

THE LINGUISTIC PREHISTORY OF THE SAHARA

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The Trans-Sahara project: State Formation, Migration and Trade in the Central Sahara (1000 BC - AD 1500)

Burials, migration, identity: Wednesday 30th April 2014 Friday 2nd May 2014

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ACRONYMS

*	regular reconstruction
BCE	Before Common Era
BP	Before present
ONA	Old North African
SBB	Sara-Bongo-Bagirmi

1. Introduction

The Sahara today is fairly uniform linguistically; Hassānīya and other Arabic dialects, Berber and Saharan¹ (Teda-Zaghawa) cover most of the terrain from west to east. However, this state of affairs is probably relatively recent and reflects both the current aridity of the Sahara (which discourages ethnolinguistic diversity) and political and religious movements over recent millennia which have also tended to induce uniformity. But it would be a mistake to read this back into the past; the ‘green Sahara’ of the early Holocene and the variety of material culture uncovered by archaeologists points to both the presence of many more languages and cultures, representing phyla different from those spoken in the present. The expansion of languages such as Hassānīya and Tuareg are demonstrably recent and a prior history is there to be uncovered.

The indications of a former linguistic geography are all fragmentary; inscriptions in Libyco-Berber and Punic/Latin scripts, terms without etymologies in present-day languages and the characteristics of residual populations which may reflect former distinct ethnolinguistic groups whose languages have been assimilated. Written records, iconography and archaeology can all provide general indications of this more diverse past. The ‘Tehenu’ appear in Vth Dynasty sources (3200 BC) as livestock keepers of the Western Desert (Vernet and Onrubia-Pintado 1994:56). Egyptian records speak of the incursions of the I-S-B-T-U, usually identified with the Asbytes of Herodotos, nomads from the deserts west of the Nile who raided settlements in the Eighteenth Dynasty (1543–1292 BC). Herodotos (ca. 500 BC), Book IV in particular, gives a long account of the geography and characteristics of the Maghrebin tribes, which grow more exotic as they move westward from the known terrain of Egypt and the Nile. Nonetheless, the oases of Siwa, Awjila and the capital of the Garamantes in the Fezzan can easily be recognised in his account. Beyond that, Herodotos claims that ten days march west of the Garamantes live the Atarantes ‘who have no names of their own’. It has been speculated that the name Atarantes derives from Berber *adrar* (pl. *idaren*) ‘mountain’. The challenge is to sift out the colourful and fantastical elements and develop an interpretation which is congruent with both synchronic linguistics and archaeology.

The object of this paper² is to draw together these fragments to present a new model for the linguistic prehistory of the Sahara and to explore how this could be correlated with the developing regional archaeology. It begins by summarising the present-day linguistic situation and then the existing evidence for inscriptions. §4. explores the significance of the ‘green Sahara’ concept for ethnolinguistic diversity and suggests that knowledge of the residual foraging groups in the Sahara provide some clues to former subsistence strategies. §5. discusses the importance of substrate lexicon, in particular for animals, in uncovering Berber-forager interaction in the southern Sahara. §6. synthesises the data presented and suggestions avenues for further research.

2. The present-day situation

2.1 General

At present, the dominant languages of the Sahara from west to east are Hassānīya Arabic, Tuareg Berber, Teda-Daza and the related Beria [=Zaghawa], Arabic again, with Beja on the Red Sea coast. Isolated pockets of Sub-Saharan languages exist within this, most notably islands of Songhay such as Tabelbala (Souag 2010) and Kanuri (Fuchs 1961). These islands are usually thought to be relatively recent; the Kanuri for example, is almost certainly a relic of the trans-Saharan slave trade, dating from the medieval period. Non-Tuareg Berber languages such as Zenaga (Tayne-Cheikh 2008, 2010), Tetserret (Lux 2013), Awjila and the

¹ The term ‘Saharan’ contains a potential ambiguity in linguistic discussions. It refers both to the desert as an adjective and is applied to the subgroup of the Nilo-Saharan phylum which includes Kanuri, Teda-Daza and Beria. The paper will try and make clear at each point which usage is intended.

² This paper represents the fruition of years of discussion with scholars from a variety of different disciplines. Particular thanks to Vaclav Blažek, Nick Drake, Maarten Kossmann and Lameen Souag for unpublished data and critiques. The paper was ably summarised at the Leicester workshop by Tim Insoll and has benefited from comment both at the workshop and subsequently.

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extinct El-Fogaha, form pockets within Arabic and other Berber. Map 1 shows the overall current linguistic situation³.

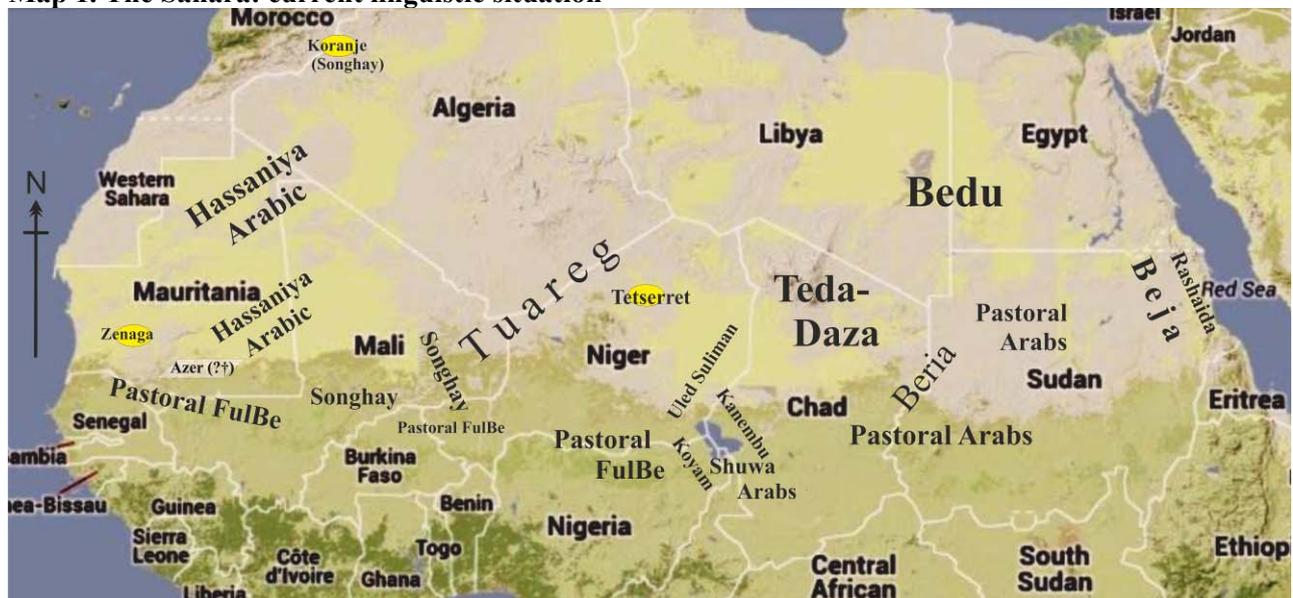
2.2 Arabic

The Arabic spoken in the Sahara is divided into a number of dialect groups. These are as in Table 1;

Table 1. Arabic dialects of the Sahara

Lect	Location
Hassānīya	Mauretania and adjacent areas
Moroccan	Morocco
Algerian	Algeria
Uled Suliman	Libya, Niger, Nigeria
Shuwa	Nigeria, Cameroun, Chad
Chadian	Chad, Sudan
Bedawi	Egypt

Map 1. The Sahara: current linguistic situation



Hassānīya Arabic (حسانية), the language of the Moors, is a conservative Arabic dialect originally spoken by the Beni Hassān, who are thought to have expanded from North Africa from the 15th century onwards (Taine-Cheikh 1979). It is likely that it assimilated a largely Berber population, of which Zenaga is the last remaining island (Al-Chennafi & Norris 1981). Although the Hassānīya must have interacted with other *in situ* populations, there is little evidence in unidentified loanwords for the genetic affiliation of these populations.

Shuwa Arabic is the language of the westernmost pastoral nomads who arrived from Sudan in the kingdom of Kanem in the thirteenth century (Zeltner 1970). Their incursions, which seem to have been very violent, are the subject of a letter of complaint from the Shehu of Kanem, preserved in the Cairo Archives (Walz 1978). The Shuwa must have intermarried extensively with indigenous populations as today they cannot be distinguished in terms of physical appearance. It is likely that the Arabic they speak is continuous with standard Chadian Arabic (De Pommerol 1997) and with the Arabic of the Baggara cattle nomads of Sudan. The Uled Suliman is a clan of camel-herders who were originally found in southern Libya. However, at some point in the twentieth century they began to leave Libya for Niger and then to migrate to NE Nigeria, where they are now well-established.

³ The map represents the situation as it was ca. 2000 AD. However, the political upheavals in the past decade may well have changed the linguistic geography of the Sahara yet again, with the Songhay in particular fleeing many settlements.

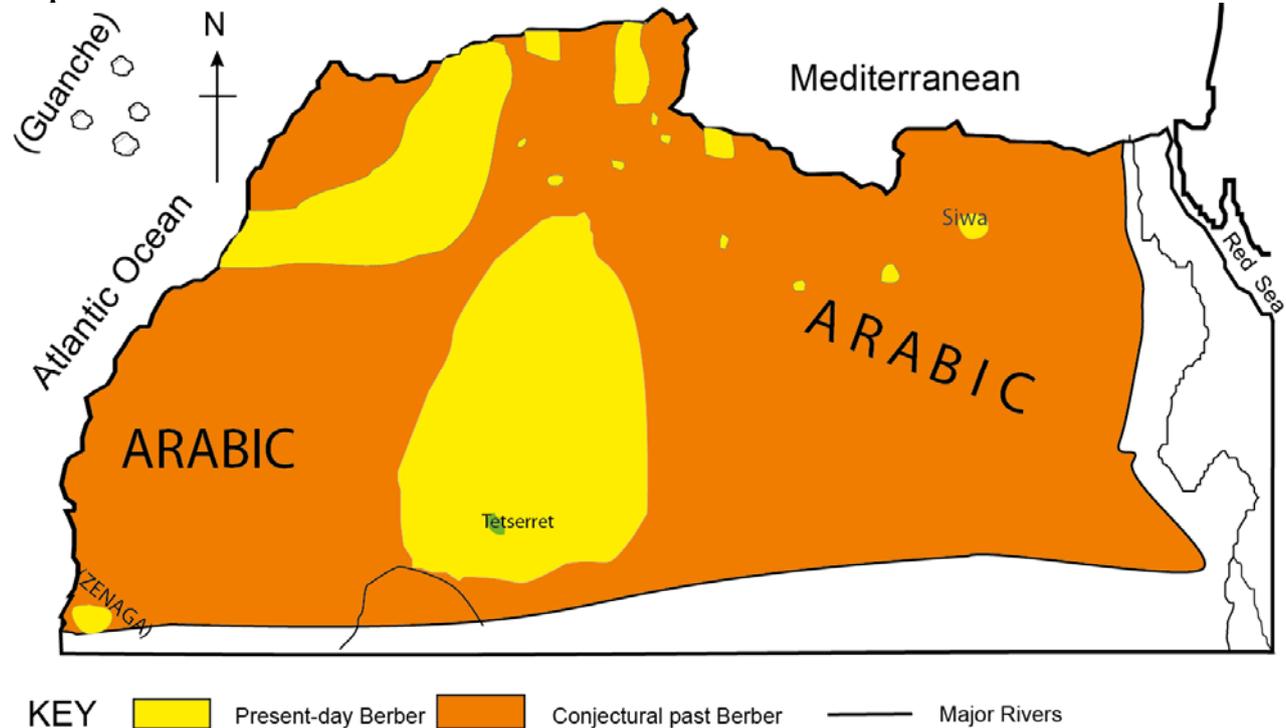
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2.3 Berber

2.3.1 Mainland languages

The Berber languages constitute a major branch of the Afroasiatic language phylum and are spoken both by settled and nomadic populations along the North African coast and far down into the Sahara, presently reaching the borders of Nigeria. Today, Berber languages are confined to a series of islands surrounded by Arabic except where they touch Sub-Saharan African languages (Map 2).

Map 2. Present and former distribution of Berber



This is a considerable geographical range, but it has been regularly argued that Berber culture and by implication, people, reached as far as the Nile Confluence (e.g. Behrens 1989). Bechhaus-Gerst (1989) claimed to detect loans from Berber into Nubian and Behrens adduced cultural evidence from rock-paintings etc. Such a stretch is not inconceivable geographically, but the evidence for this remains weak, both linguistically and archaeologically (though see a negative evaluation in Kossmann 2013). Nonetheless, Berber must once have been the dominant population throughout much of North Africa and the Sahara in the past (Basset 1952; Camps 1980; Willms 1980; Ameur 1990; Brett & Fentress 1996; Blench 2001). Although the Tuareg are presently the most widespread group, found across much of Algeria, Niger and southern Libya (Bernus 1981), their expansion is probably relatively recent as they may have entered the south-central Sahara as late as the 6th century AD (Camps 1974).

The Berber remain a highly mobile group, the Tuareg in particular forming new communities in the coastal cities of West Africa and are adept at maintaining a strong media presence. The Zenaga in SW Mauretania were a significant group when first described, but are now down to some 300 speakers (Faidherbe 1877; Masqueray 1879; Basset 1933; Dubié 1940; Nicolas 1953; Taine-Cheikh 2008). North of Agades in Niger live the Tetserret, whose language shows correspondences with Zenaga and who are now encapsulated by the Tuareg (Attayoub 2001; Lux 2013). Other islands of Berber speakers occur within the Arabic-speaking zone further east, most notably at Awjila (أوجلة) (Paradisi 1960; Putten 2013), formerly at El-Fogaha (Paradisi 1963) and Siwa (Laoust 1932). Furthermore it is often claimed that Berbers reached the Canaries in the past, leading to the formation of the Guanche, the now-vanished aboriginal population (Wölfel 1965).

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Despite an abundance of information, there are a series of major unanswered questions about the affiliations, origins and date of diversification of the Berber languages (Galand 1970-1). Berber is Afroasiatic, and its nearest relative is likely to be Semitic. Yet when deep-level Arabic borrowings are weeded out it retains only a very small corpus of established Afroasiatic roots, pointing to a 'long tail', a split from Afroasiatic at quite some time-depth. When and where this took place is highly uncertain. Similarly, the dates of the primary expansion of Berber are problematic; its extremely low internal diversity points either to a recent epoch or to an episode of language levelling. Evidence from Neo-Punic and Latin borrowings suggests a date for proto-Berber of 100-200 AD. Under no circumstances can Berber be identified with the Capsian (ca. 12,000-8000 BP) or even the first stages of the Neolithic in North Africa (? 7000 BP onwards), both of which are far too early to be reconciled with Berber internal diversity. If this is indeed so, what process is in consilience with the archaeological record?

The only way to account for the distinctiveness of Berber is to suppose that the speakers of the proto-language must have been resident somewhere for a long period, diverging from Afroasiatic but not diversifying internally⁴. At a point in the more recent past, a social or economic change must have transformed their society, stimulating a major expansion. Blench (2001) argued that this was pastoralism, on the basis that a quite detailed lexicon of livestock-keeping can be reconstructed for proto-Berber. This ought to correspond to the expansion of pastoralism across the Central Sahara, which is around 5-4000 BP (Brooks et al. 2009). The earliest dates for cattle in Africa are debated because it is difficult to be sure that skeletons represent domesticated species. Wild cattle existed in Northeast Africa, and by the time of Nabta Playa, they may have been managed by humans i.e. around 9000 BP (Gautier 1984, 1987). Di Lernia (2006) has now radiocarbon dated a large number of cattle burials in the Messak in southern Libya, and they give a fairly consistent suite of dates pointing to the introduction of livestock ca. 7000 BP. Bones of small ruminants also occur in these burials, together with occasional other species such as equids (presumably wild ass). These dates are difficult to reconcile with the lack of diversity within Berber and there are three possible explanations;

- a) either the early wave of pastoral expansion was a quite different group of people who have vanished without trace
- b) or Berber has diversified extremely slowly compared with other world language families
- c) or Berber underwent a major episode of language levelling around 100-200 AD, eliminating prior diversity

Postulating mystery populations is bad science, and the most likely explanation is that the expansion of pastoralism across the Sahara was indeed a primary migration of Berbers into the desert. The closeness of Berber lects is only explicable if we postulate a significant episode of language levelling, perhaps as late as 200 AD, to judge by the distribution of Latin loanwords. The similarities between even the far-flung branches of Berber, Zenaga and Siwa, date from this period. This co-occurs with the establishment of the Roman *limes* in North Africa, suggesting that the concentration of population this induced stimulated the spread of a prestige dialect. It seems likely that residual populations remained after this event, but a third wave of expansion and assimilation occurred with the Tuareg dispersal, from the 6th century onwards, which in turn eliminated other more archaic and diverse Berber lects such as the relatives of Tetseret. Finally, the Hassānīya expansion from the 15th century further pushed back the south-western Berber lects and precipitated the long decline of Zenaga and Azer, as well as probably displacing the original language of the Nemadi and the Imraguen.

Kossmann (1999, 2013) points out that there are well-assimilated Latin loans associated with agricultural terminology which are part of proto-Berber, as well as numerous Arabic borrowings from that are found virtually across its range. This points to a series of levelling episodes within Berber, facilitated by the mobile culture of the nomads and a strong pressure to keep communication systems open, which may in turn be associated with the importance of the camel from the first century AD onwards (Brogan 1954).

⁴ Alternatively they could have diversified but the branches that developed at that period were then assimilated by other languages.

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2.3.2 The peopling of the Canaries

When the Spanish first reached the Canary Islands in the sixteenth century, they found the inhabitants were a people called the Guanche, with four dialects spread across seven main islands. So entrancing were their dances that these were carried back to Europe and entered the repertoire of classical music, hence the *canaries* in the harpsichord suites of J.S. Bach. Unfortunately, the fate of the language was less iconic, as by the end of the eighteenth century it had disappeared, with the speakers killed, dying from disease or being assimilated. Archaeology currently points to an initial settlement from the North African mainland around 1000 BC (Milburn 1988; González & Tejera Gaspar 1990). There are many perplexing aspects of the culture of the Canaries. The most notable is the presence of mummified bodies, which use the specific techniques associated with Ancient Egypt. Similarly, there are small earth constructions that look very like attempts to replicate pyramids. Whether this implies the ancestors of the Guanche were carried to the Canaries by Egyptian ships remains a point for speculation.

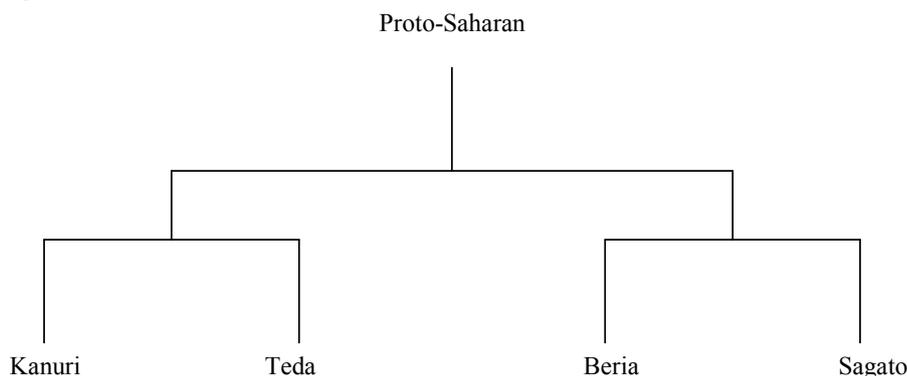
The records of Guanche are only those recorded by travellers and amateur enthusiasts. Unfortunately, little of the vocabulary is basic (there are, for example, almost no records of body parts), and it is impossible to identify the affiliation of Guanche unambiguously. The classic synthesis, Wölfel (1965), noted many similarities with Berber and much smaller number with Basque. A persistent history of theories relating Basque to African languages, particularly Berber, goes as far back as Gabelenz (1894) and Wölfel (1955) but taking in Mukarovsky (1963/4, 1969). Most researchers who have looked at the fragmentary records of Guanche have identified it as a branch of Berber (e.g. Galand 1987/88). Moreover, the very short inscriptions on rock in the Canaries which are in the old North African Numidian script further confirm the Berber link. We cannot say for certain that Guanche was a Berber language, but that there was a major influx of Berbers, which introduced the pastoral culture of North Africa and transformed the languages. Roman contact is now also demonstrated and it has been argued that the later inscriptions show familiarity with the principles of Latin writing.

2.4 Saharan (Kanembu, Teda-Daza and Beria)

2.4.1 General

The only virtually undisputed languages still spoken by early residents of the desert are the Saharan languages. Saharan consists of a group of four languages, spoken in the region between Lake Chad and the border of Sudan. Saharan was first outlined as a subgroup of Nilo-Saharan by Lukas (1951-2) and consists of Kanuri, Teda, Beria (=Zaghawa) and the now extinct Sagato (=Berti) (Petráček 1987). The Saharan languages subgroup as shown in Figure 1;

Figure 1. The internal structure of Saharan



2.4.2 Kanuri-Kanembu

Kanuri-Kanembu is spoken principally around Lake Chad today, but islands of Kanuri occur further north in the Sahara, most notably in the oasis of Fachi (Fuchs 1983). Such islands are thought to date from the trans-Saharan slave trade although there is no clear evidence for this and these Kanuri outliers have not been studied linguistically. The Kanembu are found principally in communities east and north of Lake Chad,

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while Kanuri is situated within Nigeria. The Turkish physician, Evliya Çelebi (أوليا چلبی), 1611 – 1682, collected information about Kanem and the arrival of the yearly slave caravans in the late 17th century (Çelebi 1995 ff.). Habraszewski (1967) summarises all the information that can be gathered from Çelebi's account of Borno. Çelebi records two languages, Bornavi and Maiburni, both essentially Kanuri, from his Cairo informants.

2.4.3 Teda-Daza

The Teda-Daza or Tubu inhabit the Tibesti mountains of Northern Chad and adjacent regions of Niger (Cline 1950; Chapelle 1957; Kronenberg 1958; Baroin 1985). There is every reason to consider these are long-term residents of the region and it is often supposed that these were the Ethiopian Troglodytes referred to by Herodotos (Book XX) 'who speak a language different from all other peoples, which resembles the cry of the bat' and were chased by Garamantian slavers in four-horse chariots, a technology independently confirmed by rock-paintings (Lhote 1985).

2.4.4 Beria (Zaghawa)

The Beria (Zaghawa) live east of the Teda-Daza and may also have been long-term residents of this region as they are mentioned in the Arab geographers (Le Rouvreur 1989). Al-Ya'qubi, in a description written around 890 refers to the Zaghawa in Kanem. References to the Zaghawa (=Beria) have a very long pedigree in the sources. The first modern account of the Beria is in MacMichael (1912) written from the Sudan side of the border, while Chalmel (1931) provides the first extended account from the Francophone side. Since then the anthropologists Joseph and Marie-Jose Tubiana have actively documented Beria culture (e.g. Tubiana 1964, 1985 & Tubiana & Tubiana 1977). The Ounia (§4.2.4), a residual population around Lake Ounianga in northeast Chad, speak a dialect of Beria (Fuchs 1961).

2.5 Songhay

The Songhay languages are spoken along the Niger between Timbuktu and Gao, stretching into the Sahara of Niger and South and East into Benin Republic and Nigeria (Map 3). Songhay speakers are also known from Sudan, remnants of the pilgrimage to Mecca (Abu Manga 1995). An isolated population, the Kwarandzyey of Tabelbala (تبلبالة), live in a small community on the Moroccan-Algerian borderland (Souag 2010). Songhay is often treated in earlier literature as if it was a single language, but it is now recognised as a complex cluster. The first study of the varieties of Songhay and its internal relationships is Nicolai (1981). This was a valuable beginning, but unfortunately this author has followed up his initial work with a series of increasingly ill-founded claims which have had the effect of confounding the situation rather than adding clarity. His claim that Songhay is a Berber creole (Nicolai 1990) has been repeated in a number of publications without gaining any adherents. Nicolai (2003) is a voluminous tome which promises an in-depth account of these processes, but only serves to further confuse the linguistic issues. Fortunately, much new good quality data has become available on Songhay lects (e.g. Heath 1998a,b, 1999; Souag 2012) and it is now possible to provide a brief account of the evolution of the language family.

Songhay is undoubtedly Nilo-Saharan, as it shares a significant number of basic lexemes with remote geographical languages which are neither Afroasiatic nor Niger-Congo in origin. But it is distant from other Nilo-Saharan branches and suggests that either pre-proto-Songhay was spoken in an isolated community with little differentiation or that the relatives of proto-Songhay were subsequently assimilated by other languages. Songhay appears to have come under strong Mande lexical and grammatical influence (perhaps specifically from an ancestor of Soninke) at an early stage in its evolution (Creissels 1981). At the same time proto-Songhay was diverging, it must also have been in contact with Berber influence, to judge by a small number of Berber borrowings in early or proto-Songhay (Souag 2010). Songhay is traditionally divided into two primary subgroups, Northern and Southern; a revised classification is proposed by Souag (2012). According to this hypothesis, the first split within the family was between Eastern Songhay, probably spoken around Gao, and Northwestern Songhay, somewhere further north; it was followed by a more prominent split between Western and Northern Songhay. Eastern Songhay is close to being a dialect continuum, although a handful of extra-riverine varieties at Hombori and Kikara in Mali and Djougou and Kandi in Benin show greater divergence.

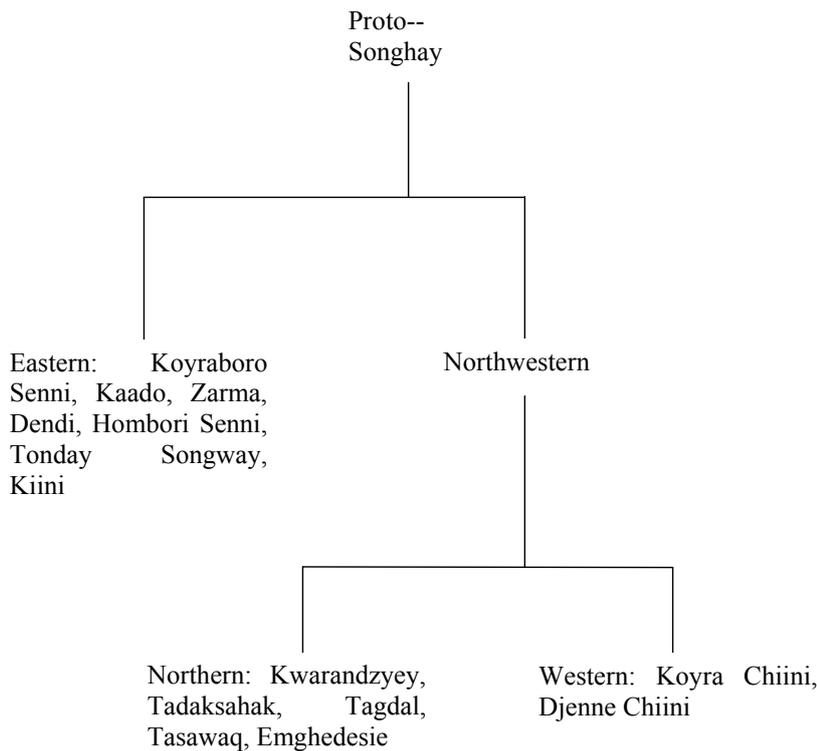
Map 3. The Songhay languages



Western Songhay, spoken around Timbuktu and at Djenné, remained in fairly close contact with Eastern, a situation intensified not just by the ease of riverine trade but also by the Songhay Empire's conquest of Timbuktu; as a result, words attested only in Eastern and Western Songhay can be securely reconstructed only for proto-Eastern. The divergence of the Northern Songhay split with the rest has been far more complete, thanks to its speakers' dispersal in oases and desert areas dominated by speakers of Berber and Arabic (Wolff & Alidou 2001). Figure 2 shows the internal structure of the Songhay languages using this new model.

Two varieties (Tadaksahak and Tagdal) are spoken by nomadic groups; since agricultural vocabulary is reconstructible for proto-Northern Songhay, these are likely to result from a later change of lifestyle or language shift. The dispersal of Kwarandzyey as far as Tabelbala (تبلبالة), a thousand kilometres north of the rest of the family, has not yet been fully explained, but appears to be linked to the trans-Saharan trade. Tabelbala was an important halt on a trade route linking Morocco and the Sahel. Souag (2012) points out that Songhay terms related to agriculture, such as 'hoe' (*kumu*), 'sow seed' (*dzom*) and 'irrigated garden' (*lambu*) are retained in Kwarandzyey. This suggests their ancestor were brought there as horticulturalists, whether as slaves or through some other type of contract relationship (see also Souag *fc.*).

Figure 2. Internal structure of Songhay



Source: Souag (2012)

As with Berber, the puzzle of Songhay is that it is remote from other branches of its parent phylum, Nilo-Saharan, yet all its lects are very close to one another, implying a relatively recent dispersal. Souag (2012) observes that lexemes concerned with both livestock and agriculture reconstruct in proto-Songhay, as well as words reflecting urbanism, such as ‘kitchen’, ‘key’ etc (Table 2).

Table 2. Proto-Songhay terms associated with urbanism

Gloss	Songhay
villages or town	* <i>ko(y)ra</i>
house	* <i>hugu</i>
room	* <i>gar</i>
kitchen	* <i>fuutay</i>
key	* <i>karkabu</i>
clay	* <i>laabu</i>

Source: adapted from Souag (2012:201)

This implies that it was the development of urbanism which kick-started the expansion of Songhay as we see it today and it is reasonable to associate it with the incipient urbanism occurring in the archaeological record from ca. 200 BC. Park (2010) describes the ceramic phases which mark a transition to urbanism in the Timbuktu area. There is considerable evidence for a shift from aquatic subsistence to cereal agriculture and livestock. Importantly, none of the significant terms reconstructed for either architecture or livestock in proto-Songhay are Berber or Arabic loans.

In subsistence terms the Songhay apparently split into those who develop the urban motif and spread east and south as traders and those who adopt cattle pastoralism from their Berber neighbours and move into the arid zones around Agadez. They become the ‘Wangarawa’ who traded gold and other products with the Hausa in the early Middle Ages, marked by a significant number of borrowings from Songhay into Hausa (Skinner 1996). The surveys reported in Haour et al. (2011) in the Niger River Valley on the border of Benin

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and Niger indicate proto-urban settlement formation from around 400 AD. Given this whole region is still Dendi-speaking there is little doubt that these sites mark the first expansion of the Songhay along the Niger River.

2.7 Niger-Congo

Azayr or Azer, once spoken in Wəḍən and Tishit, was a form of Soninke, a Mande language, partly restructured via Berber. The status of the language is hard to gauge; Monteil (1939) reports that it was disappearing and Taine-Cheikh (1979) says that it was nearly extinct. Cleaveland (2002) in his historical study of Walata indicates that Azer place-names still are used in the ‘upper’ town, although the language itself has gone.

3. Inscriptional languages

3.1 Libyco-Berber

Apart from Latin in North Africa and recent Arabic, the principal script found in the Sahara is the Berber script (O’Connor 1996). Its modern form, Tifinagh (ⵜⴰⴳⴷⵓⴷⴰ in Neo-Tifinagh), is the written form of Tuareg and is still in use. Indeed Tifinagh has undergone something of a renaissance as a consequence of its use in literacy materials in Mali. Older forms of the script, known as Libyco-Berber, occur spread across from the Central Sahara to Western Morocco, with fragmentary texts also recorded in the Canaries. The first inscriptions occur in the 3rd century BC and continue through to the 3rd century AD, but almost all texts are disappointingly short, hence the limited contribution of epigraphy to Berber history (Le Quellec 2011).

The eastern variant was used in what is now Constantine, the Aurès region and Tunisia. Since twenty-two letters out of 24 can be transliterated and there are several Numidian bilingual inscriptions in Libyan and Punic, it is the best-deciphered variant (Zyhlarz 1932). Figure 3 shows a bilingual Latin/Berber inscription from Roman North Africa published in Gsell (1933) which gives an idea of how these inscriptions can be transliterated. The western variant was used along the Mediterranean coast from Kabylie to the Canary Islands has 13 extra letters, which has made decipherment more uncertain (Février 1964–1965). It is entirely possible that the underlying language is different from the Eastern inscriptions.

One of the most problematic aspects of the Numidian problem is the language and inscriptions attributed to the Garamantes. The people generally known as Garamantes in classical records were placed by Pliny twelve days journey from the Augilae, in the interior of Libya. They occupied the most habitable region of the Sahara: the Wadis *el-Agial* and *Sciati* and the oases from Murzuk to Zuila. The Garamantes formerly lived on the shores between Zwara (Libya) and Gabes in Tunisia. Ibn Khaldun states that *Germanah* (Germa) was first settled by the *Lauta* or *Luwwatah* tribe, who also inhabited the coastal regions of Tripolitania. Sites in the vicinity of Germa, the Garamantian capital of what is now known as Fezzan, have abundant inscriptions. They are found cut or painted on dark grey amphorae, in the tombs of Garamantian cemeteries, such as those of *Saniat ben Howedi*. Although the inscriptions are in Berber characters (Figure 4), but only some are decipherable. This may be because they are in a non-Berber language, perhaps Nilo-Saharan or something unknown. Transliterated inscriptions for specialists to analyse are a high priority.

Figure 3. Bilingual Latin/Berber inscription

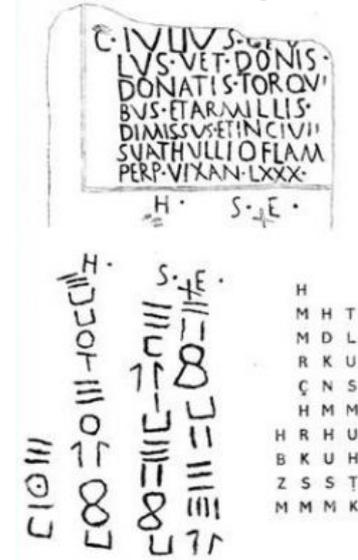


Figure 4. Garamantian inscriptions



3.2 Punic

Punic is an extinct Semitic language spoken in the overseas Phoenician empire in North Africa, which included Carthage and some Mediterranean islands (Segert 1976). The Phoenicians originated in what is now Lebanon and created a sea-borne empire. Carthage was founded ca. 800 BC and destroyed in 146 BC, but the language continued to be spoken until around the 6th century AD. It is known from inscriptions (most of them religious formulae) and personal name evidence (Jongeling & Kerr 2005). The play *Poenulus* by Plautus contains a few lines in spoken Punic which has provided key evidence for its transliteration because vowels are represented (Sznycer 1967). A series of late trilingual funerary texts found in the Christian catacombs of Sirte, Libya are in Classical Greek, Latin and Punic. Al-Bakri (c. 1014–1094), an Andalusian Muslim geographer, describes an unknown language spoken in Sirte in the tenth century, so it is conceivable Punic survived as a spoken language into the medieval era.

Photo 1. Punic inscription, Leptis Magna



Part of the interest of Punic is that there are identifiable borrowings in proto-Berber, which implies that the culture of Carthage preceded the break-up of Berber (Vycichl 1952). In addition, the nature of the loans provides useful information on the interaction of the two cultures. Due to the destruction of the libraries following the Third Punic War (149-146 BC), records of the language are mainly in later neo-Punic (Kerr 2010). Examples of Punic loans into Berber are reviewed in Malášková & Blažek (2012) and Kossmann (2013:58) and are shown in Table 3;

Table 3. Punic borrowings into proto-Berber

Gloss	Neo-Punic	Proto-Berber	Berber gloss if different
Almond	Phoenician <i>š.q.d.m</i>	* <i>ā-sāγīd</i>	
Cucumber	<i>q.š.ʿ</i>	* <i>ā-γ[i]ssīm</i>	melon
Olive	Phoenician <i>z.t</i>	* <i>ā-zātīm</i>	
Onion	<i>b.f.l</i>	* <i>ā-b[i]zālīm</i>	
Reed	<i>q.n</i>	* <i>ā-γānīm</i>	
Bronze	<i>n.ḥ.š.t</i>	?* <i>ā-niHās</i>	copper
Fortified camp	<i>g.d.r</i>	* <i>ā-gādīr</i>	
City	Phoenician <i>q.r.t</i>	* <i>γarat</i>	? To be polite
Oil-lamp	<i>n.r</i> lamp, candelabrum	* <i>ē-niHir</i>	
To move, remove	<i>g.l.y</i>	<i>əgəl</i>	Tamasheq ‘to go away’
To read	<i>q.r.ʿ</i>	* <i>ayriH</i>	

Adapted from Malášková & Blažek (2012)

Kossmann (2013:59) notes the absence of Punic loans in Zenaga, which may reflect the nomadic lifestyle of the desert nomads (most Punic loans are nouns associated with settled life) but possibly showing the migration of the Zenaga prior to the period of significant interaction.

4. Former ethnolinguistic diversity

4.1 The ‘green Sahara’

The current aridity of the Sahara is not a good guide to its past status, as in the early Holocene (i.e. 12,000 BP) it was a lush humid area with a chain of lakes and waterways connecting West to North Africa (Drake et al. 2011). This would have created both a ‘corridor’ for savannah and aquatic species to diffuse and a major expansion of resource opportunities for both Sub-Saharan and North African foragers. The waterways probably both drew populations from further east with specialisations such as crocodile and hippo-hunting and attracted Maghrebin foragers armed with bows and arrows southwards as large mammals began to migrate north along these networks of rivers and lakes. Linguistic evidence suggests that the aquatic specialists and wielders of bone harpoons could have been Nilo-Saharan speaking (§5.2)

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This period is too early for the spread of cattle-keeping and indeed there is no linguistic evidence for the reconstruction of livestock terms to this level in Nilo-Saharan⁵. Brooks et al. (2009: 919) have plotted the spread of cattle-keeping across the Sahara and the pattern is clear. The oldest sites are in the Nile Valley (9-7000 BP) and the youngest sites in Mauretania (4-3000 BP). Di Lernia (2001) reports foragers corralling Barbary sheep between 8500 and 7500 years bp at some Libyan sites. Populations must have moved in from north, south and east and that they are likely to have been both linguistically and culturally diverse, something particularly suggested by the Gobero site in Niger (Garcea 2013).

The linguistic affiliation of the North African forager populations who came south is difficult to establish as probably represented a language phylum or phyla now vanished. The evidence for this is an expansion of microlithic ‘Ounanian’ points in west-central Sahara from ca. 10 kya (Vernet et al. 2007) contributing to the ‘Epipalaeolithic’ of Northern Mali and Southern Algeria. These populations are called ‘Paleoberber’ in the literature, but there is *no* evidence they spoke a language were in any way connected with modern Berber. As they spread southwards they transferred the bow and arrow to a population which eventually became modern Niger-Congo. Although these foragers were broadly assimilated, there appear to be relic populations from this era; across the region there are remaining groups of foragers, often socially excluded, who maintain an archaic lifestyle. None of these retain a distinct language, but there is anecdotal evidence for unusual vocabulary relating to subsistence. Unfortunately none of this is presented to modern linguistic standards. §4.2 summarises what is known about these populations and Map 4 shows their locations.

Map 4. Residual populations of the Sahara



4.2 Residual populations

4.2.1 Nemadi

The Nemadi [=Ikoukou] are a small group of hunters who migrate between eastern Mauretania and adjacent parts of Mali (Anon. n.d., Fondacci 1945 ; Fortier 2004 ; Gabus 1951 ; Laforgue 1926 ; Hermans 2013 ; Taine-Cheikh 2013). They speak a dialect of Hassāniya Arabic, or in some cases perhaps Azer (§2.7). Arnaud (1906) reported that around Tichit the Nemadi speak ‘Azeïr’ and the name Nemadi is an Azer expression meaning ‘master of dogs’. Brosset (1932) says that they speak Hassāniya, and that ‘their special vocabulary does not consist of vocables different from Hassaniyya, but of technical terms which need has forced them to create, which are forged from Arabic, Zenaga, and maybe Azer’. According to Gerteiny (1967), they speak ‘their own dialect, probably a mixture of Azêr, Zenaga, and Hassaniyya, called *Ikôku* by the Moors’. It is more than possible Nemadi preserves archaic terminology relating to hunting and other subsistence strategies.

⁵ Although there is a strong association between cattle and the subsequent expansion of a major subgroup of Nilo-Saharan, the Eastern Sudnaic languages (Dimmendaal 2007).

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4.2.2 Imraguen

The Imraguen language is spoken by some 500 people in the Banc d'Arguin National Park on the Atlantic coast of Mauritania (Trotignon 1981). The name *Imraguen* is Berber for 'fishermen'. The Imraguen are an isolated and endogamous fishing population whose origins and antiquity are unknown. Ethnographic accounts suggest they have a knowledge of the sea and fishing techniques quite unlike fishing populations further north (Lotte 1937; Anthonioz 1968; Maigret & Abdallahi 1976; Trotignon 1981; Maigret 1985; Topper 1992/93; Worms & Ould Eida 2002; De Noray 2006). According to Gerteiny (1967) it is 'a strange version of Hassaniyya restructured on an Azêr base'. Fortier (2004) says the Imraguen speak the 'same' language as the Nemadi, i.e. Hassāniya Arabic.

Photo 2. Imraguen fisherman



4.2.3 Dawada

The Dawada (Duwwud, Dawwada) are a distinctive dark-skinned ethnic group of Fezzan, southern Libya, first reported by Hugh Clapperton (1829) who visited them in the 1820s. They formerly lived around the Gabraoun oasis where they harvested brine shrimp in the salty lakes, drying and selling them to caravans (Limouzin 1951; Bellair 1951; Pauphilet 1953; Wellard 1964). Their name, Dawada, means 'worm-folk' in Arabic. An endogamous group, they were dispersed by the Qaddafi regime in the 1980s. No information is available on the likelihood that their language contains unetymologisable lexemes.

4.2.4 Ounia

The Ounia people live around Lake Ounianga in NE Chad. They were visited by Fuchs (1961) and there are scattered reports of them since including a field visit by the Tubianas. They are said to speak a variety of Beria (Zaghawa) although this is far from certain. There are persistent rumours that they speak a 'secret' language, but no data or confirmation is forthcoming.

4.2.5 Haddad

A population which has remained very little-known until recently is the Haddad, foragers who live among the Teda-speaking populations of the desert zone of Chad (Nicolaisen 2010). The monograph reflects the situation of the Haddad in 1963 although the text in question was written up by Ida Nicolaisen, based on her husband's fieldnotes. At the time, the Haddad were still largely foragers, deploying both nets and bows and arrows, and having a culture largely based around hunting techniques. Le Quellec & Civrac (2010) point out that net hunting is widely attested in Saharan rock art, as well as elsewhere in Sub-Saharan Africa (Lindblom 1925). The Haddad were not a unitary group, with varied subgroups focused on specific techniques in different regions. Nonetheless, even in the 1960s, declining numbers of game meant that more were switching to livestock herding or craft. It is unclear whether any Haddad today still maintain a foraging lifestyle, but insecurity in Chad over decades and the spread of high-power weapons does not support a very optimistic prediction. Haddad is also a name for 'blacksmith' and there is a strong relationship between the casted blacksmiths who live among the Teda and the foragers. A key question, however, is whether the Haddad are genuine survivors of an LSA foraging tradition, or are a casted group which has adapted to foraging. Nicolaisen considers this at some length, but ultimately the question is not easily answered, because Haddad traditions are internally contradictory. It may be that their origins are diverse and that they have been brought together as a cultural category, something like the Mikea foragers of Madagascar (Tucker 2003).

5. Substrate words in Sahara languages

5.1 Berber evidence

The date of the Berber presence in the Sahara is debated, but in terms of the overall peopling of the region, it is relatively recent. Both the Zenaga and the Tuareg migrants must have encountered forager populations already *in situ*. One of these was undoubtedly Songhay, because of the evidence for intensive interaction

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between Songhay lects and Berber and the existence of ‘mixed’ speech-forms. South Berber borrows the word for ‘hippo’ from Songhay, for example. However, it seems there were also likely to have been other very different languages, because Tuareg has apparently adopted lexical items for significant flora and fauna from unknown sources. Table 4 shows a few selected examples of mammal names in South Berber, i.e. Tuareg, Zenaga and Tetsrerret. Some of these, such as ‘lion’, ‘hare’ are clearly cognate across all three languages. However, other mammal names are unrelated and of unclear origin. At least some of these may have been adopted from pre-existing forager languages.

Table 4. Comparative mammal lexicon in South Berber

Species	Scientific	Tuareg	Zenaga	Tetsrerret
lion	<i>Leo africanus</i>	āhārr	waʔr	ar
hare	<i>Lepus sp.</i>	t-e-mārwæl-t	tārāmbuL	tmarwult
antelope [ʔreedbuck]		t-ē-nher-t	ānaʔr	ænarʔ
elephant	<i>Elephas maximus</i>	élu	iyih	
gazelle	<i>Gazella spp.</i>	t-ašəŋkətt	āžānkud	azonkəð
striped hyena	<i>Hyaena hyaena</i>	šəbójæn	ārđāy	tafagant

Data for Tuareg are from Heath (2006) and Sudlow (2009), for Zenaga from Tayne-Cheikh (2008) and for Tetsrerret from Lux (2013). Terms for most species are cognate but the hyaena and the elephant seem to have acquired unrelated names.

5.2 Lexical evidence in Nilo-Saharan

If the expansion westwards of Nilo-Saharan is associated with the Holocene ‘green Sahara’, then there should also be a link with aquatic subsistence terms. In Drake et al. (2011) it is argued that this is in turn also reflected in the distribution of bone harpoons, used to hunt large river fauna. Two species which are notable in Saharan rock art and which would be key prey species for foragers are the crocodile and then hippo. Useful confirmation of this is that both of these can be reconstructed in Nilo-Saharan languages. Table 5 and Table 6 marshal the lexical evidence for this;

Table 5. A Nilo-Saharan root for 'crocodile'

Family	Subgroup	Language	Attestation
Eastern Sudanic	Ama	Afitti	arəm
Eastern Sudanic	Nubian		elim
Central Sudanic	SBB	Gula Mere	màrà
Central Sudanic	SBB	*SBB	*màr[à]
Saharan	West	Manga	kárám
Songhay	South	Zarma	kààrày

This assumes the root had an initial k-, deleted in East Sudanic and that SBB languages underwent metathesis.

Table 6. A Saharan root for 'hippo'

Family	Subgroup	Language	Attestation
Gumuz		Kokit	baŋa
Maban	Runga	Aiki	bùngùr
CS	Sara	Nar	àbà
Songhay	North	Tadaksahak	ágamba
Songhay	North	Koyra Chiini	baŋa
Songhay	South	Zarma	bàŋá

This is just a preliminary insight into a large body of evidence. Work is in hand compiling a raft of water-related lexemes, including ‘river’ and ‘lake’. It is unclear just how old the core languages of Nilo-Saharan are in their homeland area in the Ethio-Sudan borderland. But there is increasingly little doubt that the relatively sudden abundance of aquatic resources stimulated a rapid expansion westwards of fisher-foragers, with specialised subsistence strategies. The subsequent expansion of first Niger-Congo and then Afroasiatic

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speakers fragmented Nilo-Saharan, giving it the appearance of a chain of isolated branches. Nonetheless, its history within the framework of the Sahara is there to be reconstructed.

6. Synthesis and the agenda for further research

The present-day linguistic situation of the Sahara is a highly misleading guide to its past. The pre-Holocene language situation is probably unrecoverable, but once the humid period began, the so-called 'green Sahara', the desert must have been rich with languages, Niger-Congo and Nilo-Saharan in the south-centre, but unidentified forager languages in the centre-north. Residual forager populations which still survive give some indication of the possible interlocking subsistence specialties at this period.

Prior to the expansion of Berber and then Arabic, unknown but distinct languages would have been spoken in both the Sahara and along the North African coast. It is generally assumed the Herodotos' 2500 BP listing of the Maghreb tribes and their varied customs reflects something of the ethnic diversity at this period. For convenience, these languages can be referred to as 'Old North African' (ONA) with no presuppositions as to their genetic affiliation(s). It is possible they were related to the former languages of the Iberian peninsula, such as Tartessian. Archaeologically, these must be identified with the Capsian and its predecessors, although the languages spoken in the first period of the Neolithic in the Maghreb would also have been Old North African. But the completeness with which Berber eliminated ONA means little can be said about it. The Berber roots which are not of Afroasiatic origin may reflect these languages, or simply the long period of differentiation from the mainstream of the Afroasiatic lexicon.

The problematic inscriptions typical of the western Libyco-Berber area undoubtedly represent a distinct language, possibly some sort of creole between Berber and ONA. It is this language which was carried to the Canaries, hence the partial Berber character of Guanche. Surveys of burial grounds in 'Numidia' have shown remarkable diversity in architecture and burial practice and it is usually assumed this reflects ethnolinguistic diversity, although the disappearance of individual languages following the Berber dispersal makes it now difficult to tie these to particular populations (Camps 1961; Sanmartí & Cruz this volume).

However, Old North African also spread far across the Sahara attracted by the expansion of large game animals following the Holocene humid episodes. Its speakers carried the bow and arrow south, where they encountered both Nilo-Saharan speakers and another ethnic group which was later to develop into Niger-Congo. However, they were still *in situ* when the Tuareg expanded south, as their names for large animals were borrowed by the Tuareg, who might have been either unfamiliar or barely familiar with animals such as lions and elephants. By this period the Sahara was sufficiently arid for species such as the hippo to be long gone. Hence it was only when the Tuareg reached the Niger and came into contact with the Songhay that they would have needed a name for this animal.

Likely candidates for the last speakers of ONA would have been the Dawada and possibly the Nemadi, although Nilo-Saharan is another possibility for their language. At any rate, the language clearly became extinct as a living entity within the early phases of the Tuareg and Hassāniya expansion. Nonetheless, it seems likely that further lexical analysis and toponymy should be able to recover more of the linguistic prehistory of the Sahara than is presumed at present.

The major puzzle lies in understanding the role of Berber in assimilating these diverse populations. Berber is remote from other Afroasiatic languages, suggesting a period of diversification in isolation and then a primary wave of expansion. It seems credible to identify this with the first wave of pastoralism in the Sahara (? 5-6000 years ago) but this is in conflict with the lack of internal diversity of Berber. The possible explanation is that Berber underwent a major episode of language levelling at the time of the establishment of the Roman limes (100-200m AD) and perhaps an additional episode following the spread of Islam in North Africa.

Two areas remain open for significant further work in respect of this model. The vast corpus of Saharan rock art remains poorly dated and often not analysed for possible economic interpretations. Illustrations of livestock and management practices need to be further mapped and compared with the archaeological and linguistic record, as do important changes such as the introduction of the camel. The other area concerns

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inscriptions; these are far from fully catalogued, dated and convincingly translated. Old Libyan inscriptions predate the postulated episodes of language levelling and those which include problematic characters may provide clues to language diversity, linking both to the records of Herodotus and the diversity implicit in mortuary sites. We are unlikely to recover significant new languages, although more detailed elicitation of plant and animal names would be welcome. Lexical analysis shows that layers of archaic lexicon exist within Berber, and these may provide evidence for the rich mosaic of Saharan linguistic prehistory.

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