche & Klee 1996).

Another problem is picking and choosing the subset of a language family that supports a specific hypothesis. All large, diverse language phyla may have at least one subgroup that depends on livestock-keeping, agriculture, hunting-gathering or fishing. Nilo-Saharan, Iroquoian and Altaic represent typical examples of this diversity of subsistence. By selecting the appropriate subgroup, the archaeological evidence can be made to match the linguistic model. There is nothing wrong with this procedure as long as the scales of the two disciplines remain in parallel; errors arise when the interpretation is expanded to apply to a whole phylum. Mithun (1984, 271) specifically discusses the question of whether agriculture can be reconstructed for the whole of Iroquoian and concludes that it

cannot, despite the presence of agricultural terminology in proto-north Iroquoian. Importantly, then the initial driver of Iroquoian expansion cannot be agriculture, whatever its role in a later era.

Is all this, then just building castles from the spirits of the upper air? Not entirely, but there has been a speculative leap from cases where such dispersals are well-supported by interdisciplinary evidence, to those where the evidence is at best insubstantial. The guilty party is definitely Austronesian; the only phylum where there are large number of quite uncontroversial reconstructions of agricultural and livestock-related terms (e.g. Wolff 1994). The great majority of archaeologists working in the region of island SE Asia accept a general dispersal from Taiwan and most would probably accept a link with a seafaring culture with agricultural skills. At the level of Oceanic, a major subgroup of Austronesian, the correlations are tighter still (Pawley & Ross 1995).

But Austronesian is the exception, not the rule. Not only is there an unparalleled body of descriptive language data and field archaeology, but Austronesian is sufficiently 'young' for its unity to be uncontroversial. Some relatively shallow New World phyla such as Maya (Kaufman 1976) or Mixe-Zoque (Wichmann 1995) are perhaps similar and also support the notion of agricultural expansion. Language phyla of greater antiquity and those in continental zones that have undergone much more extensive interaction with unrelated groups produce much more ambiguous results (cf. Dixon (1997) for an ahistoric view). Afro-Asiatic is a good example of this; archaeologists and linguists convinced its origins are to be found in the Near East have taken the generally accepted evidence for reconstructions of agricultural terminology in Semitic (e.g. Fronzaroli 1969) as evidence that agriculture was the engine of Afro-Asiatic expansion as a whole (e.g. Militarev in press). This type of argument uses scattered look-alikes to buttress the argument, despite a complete absence of regularly reconstructed items reflecting agriculture in Omotic and Chadic, the most diverse branches of Afro-Asiatic.

By a strange irony, one language phylum omitted from the above discussion provides some of the most convincing evidence for agricultural expansion. Daic, the phylum to which modern Thai belongs, is today scattered across southern China and adjacent regions of SE Asia. Its geographical dominance in Thailand is historically recent, for the

diversity of the group is situated in China. Ostapirat (2000 and in press) has recently shown that a wide range of crops and fruits can be reconstructed for proto-Daic, which is probably slightly 'younger' than Austronesian. Frustratingly, although the archaeology of cereal production in China is beginning to be quite well-known, there is as yet no archaeological complex that can be linked with Daic expansion (though see some arguments in Higham & Thorassat 1998).

Attributing dates to phylic dispersals

Even if we are sceptical about the claims of glottochronology, it seems reasonable to want to put dates to the dispersal of individual language phyla for an effective liaison with the archaeological evidence (e.g. Renfrew et al. 2000). Table 1 offers this, but without any specific justifications for the assignation of individual phyla. Except perhaps for Austronesian, it is probably too early to make any uncontroversial assertions in this area, but we can look at the evidence to hand and set out the tools and research directions that will bring more convincing results. For the establishment of a convincing time-scale for the diversification and spread of language groups and the interpretation of this spread in terms of subsistence systems there are three essential elements;

- a) the development of an internal classification for the phylum with a relative chronology
- b) the reconstruction of lexical items indicative of particular subsistence strategies
- c) an archaeological dataset that can be linked to the reconstructed subsistence strategies

There is nothing very new or surprising about this; but its application in particular cases is a non-trivial task. The first problem is that many language phyla do not have an agreed internal structure. For example, two subclassifications and reconstructions of Nilo-Saharan have been published, Bender (1996) and Ehret (2001), which reach very different results concerning the internal classification of the phylum. In the case of Afro-Asiatic, questioning its Near Eastern origin is almost a taboo subject among scholars with a Semitic or Egyptological background (e.g. Diakonoff 1988; Orel & Stolbova 1995).

Nonetheless, researchers working in the more diverse African branches concluded long ago that its most likely homeland was in Sub-Saharan Africa, most specifically in SW Ethiopia (Bender 1975; Ehret 1995). Sino-Tibetan, a phylum whose broad internal structure was long accepted in outline, has recently been deconstructed by Van Driem (2001) and now resembles more ‘fallen leaves’ than a tree. While disagreements persist, archaeologists should be extremely wary of attempting to interpret phyllic level dispersals and stick with agreed subgroups. In other words, it may be more effective for archaeologists to explore Nilotic or Songhay than Nilo-Saharan as a whole.

The second requirement is that it should be possible to reconstruct lexical items indicative of particular subsistence strategies. For example, the Miao-Yao language phylum, spoken in scattered communities across China and NE Thailand, has several roots for rice and its preparation that appear to be reconstructible to proto-Miao-Yao. These are;

Table 2. Rice-related reconstructions in proto-Miao-Yao

Lexical item	Reconstruction
rice-plant	#zɑŋ
unhulled rice/sticky rice	#mple
hulled rice	#coŋ
cooked rice	#naŋ

Source: Haudricourt (1988)

These reconstructions suggests that speakers of proto-Miao-Yao were familiar with wetfield rice-cultivation rather than simply wild rice. Given the increasingly early dates for cultivated rice in China, it may be that Miao-Yao were the original domesticators of rice and the Han took over as they moved in from further north (cf. Blench in press for more detailed discussion).

Another case where there is convincing body of reconstruction to support a very specific hypothesis concerning the subsistence patterns of speakers of a proto-language is Berber, spoken in north Africa and formerly throughout most of the Sahara. Blench (2001a) shows that all major species of domestic ruminant except the camel can be

reconstructed for proto-Berber, suggesting extremely strongly that its earliest speakers were not only livestock producers but pastoralists. In the absence of other candidates, the diffusion of domestic animals across the desert and into sub-Saharan Africa which can be dated through archaeology, should therefore be identified with the Berber expansion. On a scale of greater detail, Schoenbrun (1997, 1998) has reconstructed a raft of cultural vocabulary for the Bantu of the Great Lakes region and linked it with the known archaeology of the region.

Of course, not all the data for the world's language phyla work out so neatly or are indeed available. Still, the detailed reconstructions for Austronesian and Daic mentioned above and the evidence for the inclusion of Hopi in the Northern Uto-Aztecan maize complex (Hill 2001) all suggest these are profitable avenues to explore and can be linked very directly to archaeological evidence. Ross *et al.* (1998), which contains the first part of a continuing series of explorations of the lexicon of proto-Oceanic, provide a model that could well be emulated in other regions of the world.

Negative evidence is also important here, where the data are adequate. For example, both 'bow' and 'arrow' have clear reconstructions in Niger-Congo and not in Nilo-Saharan (nor indeed in Afro-Asiatic or Khoisan). In neither phylum is there incontrovertible evidence for any reconstructions of terms connected with agriculture⁵. This suggests strongly that both Niger-Congo and Nilo-Saharan began to disperse prior to agriculture and that Nilo-Saharan also before the bow and arrow reached sub-Saharan Africa. Negative evidence must be used with care, however. In the case of ceramics, few language phyla anywhere in the world have reconstructed terms for pottery. This does *not* show whether the speakers of the proto-language used pottery, but rather that the great variety of pottery makes the semantic field in which they occur rapidly become very diffuse.

The third requirement is that an archaeological dataset be available that can be linked with the reconstructed subsistence strategies. The existence of this is highly contingent and often reflects politics and geography as much as scholarship. Indo-European tends to out-compete other regions, since archaeological coverage is extremely dense across most of its purported range. Uralic, Austronesian, Na-Dene and Australian are other

language groupings where archaeological and linguistic coverage can be matched with some confidence. However, SE Asian phyla such as Tibeto-Burman, Miao-Yao, Daic and Austroasiatic all have part of their extension in areas where warfare and political problems restricted archaeology and indeed field linguistics during the twentieth century. This situation is gradually being rectified, but the sort of correlations possible in the eras mentioned previously should not be expected for some time. The situation is similar in much of Africa and South-Central America, not necessarily for political reasons, but rather that few resources have been available for the excavation of non-monumental sites and coverage therefore remains inadequate.

Placing potentially verifiable dates on the dispersal of language phyla must involve building on known historical facts. If we can place *ante quem* dates on particular families or subgroups then at least proposals for dates of phyllic expansion can derive from overall estimates of internal diversity. One African phylum, Afroasiatic, is particularly suitable for such an approach, since three of its branches, Egyptian, Semitic and Berber, have early and datable written texts. Table 3 shows the approximate earliest dates for written sources and the number of languages in the branch;

Table 3. Written attestations of Afroasiatic

Branch	Date	Diversity of group
Egyptian	3100 BC	Single language
Semitic	2700 BC	30 closely related languages
Berber	300 BC	Single language changing clinally across its range

These 'northern' branches are extremely undiverse compared with the branches without written attestations (Table 4);

Table 4. Diversity of other branches of Afroasiatic

Branch	Number of languages	Source
Chadic	135	Jungraithmayr & Ibriszimow (1994)
Cushitic	60	Bender & Fleming (1976)
Omotic	35	Bender (2000)

Not only do the southern branches of Afroasiatic have numerous languages but they are also extremely internally diverse, normally an indicator of considerable antiquity. Interpretations of Afroasiatic as a tree structure usually assign the sub-Saharan families as primary branchings (e.g. Ehret 1995). Given the already considerable age of Egyptian, it would be perverse not to see the original dispersal of Afroasiatic as at least 9-10,000 years old and probably one or two millennia older still. Disagreements over the homeland of Afro-Asiatic have arisen because the archaeological data for the Near East and North Africa are so much richer than for SW Ethiopia, that some writers have chosen to privilege this region (e.g. Militarev, in press).

An argument from archaeology along similar lines can derive dates for the dispersal of Niger-Congo (Blench 1999a). The Bantu languages, known for their close internal relationships, are spread from SE Nigeria to South Africa. They represent the final branching of Niger-Congo, 'a subgroup of a subgroup of a subgroup' roughly comparable to Polynesian within Austronesian. Archaeology suggests that Bantu is at least 4000 years old, if it is to be identified with the Neolithic populations spreading southwards into Northern Gabon ca. 4000 BP as most scholars suppose (e.g. Oslisly 1992; Clist 1995). Niger-Congo is a rich and complex phylum and it is inconceivable that such complexity could have evolved unless it was at least twice as old.

The settlement of the New World has been the source of a controversy that illustrates the internal problems of historical linguistics and consequent difficulties that arise in linking them to archaeological data. The Americas represent a region of exceptional linguistic diversity and the earliest classifications suggested there were at least fifty-eight distinct phyla (cf. Campbell 1997 for an overview of scholarship and dates) which would make it one of the most diverse regions of the world. Archaeologists, however, have generally

considered the occupation of the Americas as relatively recent, with most dates focussing on the so-called 'Clovis' horizon, ca. 12,500 BP (e.g. Lynch 1990). This creates a major problem, since few linguists would accept such differentiation could evolve in so short a time, especially in the light of what we know about language diversification in Australia and Melanesia. Throughout most of the twentieth century, linguists have been unwilling to reduce significantly the numbers of distinct phyla of Amerindian languages, despite a major expansion in available data, and so have been rather sceptical of the archaeological position. However, in the 1980s, Joseph Greenberg (1987), hitherto known principally for his work in Africa, put forward a radical reclassification of the linguistic situation in the Americas which proposed to reduce the languages to just three distinct phyla. The largest of these, Amerind, would roll up most of the languages of North and South America. Amerind has been widely adopted by both archaeologists and geneticists, since it neatly solves the problem of the contradiction between language and settlement dates. Unfortunately, there seems to be little evidence that it is even partly true. Despite the predictions of many Africanists (e.g. Newman 1995) the years since the publication of *Language in the Americas* have not seen a single major scholar adopt Greenberg's ideas and recent large reference books now uniformly reject it (e.g. Campbell 1997; Mithun 1999; Dixon & Aikhenvald 1999). Amerind now lives on as a fossil conception outside the professional discipline of native American linguistics; an orphan rejected in its natural home, kindly archaeologists have adopted it.

Some mainstream literature on historical linguistics has suggested that there are temporal limits that standard methods cannot breach. A figure sometimes put forward is 10,000 years, although this seems to have little to commend it except a satisfying row of zeroes. Indeed, Nichols (1992) put forward her proposals for innovative methods precisely to try and capture much greater time-depths. However, recent work on Australian languages is challenging previous notions of reconstructibility. It is estimated there were some 400+ languages in Australia prior to European contact, and that of these records remain for at least 280 (Dixon pers. com.). Australian languages show enormous differentiation, often with lexicostatistical counts as low as values given by random comparison between any two languages. Even on the most optimistic 'lumpist' assessment there are still 8-10 language families [here = phyla] (Koch 1997) and sceptics still consider the proto-Australian project methodologically impossible. Evans (in press) shows that the extreme

diversity in Australia is gradually yielding up some common features and that a reconstructed proto-Australian is conceivable. Present evidence suggests that modern humans reached modern Papua New Guinea and Australia 60-40Ky ago (Connell and Allen 1998) and linguistic reconstructions may therefore reach back to this period. If so, there may be no temporal barrier that blocks us at some defined point in the past; we must work with the historical and archaeological materials to hand.

Language shift

It can seem from standard texts that all language families diversify neatly into branching trees and it would certainly be convenient for proponents of demic expansion if this were indeed so. Moreover, if people would stick to their own language and not engage in multilingual behaviour, the life of the archaeolinguist would be easier. But language shift is one of the key processes of cultural change and indeed bound up with prestige institutions and material culture. Any convincing model of the relation between language and prehistory must take such processes into account (Ehret 1988).

A plus about language shift is that it can be seen and documented in the present, which makes it easier to seek its traces in the past. All over the world, ethnic minorities are under extreme pressure to yield their own speech to a national language and in many cases this is occurring (Blench 2001b). The consequences for material culture, though, can be highly variable. In many developed economies, for minority languages such as Breton, Scots Gaelic or the Amerindian languages of North America, the shift in material culture has already occurred. Language loss trails behind it, perhaps artificially retarded by literacy programmes or well-meaning linguists. However, in the developing world, speaking a minority language is often linked to poverty and social exclusion, for example in Indonesia or Mexico. The spread of a dominant language by agencies of the state in such countries reflects as much the impulse towards political control as the inexorable tide of globalisation, and consequently there may be no material change in the state of populations who lose their language, as in many Latin American countries.

To relate this to archaeological interpretation, one of the long-standing puzzles of Australian prehistory is the distribution of Pama-Nyungan languages. Although the language groupings of Australia are highly diverse, indicating long periods of separation, the diversity is all confined to a small region of Northern Australia (McConvell & Evans 1998). The rest of the continent is dominated by a single family, Pama-Nyungan, the languages of which are sufficiently close as to be almost inter-intelligible. Given the early settlement dates for Australia, we must imagine that Pama-Nyungan speakers persuaded the resident groups in a large region of the continent to switch languages. Since there is no evidence that this was achieved by violence, we have to assume that either technological superiority or prestige social institutions were the keys to this process. McConvell & Evans (1998) argue that we can see evidence for both. Pama-Nyungan speakers show an innovative type of social organisation, linguistic exogamy, linked to possession of song repertoires, that may well be the prestige social institution that impressed the resident groups. At the same time, some 4-5000 years BP, a new type of microlithic technology begins to appear throughout the region. Backed blades specifically, correspond almost precisely with the distribution of Pama-Nyungan languages. The combination of tools and songs⁶ seems to have been irresistible and the languages gradually spread through most of the continent, assimilating those already present.

Loanwords as an underexploited tool

Historical linguists are rather prone to look for convincing reconstructions that can be assigned to proto-languages. Marcus van Boxhorn (1647) was perhaps the first scholar to draw attention to the study of loanwords. Boxhorn (1647:65) says;

Niet oock uyt vreemde woorden neffen vreemde saecken ontleent van vreemden, ende dien volgende onder verscheiden vreemde volckeren te vinden, gelijk een *Kemel*, over al by de Romeinen, Griecken, Duitschen, ende andere, genoemt vverdt een *Kemel*, maer uyt in ende aengeboren vwoorden, bediedende saecken ofte dingen, die over al dagelijcx gebruyct, geboren, ende gevonden vworden.

[Genetic relationship is established:] not on the basis of loanwords for foreign objects borrowed from foreigners, which can therefore be found amongst foreign nations, just as a camel is known as a camel to the Romans, Greeks, German and others, but rather on the basis of native, inherited words which denote matters or things which are used, borne or encountered on a daily basis. [translation by Van Driem 2001:1045]

Boxhorn (1654:100) also understood that relationships must have a systematic character and that linguists must be careful to eliminate chance resemblances or 'look-alikes'. He notes that simply because Latin has *sus* for 'pig' and Hebrew *sus* for 'horse' we should not construct a historical explanation to related these two.

The study of lexical items that reflect introductions is definitely perceived as a less prestigious activity, a task for graduate students. However, in terms of the reconstruction of prehistory, the tracking of loanwords can provide much information that is unavailable through other means. A good example is the spread of New World crops in Africa. We know that maize, cassava, groundnuts and chilis transformed African agriculture long before European presence in the African interior reached significant levels. The main agents for the introduction of American food plants were the Portuguese, who left few records. Using the pattern of loanwords the spread of individual crops can be tracked from the coast into the hinterland and moreover show how they were borrowed from one group to another, and often by what agency, whether through trade or farmer-to-farmer spread (cf. Blench et al., 1997 for maize, Blench 1998 for cassava, Phillipson & Bahuchet 1998 for American crops in Central Africa). Wichmann (1998) explores many of those same crops in the Mixe-Zoque-speaking regions of Mexico and observes that even where archaeology can establish the antiquity of particular domesticates, linguistics demonstrates that they are regularly borrowed between subsets of a particular language grouping. Brown (1999) has used similar analyses both to track the spread of post-Columbian introductions such as the horse among the indigenous peoples of North America and to explore more generally the conditions for borrowing and the different circumstances under which it occurs.

There is another way in which loanwords can be of interest. Their frequency in languages that interact can also indicate the intensity and often the nature of contacts. For example, Papua New Guinea and its offshore islands were inhabited entirely by Papuan speakers prior to the sea-borne incursions by Austronesians. The two language groupings are entirely different in structure and lexicon and as a consequence it is relatively easy to detect loan phenomena. And indeed we find a wide variety of linguistic outcomes of this interaction, most strikingly 'mixed' languages, such as Maisin or Magori, which derive an almost equal proportion of their grammar and syntax from the two different phyla (Dutton 1976; Ross 1984). This points to situations of intense bilingualism over a long period. In other cases, whole areas of vocabulary illustrate the consequences of contact. On Mailu island, for example, the resident Magi (Papuan) speakers have borrowed all their vocabulary to do with boats and sailing as well as a large proportion of lexemes relating to trade and barter from Austronesian (Dutton 1999). More curiously still, the Magi represent the dominant group and Austronesian languages now only have a fragmentary presence. Even without archaeology, we can conclude that the residents of Mailu were initially culturally dominated by the technology brought by the incoming seafaring groups, lived in a situation of intense bilingualism and probably regarded Austronesian as highly prestigious. However, at some point, they must have regained their cultural self-confidence, expanded to overwhelm the Austronesian settlements and reinvented themselves as traders and seagoing people. Fortunately, however, we also have a good account of the archaeology of Mailu (Irwin 1985) and indeed, much of this scenario seems to be paralleled by the archaeological record. For example, the regaining of territory by the Papuan speakers, when the Mailu people took over the Austronesian trading system and disruption ensued, is probably reflected in a radical shift in settlement pattern on the mainland from about 300 BP onwards (Irwin 1985, 204; Dutton 1999). Loanwords remain thus far an underexploited tool; their potential to illuminate the spread of technologies of interest to archaeologists such as ironworking and ceramics has been little utilised.

Archaeology, linguistics and genetics: new synthesis or wayward detour?

A discipline which has been the subject of great hopes and even greater claims has been genetics, specifically the analysis of mitochondrial DNA. DNA can potentially be recovered

from archaeological material but seems also to offer a way of relating present human populations, both to one another and to past skeletal or other materials. Indeed to judge by the claims of some of its exponents, the links between language, demographic movement and genetics in prehistory are well-established. These were enthusiastically promoted at the end of the 1980s and into the early 1990s as the 'New Synthesis' and Archaeogenetics (see, for example, Cavalli-Sforza et al. 1988; Renfrew 1992; Cavalli-Sforza 1997; Renfrew and Boyle 2000). The culmination of this trend was the appearance of *'The History and Geography of Human Genes'* (Cavalli-Sforza et al. 1994) which essays a major revision of the methodology for exploring human history. Linguistic classifications of human populations purport to offer a tool for outflanking simple racial models; more abstract, they appear to provide an ideal analogue to the classificatory trees drawn from DNA analyses. If DNA trees and language trees were indeed to correspond, then this would provide striking mutual confirmation for models of human prehistory (e.g. Gibbons 2001). This plays well in the pages of *Nature* and hardly at all with most archaeologists and linguists (e.g. Pluciennik 1996; MacEachern 2000). Part of this is innate conservatism and the fact that no academic career points are to be made in being interdisciplinary, where established disciplines have developed internal structures. But it is also because DNA studies have not delivered credible results; linguists are faced with endless trees that show links quite contrary to established results and contradict one another from one paper to the next (cf. Chen, Sokal & Ruhlen, 1995; Blench 1999b for some particularly egregious cases; MacEachern 2000). Claims for a genetic 'clock' are endlessly revised and 'theoretical' dates seem not to match any actual dates available⁷.

What is going wrong here? Human populations move, interact, spread their genes; there should be a link with the map of language, as Darwin suggested. The sand in the machine is language shift; human populations shift languages for reasons which have no biological analogy. Their marriage patterns may reflect notions of cultural prestige that do not mirror biological advantage. As a consequence, language affiliation and genetic composition rapidly go out of synchronisation. Only where a population is expanding into previously uninhabited terrain or is otherwise unable to interact with other, genetically distinct, populations is such a correspondence possible. Genetics seems presently to be confident about its ability to provide useful hypotheses for other disciplines to test, but outside its special arena, a healthy scepticism still prevails.

Polynesia represents as simple a case history as exists; linguists all agree that it is an offshoot of Central Pacific, which includes Rotuman and Fiji, and Samoan is the first island in the chain which eventually leads to New Zealand. For most accepted language groupings, notably Austronesian, of which Polynesian is but a small subset, many physical types are represented and much of the genetic interactions in prehistory are still poorly understood. Despite their racial, archaeological and genetic accretions, terms such as Polynesian and Austronesian remain purely linguistic classifications and attempts to implant other types of meanings encounter a purely logical gap. To assume that linguistic entities can be mapped one-to-one against constructs from other disciplines is also to implicitly accept that contradictions can occur. In other words, a proposition of the form 'genetics shows that Polynesians did not originate in Samoa as commonly supposed, but rather..' has an assignable meaning. Bing Su et. al. (2000) use genetics to try and decide between a Melanesian or a Taiwanese origin for the Polynesians. This represents a serious confusion; genetics *cannot* show linguistic hypotheses to be 'wrong' in this way.

What then can such statements mean? Presumably those who say this have something in mind. The underlying statement seems to be that 'certain genetic markers characteristic of the people presently identified as Polynesian' are found in important concentrations in x where x is different from the agreed homeland of the Polynesians. It seems very doubtful whether enough of the diverse Polynesian-speaking peoples has really been adequately sampled to make this statement unequivocally. However, for the sake of argument, let us suppose that Polynesian-speaking peoples have been so characterised. The geneticists' claim then amounts to the observation that the genetic profile typical of a linguistic group is found among peoples who do not speak those languages today. Clearly this can have a number of possible explanations;

Chance mutation

Migration of a population from the present-day Polynesian-speaking region to region x and its assimilation

Migration of a population from region x to the present-day Polynesian-speaking region and its assimilation

Both populations deriving from a common source in a third region thus far unidentified

However, none of these options suggest that linguists are wrong or even confused in their characterisation of Polynesian. There are technical problems with the results from DNA analyses, but even more important are logical gaps that are far from being addressed. Moreover, DNA is a large church, with a great variety of haplotypes and significantly different distributions of nuclear and mitochondrial DNA. So a distinctive characterisation of Polynesians on this basis is probably as much a chimaera as the classification of human races by head types, nasal indices or many another now-forgotten indicator.

Conclusion

What emerges from all this? If nothing else, that the interaction between archaeology and linguistics is currently extremely lively. The engines are undoubtedly the growth of available data, both putting names and classifications to the languages of the world and ensuring that at least a small scattering of datapoints populate previously blank areas of the archaeological map. Nationalist concerns and the increasing articulacy of indigenous peoples have also played an important role in moving along the archaeological agenda.

For a more fruitful interchange, historical linguists need to consider more carefully what sorts of reconstructions they research, focusing in particular on areas where material remains can be recovered by archaeologists. This in turn may require rethinking certain types of data collection, particularly as regards technological vocabulary. They will also need to find ways to present their results in terms accessible to those outside the discipline. Archaeologists seeking a more rounded prehistory should in turn try and work with linguists to discover what models of language distribution are current for their region of interest and in turn what hypotheses could be tested by further research. It seems unlikely that any archaeologist has ever conducted an excavation solely to explore a linguistic model; the scale of the archaeological endeavour and thereby its inherent inertia militates against this. But it can at least be imagined; this is a topic that won't go away.

Appendix 1. Language phyla of the world

Table 5 presents a synoptic overview of the language phyla of the world to assist in locating the examples given in this chapter. There are some language phyla whose existence is generally accepted, such as Indo-European or Austronesian, as a result of the weight of scholarly opinion. In a few cases, such as Nilo-Saharan, despite its introduction in the 1950s and a series of conferences since then, a body of scholarly comment exists questioning either its unity as a phylum or the families that compose it. In addition, there are regions of the world where a large number of languages exist which show common features but which have not been shown to be related to the satisfaction of most researchers. These 'geographical' names are often shown as phyla in works of synthesis. The most important of these are Papuan, Australian and Amerind; zones of languages with common features and coherent subgroups where overall genetic relations have proved resistant to the methods of historical linguistics. Similarities of phonology or other features do suggest a common origin; but it is possible that they have so far diversified from a common proto-language that proof will remain a chimaera. Finally, in one case, Andamanese, inadequate data make any final judgment impossible at present.

Table 5. Language phyla of the world and their status

<i>Phylum</i>	<i>Usual Acronym</i>	<i>Where spoken</i>	<i>Status/Comment</i>
Niger-Congo	NC	Western, Central and Southern Africa	Accepted
Afroasiatic	AA ^a	NE Africa and the Middle East	Accepted
Indo-European	IE	Eurasia	Accepted
Uralic	U	Eurasia	Accepted
Kartvelian	K	Caucasus	Accepted
North Caucasian	NC	Caucasus	Accepted
Chukchi-Kamchatkan	CK	Siberia	Accepted
Karasuk	KS	Siberia/ N.Pakistan	Recently proposed
Eskimo-Aleut	EA ^b	Bering Strait	Accepted
Dravidian	DR	India	Accepted
Sino-Tibetan ^c	ST	Central Asia	Accepted
Miao-Yao	MY	China	Accepted
Daic (=Tai-Kadai)	D	SE Asia	Accepted
Austroasiatic	AS ^a	SE Asia	Accepted
Austronesian	AN	Pacific	Accepted
Trans-New-Guinea	TNG ^b	Papua New Guinea	Accepted though formulations of membership differ
Pama-Nyungan	PNY	Australia	Accepted
Na-Dene	ND ^b	North America	Accepted though affiliation of Haida is debated
Khoisan	KH	Eastern and Southern Africa	Usually accepted but some languages not included
Nilo-Saharan	NS	Eastern and Central Africa	Usually accepted although external scholars have questioned the evidence
Altaic	AT	Eurasia	Usually accepted although the affiliation of Korean is debated
'Papuan'	ppb	Papua New Guinea	Large number of accepted groups but their unity is not accepted
'Australian'	AU ^b	Australia	Large number of accepted groups but their unity is not considered proven
'Amerind'	AM ^b	Americas	Large number of accepted groups but their unity is not accepted
Andamanese	AD ^b	Andaman islands	Inadequate data makes effective historical linguistics impractical

This table excludes a number of well-known isolates such as Basque, Ghilyak, Ainu and Japanese, as well as African and New World isolates and problematic languages of Asia such as Nahali and Kusunda.

^aAA is unfortunately used for both Afroasiatic and Austroasiatic. AS is adopted here for Austroasiatic to eliminate confusion. PN is applied to Polynesian, hence the use of PP for Papuan here.

^bProposed acronym

^cVan Driem (2001 and elsewhere) has argued strongly for a revision to the phylic structure of Sino-Tibetan which would reclassify it as Tibeto-Burman. I retain the older formulation until the scholarly community comes to more of a consensus on this issue.

Notes

1. This subject has recent been reviewed in Blench & Spriggs (1999) and I have attempted here not to repeat that discussion but to cover new themes or else to add significant updating. Matthew Spriggs drew my attention to some of the quotations from the archaeological literature.
2. Leonard Bloomfield (1935:6) in his book 'Language' noted that no direct source in Voltaire's writings has been discovered and there is more than a suspicion that this is a piece of convenient linguistic folklore.
3. I would like to thank George van Driem for drawing to my attention to what is effectively a major revision of the narrative of historical linguistics and to say that this passage draws heavily on this published account (Van Driem 2001).
4. Although regular attempts are made to revise the system of calculation to counter the rather basic objections coming from both archaeology and sociolinguistics. For one modern version, see Greenberg (1987).
5. This is controversial, since Ehret (1993) seems convinced that such terms are found in proto-Nilo-Saharan, but Bender (1996) was unable to confirm his reconstructions.
6. This may seem less improbable once it is compared with the rapid spread of studio-produced popular music from America which has lead to the rapid erasure of many local musical traditions in the last decades.
7. It would be unfair to say that there are no archaeologists who have taken an interest in 'Archaeogenetics', the publications of the McDonald Institute constituting a major focus of these ideas (e.g. Renfrew et al. 2000). But publications in this area seem to have taken

on a momentum of their own; rather than influencing mainstream practitioners, a school of researchers spend their time going to conferences with one another.

References

- Bellwood, P., 1991. "The Austronesian dispersal and the origin of languages". *Scientific American* 265(1): 88-93.
- Bellwood, P., 1996. "The origins and spread of agriculture in the Indo-Pacific region: gradualism and diffusion or revolution and colonization?" in D. R. Harris (ed.) *The Origins and Spread of Agriculture and Pastoralism in Eurasia*, pp. 465 - 98. London: UCL Press.
- Bellwood, P., 1997. "Prehistoric cultural explanations for the existence of widespread language families". In McConvell & Evans (eds.) *Archaeology and Linguistics: Aboriginal Australia in Global Perspective*. pp. 123 - 34. Melbourne: Oxford University Press.
- Bender, M.L. 1975. *Omotic: A New Afroasiatic Language Family*. Carbondale: University Museum, Southern Illinois University.
- Bender, M.L. 1996. *The Nilo-Saharan languages: a comparative essay*. München: Lincom Europa.
- Bender, M.L. 2000. *Comparative morphology of the Omotic languages*. München: Lincom Europa.
- Bender, M. L. & Fleming, Harold C. (eds.) 1976. *The non-Semitic languages of Ethiopia*. Michigan University Press.
- Bing Su, Li Jin, Peter Underhill, et. al. 2000. "Polynesian origins: Insights from the Y chromosome". *Proceedings of the National Academy of Sciences USA*, 97(15):8225-8228.
- Blench, R.M. 1998. "The diffusion of New World Cultigens in Nigeria". in M. Chastenet (ed.) *Plantes et paysages d'Afrique*. pp. 165-210. Paris: Karthala.
- Blench, R.M. 1999a. "The languages of Africa: macrophyla proposals and implications for archaeological interpretation." in R.M. Blench and M. Spriggs (eds.) *Archaeology and Language, IV*. pp. 29-47. London: Routledge.

- Blench, R.M. 1999b. "Are the African pygmies an ethnographic fiction?" in K. Biesbrouyck, G. Rossel and S. Elders (eds.) *Challenging elusiveness: Central African hunter-gatherers in a multi-disciplinary perspective*. pp. 41-60. Leiden: Centre for Non-Western Studies.
- Blench, R.M. 2001a. "Types of language spread and their archaeological correlates: the example of Berber". in *Origini*, XXIII: 169-190.
- Blench, R.M. 2001b. *Globalisation and policies towards cultural diversity*. Natural Resource Paper, 70. London: Overseas Development Institute. Also at: <http://www.oneworld.org/odi/nrp/70.html>.
- Blench, R.M. in press. "From The Mountains To The Valleys: Understanding Ethnolinguistic Geography in SE Asia." in Sagart, L., Blench, R.M. & A. Sanchez-Mazas, (eds.) *Perspectives on the Phylogeny of East Asian Languages*. London: Curzon Press.
- Blench, R.M. K. Williamson & B. Connell 1997. "The Diffusion of Maize in Nigeria: a Historical and Linguistic Investigation." *Sprache und Geschichte in Afrika*, XIV:19-46. Köln.
- Blench, R.M. & M. Spriggs 1999. "General introduction." R.M. Blench and M. Spriggs (eds.) in *Archaeology and Language*, IV. pp. 1-20. London: Routledge.
- Bloomfield, L. 1935. *Language*. London: Allen & Unwin.
- Bonfante, G. 1953. "Ideas on the kinship of the European Languages from 1200 to 1800". *Cahiers d'Histoire Mondiale*, 1: 679-699.
- Boxhorn, Marcus van 1647. *Antwoord van Marcus Zuerius van Boxhorn op de Vraaghen, hem voorgesteld over de Bediedinge van de tot noch toe onbekende Afgodinne Nehalennia, onlanx uytgegeven. In welcke de ghemeine herkomste van der Griecken, Romeinen, ende Duytschen Tale uyt den Scythen duydelijck bewesen, ende verscheiden Oudheden van dese Volckeren grondelijck ontdeckt ende verklaert*. Leyden: Willem Christiaens van der Boxe.
- Boxhorn, Marcus van 1654. *Originum Gallicarum Liber. In quo veteris & nobilissimæ Gallorum gentis origines, antiquitates, mores, lingua & alia eruuntur & illustrantur*. Amsterdam: Joannes Jansonius.
- Brown, C.H. 1999. *Lexical acculturation in Native American Languages*. New York: Oxford University Press.

- Campbell, L. 1997. *American Indian languages: the historical linguistics of native America*. New York/Oxford: Oxford University Press.
- Cavalli-Sforza, L. L., Piazza, A, P. Menozzi et al. 1988. "Reconstruction of human evolution: bringing together genetic, archaeological and linguistic data." *Proceedings of the National Academy of Science, USA*. 85: 6002-6006.
- Cavalli-Sforza, L.L., Menozzi P. and Piazza A., 1994. *The History and Geography of Human Genes*. Princeton (NJ): Princeton University Press.
- Cavalli-Sforza, L. 1997. Genes, peoples, and languages. *Proceedings of the National Academy of Sciences, USA*, 94:7719-7724.
- Chen, J., R.R. Sokal, and M. Ruhlen, 1995. "Worldwide analysis of genetic and linguistic relations of human populations". *Human Biology*, 67 (4): 595-612.
- Clist, Bernard. 1995. *Gabon: 100 000 ans d'Histoire*. Libreville: Sepia.
- Connell, B. 1998. "Linguistic evidence for the development of yam and palm culture among the Delta Cross River peoples of Southeastern Nigeria." in R.M. Blench and M. Spriggs (eds.) *Archaeology and Language II*, pp. 324-365. London: Routledge.
- Connell, James F. and Jim Allen 1998. "When did humans first arrive in Australia and why is it important to know?" *Evolutionary Anthropology* 6(4):132-146.
- Daniel, G. 1962 (reissued 1971). *The Idea of Prehistory*. Harmondsworth: Penguin.
- Darwin, C. 1859. *On the origin of species*. London: John Murray.
- Diakonoff, I.M. 1988. *Afrasian languages*. Moscow: Nauka Press.
- Diamond, J. 1998. *Guns, Germs and Steel: A Short History of Everybody for the Last 13,000 Years*. London: Jonathan Cape.
- Dixon, R.M.W. 1997. *The Rise and Fall of Languages*. Cambridge: Cambridge University Press
- Dixon, R.M.W. & A.Y. Aikhenvald (eds). 1999. *The Amazonian languages*. Cambridge: Cambridge University Press.
- Donaldson, J. W. 1839. *The New Cratylus*. Cambridge: Deighton.
- Dumont d'Urville, J.S.C. 1834. *Philologie, par M. D'Urville. Seconde Partie. Les autres vocabulaires de langues ou Dialectes océaniens recueillies durant la voyage, et le Vocabulaire comparatif des langues françaises, madekass, malaio, mawi, tonga, taiti et hawaii, suivis de quelques considérations générales sur ces langues*. Paris: Ministère de la Marine.

- Dutton, T. 1976. "Magori and similar Languages of Southeast Papua." In S. Wurm. (ed.) *New Guinea Area Languages and Language Study. Volume II. Austronesian Languages*. pp. 581-636. Pacific Linguistics C-39. Canberra: ANU.
- Dutton, T. 1999. "From pots to people: fine tuning the prehistory of Mailu Island and neighbouring coast, south-east Papua New Guinea." in R.M. Blench and M. Spriggs (eds.) *Archaeology and Language III, artefacts, languages and texts*. pp. 90-108. London: Routledge.
- Ehret, C., 1988. "Language change and the material correlates of languages and ethnic shift." *Antiquity* 62: 564 - 74.
- Ehret, C. 1993. "Nilo-Saharan and the Saharo-Sudanese Neolithic." in T. Shaw, P. Sinclair, B. Andah and A. Okpoko (eds.) *The Archaeology of Africa. Food, Metals and Towns*. pp. 104-125. London: Routledge.
- Ehret, C. 1995. *Reconstructing proto-Afroasiatic: consonants, vowels, tone and vocabulary*. Berkeley: University of California Press.
- Ehret, C. 2001. *A historical-comparative reconstruction of Nilo-Saharan*. Köln: Rudiger Köppe.
- Elichmann, Johann 1640. *Tabula Cebetis Græce, Arabice, Latine. Item Aurea Carmina Pythagoræ cum Paraphrasi Arabica*. Leiden: Ioannis Maire.
- Evans, N. in press. "Faint tracks in an ancient wordscape". in J. Moore & W.A. Durham (eds.) *Entering new landscapes: comparing the first human occupations of Australia, the Americas and remote Oceania*.
- Fronzaroli, P. 1969. "Studi sul lessico comune semitico, VI. La natura domestica." *Rendiconti dell'Accademia Nazionale dei Lincei, Classe di Scienze morali, storiche e filologiche*, VIII, 24:285-320.
- Gibbons, Ann 2001. "The Peopling of the Pacific: Archaeologists, linguists, and geneticists struggle to understand the origins of the bold seafarers who settled the remote Pacific Islands". *Science*, 291(5509):1735-1737
- Gilij, F.S. 1780-1784. *Saggio di storia americana, o sia, storia naturale, civile e sacra de' regni e delle provincie spagnuole di Terra-Firma nell'america meridionale*. (4 vols.) Roma: Perigio.
- Green, R. & A. Pawley 1999. "Early Oceanic architectural forms and settlement patterns: linguistic, archaeological and ethnological perspectives." in R.M. Blench and M. Spriggs

- (eds.) *Archaeology and Language III, artefacts, languages and texts*. pp. 31-89. London: Routledge.
- Greenberg, J. 1987. *Language in the Americas*. Stanford, CA: Stanford University Press.
- Haudricourt, A.G. 1988. "Les dialectes chinois." in Revel, N. (ed.) *Le riz en Asie du sud-est*. Volume I. pp. 35-42. Paris: EHESS.
- Higham, C. & R. Thosarat 1998. *Prehistoric Thailand: from early settlement to Sukothai*. Bangkok: River Books.
- Hill, J.H. 2001. "Dating the break-up of Southern Uto-Aztecan." in J.L.M. Zamarrón & J.H. Hill (eds.) *Avances y balances de lenguas yutoaztecas*. pp. 345-357. México: INAH.
- Hymes, D. H. 1983. "Lexicostatistics and glottochronology in the nineteenth century (with notes towards a general history)." In D.H. Hymes (ed) *Essays in the history of Linguistic Anthropology*. pp. 59-113. Amsterdam and Philadelphia: John Benjamins.
- Irwin, Geoffrey 1985. *The emergence of Mailu: as a central place in coastal Papuan prehistory*. Canberra: Department of Prehistory, Research School of Pacific Studies, Australian National University [Terra Australis 10].
- Jungraithmayr, H. and Dymitr Ibriszimow 1995. *Chadic lexical roots*. [2 vols.] Berlin: Reimer.
- Kaufman, T. 1976. "Archaeological and linguistic correlations in Mayaland and associated areas of Meso-America". *World Archaeology*, 8:101-118.
- Koch, H. 1997. "Comparative linguistics and Australian prehistory." in McConvell, P. & N. Evans (eds.) *Archaeology and Linguistics. Aboriginal Australia in global perspective*. 27-43. Melbourne, Australia: Oxford University Press.
- Latham, R. G. 1850. *The natural history of the varieties of man*. London: John van Voorst.
- Lynch, T.F. 1990. "Glacial-age man in South America?" *American Anthropologist*, 55:12-36.
- McConvell, P. & N. Evans (eds.) 1997. *Archaeology and Linguistics. Aboriginal Australia in global perspective*. Melbourne, Australia: Oxford University Press.
- McConvell, P. & N. Evans 1998. "The enigma of Pama-Nyungan expansion in Australia." In R.M. Blench and M. Spriggs (eds.) *Archaeology and Language II*, pp. 174-191. London: Routledge.
- McEachern, S. 2000. "Genes, tribes and African history", *Current Anthropology*, 41,3:384.
- Militarev, A. in press. "Prehistory Of Dispersal: Proto-Afrasian (Afroasiatic) Farming Lexicon." in P. Bellwood & C. Renfrew (eds.) *Proceedings of the meeting on early*

- farming dispersals*. McDonald Institute Monographs. Cambridge: McDonald Institute for Archaeological Research.
- Mithun, M. 1984. "The proto-Iroquoians: cultural reconstruction from lexical materials". In: M.K. Foster, J. Campisi & M. Mithun (eds.) *Extending the rafters: interdisciplinary approaches to Iroquoian studies*. pp. 259-281. Albany: State University of New York Press.
- Mithun, M. 1999. *The languages of Native North America*. Cambridge: Cambridge University Press.
- Muller, J-C. 1986. "Early stages of language comparison from Sasseti to Sir William Jones (1786)". *Kratylos*, 31(1): 1-31.
- Müller, F.M. 1871. *Lectures on the science of language*. [2 vols.] London: Longmans, Green and Company.
- Neumann, K., A. Ballouche & M. Klee 1996. "The emergence of plant food production in the West African Sahel: new evidence from northeast Nigeria and northern Burkina Faso". in G. Pwiti & R. Soper (eds.) *Aspects of African archaeology*. pp. 441-448. Harare: University of Zimbabwe Publications.
- Newman, P. 1995. *On being right: Greenberg's African linguistic classification and the methodological principles which underlie it*. African Studies Program. Bloomington: Indiana University.
- Nichols, J., 1992. *Linguistic Diversity in Space and Time*. Chicago (IL): University of Chicago Press.
- Orel, V. & O. Stolbova, 1995. *Hamito-Semitic Etymological Dictionary*. Leiden: Brill.
- Oslisly, R. 1992. *Préhistoire de la moyenne Vallée de L'Ogooué (Gabon)*. 2 vols. Paris: ORSTOM.
- Ostapirat, W. 2000. "Proto – Kra." *Linguistics of the Tibeto-Burman Area*, 23.1.
- Ostapirat, W. in press. "Kra-Dai And Austronesian" in Blench, R.M., Sagart, L. & A. Sanchez-Mazas, (eds.) *Perspectives on the Phylogeny of East Asian Languages*. London: Curzon Press.
- Pawley, Andrew and Malcolm Ross, 1995. "The prehistory of Oceanic languages: a current view." In Bellwood, P. James Fox and Darrell Tryon (eds.) *The Austronesians: Historical and Comparative Perspectives*. pp. 39-74. Canberra: Department of Anthropology, Research School of Pacific and Asian Studies, Australian National University.

- Payne, D. 1993. "Una visión panorámica de la familia lingüística Arawak." In M.L.R. De Montes (ed.) *Estado actual de la clasificación de las lenguas indígenas de Colombia*. pp. 127-164. Santafé de Bogotá: Instituto Caro y Cuervo.
- Pictet, A. 1859-63. *Les origines indo-européennes, ou les Aryas primitifs: essai de paléontologie linguistique*. Paris: Cherbuliez.
- Phillipson, G. & S. Bahuchet 1998. "Les plantes d'origine américaine en Afrique bantoue: une approche linguistique." In M. Chastenet. (ed.) *Plantes et paysages d'Afrique*. pp. 87-116. Paris: Karthala.
- Pluciennik, M. 1996. "Genetics, archaeology and the wider world". *Antiquity* 70:13-14.
- Relandus, Hadrianus, [Adriaan van Reeland] 1708. *Dissertationum Miscellanearum, Pars Tertia et Ultima*. pp. 55-139. Trajecti ad Rhenum: Guilielmus Broedelet.
- Renfrew, C. 1987. *Archaeology and Language: the Puzzle of Indo-European Origins*. London: Jonathan Cape.
- Renfrew, C. 1992. "Archaeology, Genetic and Linguistic Diversity". *Man*, 27(3): 445-478.
- Renfrew, C. in press. "The Emerging Synthesis': The Archaeogenetics Of Language/Farming Dispersals And Other Spread Zones". In P. Bellwood & C. Renfrew (eds.) *Proceedings of the meeting on early farming dispersals*. McDonald Institute Monographs. Cambridge: McDonald Institute for Archaeological Research.
- Renfrew, C., McMahon, A. & L. Trask (eds.) 2000. *Time depth in historical linguistics*. (McDonald Institute Monographs). Cambridge: McDonald Institute for Archaeological Research.
- Renfrew, C., and Boyle, K. (eds.) 2000. *Archaeogenetics: DNA and the Population Prehistory of Europe*. (McDonald Institute Monographs). Cambridge: McDonald Institute for Archaeological Research.
- Ross, M. 1984. "Maisin: a Preliminary Sketch." in *Papers in New Guinea Linguistics No. 23*. pp. 1-82. Pacific Linguistics A-69. Canberra: ANU.
- Ross, Malcolm, Andrew Pawley and Meredith Osmond, 1998. *The Lexicon of Proto Oceanic. Vol. 1. Material Culture*. Canberra: Pacific Linguistics.
- Ruhlen, M. 1991. *A guide to the World's Languages. Volume I*. Stanford, CA: Stanford University Press.
- Schoenbrun, D.L. 1997. *The historical reconstruction of Great Lakes Bantu cultural vocabulary*. Köln: Rudiger Köppe.

- Schoenbrun, D.L. 1998. *A green place, a good place: agrarian change, gender and social identity in the Great Lakes Region to the 15th Century*. Portsmouth/ Nairobi/ Kampala/ Oxford: Heinemann/ Fountain/ EAEP/ James Currey.
- Swadesh, M. 1952. "Lexicostatistic dating of prehistoric ethnic contacts". *Proceedings of the American Philosophical Society*, 96: 453-462.
- Téné, D. 1980. "The earliest comparisons of Hebrew with Aramaic and Arabic". In Konrad Koerner (ed.) *Progress in Linguistic Historiography*. pp. 355-377. Amsterdam: John Benjamins.
- Thomason, S. G. and Kaufman, T. 1988. *Language Contact, Creolization and Genetic Linguistics*. Berkeley, CA: University of California Press.
- Trigger, B. G. 1989. *A History of Archaeological Thought*. Cambridge: Cambridge University Press.
- Van Driem, G. 2001. *Languages of the Himalayas: an ethnolinguistic handbook*. Handbuch der Orientalistik, . Leiden: Brill.
- Wauchope, R. 1962. *Lost tribes and sunken continents*. Chicago and London: University of Chicago Press.
- Wichmann, S. 1995. *The relationship among the Mixe-Zoquean languages of Mexico*. Salt Lake City, UT: University of Utah Press.
- Wichmann, S. 1998. *A conservative look at diffusion involving Mixe-Zoquean languages*. in R.M. Blench and M. Spriggs (eds.) *Archaeology and Language II*, pp. 297-323. London: Routledge.
- Wolff, J.U. 1994. "The place of plant names in reconstructing proto-Austronesian." in A.K. Pawley & M.D. Ross (eds.) *Austronesian terminologies: continuity and change*. pp. 511-540. Pacific Linguistics C-127. Canberra: ANU.
- Wotton, W. 1730. *A discourse concerning the confusion of Languages at Babel*. London: Austen & Bowyer.

¹ This subject has recent been reviewed in Blench & Spriggs (1999) and I have attempted here not to repeat that discussion but to cover new themes or else to add significant updating. Matthew Spriggs drew my attention to some of the quotations from the archaeological literature.

² Leonard Bloomfield (1935:6) in his book 'Language' noted that no direct source in Voltaire's writings has been discovered and there is more than a suspicion that this is a piece of convenient linguistic folklore.

³ I would like to thank George van Driem for drawing to my attention to what is effectively a major revision of the narrative of historical linguistics and to say that this passage draws heavily on this published account (Van Driem 2001).

⁴ Although regular attempts are made to revise the system of calculation to counter the rather basic objections coming from both archaeology and sociolinguistics. For one modern version, see Greenberg (1987).

⁵ This is controversial, since Ehret (1993) seems convinced that such terms are found in proto-Nilo-Saharan, but Bender (1996) was unable to confirm his reconstructions.

⁶ This may seem less improbable once it is compared with the rapid spread of studio-produced popular music from America which has led to the rapid erasure of many local musical traditions in the last decades.

⁷ It would be unfair to say that there are no archaeologists who have taken an interest in 'Archaeogenetics', the publications of the McDonald Institute constituting a major focus of these ideas (e.g. Renfrew et al. 2000). But publications in this area seem to have taken on a momentum of their own; rather than influencing mainstream practitioners, a school of researchers spend their time going to conferences with one another.