

Defining the Neolithic of the Sudan

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Abstract: *The Neolithic cultures of the Sudan were distributed through the Central, Eastern, Western and Northern regions in the fifth millennium BC. In Sudan, one of the most serious problems in studying the changes over the millennia is to define the chronological relationships between sites and regions. A number of terms have been used to describe these phases, some of which are more confusing than enlightening. The material culture of the Neolithic sites suggests they belong to different chronological periods. The wide excavations on the Neolithic sites have greatly increased our knowledge of the cultural development of the Neolithic period, together with the results of the previous work in the North, West Plains, East and Central Sudan. This has led to a better understanding of the definition of the Neolithic culture in this region. In this paper, we will discuss in brief this definition and the current state of research in the field of the Neolithic in these regions.*

1. Introduction: Defining Neolithic

«Neolithic» was first used by Sir John Lubbock (1865 Pre-Historic Times) to mean the «New Stone Age», characterized by ground and polished stone tools and pottery. When first employed by archaeologists, the term 'Neolithic' implied a technological rather than an economic phenomenon (Lubbock 1865). However, at some point in the history of the discipline the use of ground and polished stone tools, pottery and agriculture came to be seen as inextricably linked (e.g. Cole 1965). It is also used to describe the final phase of the Stone Age, following the Mesolithic. The Neolithic begins at widely differing dates in different regions of the world. For example, in the Middle East the period starts as early as the 10th millennium BC, while the onset of the Neolithic is identified across much of northern and central Europe with the arrival of the farming Linearbandkeramik (LBK) culture between the 6th millennium BC (Hungary) and the 4th millennium BC (northwest Europe)

(Shaw and Jameson 1999. 422). Although the Neolithic was originally defined with reference to the presence of ground and polished stone tools in lithic assemblages, it quickly became associated with a major set of cultural and economic changes including the use of pottery, the domestication of animals, agriculture and sedentary living.

Up until the 1950s, and the widespread use of radiocarbon dating, it tended to be assumed that, in each region, these changes occurred together as a package. In some regions, it has become apparent that this is an over-simplification. In the Near East, the slightly cumbersome term pre-pottery Neolithic had to be adopted to describe the early agricultural villages of the Levant before they started making pottery. Conversely, in some coastal Mediterranean areas pottery and, perhaps, animal domestication seem to have arrived before the full adoption of cereal agriculture. In other areas, hunters and gatherers seem to have evolved sedentary or semi-sedentary settlements before the advent of

farming, or to have adopted the use of pottery and apparent Neolithic stone industries without developing a farming economy.

According to Thomas (1999. 13) when we come to discuss the term 'Neolithic,' we may be referring to: "a chronological horizon, a stage in an evolutionary scheme, a form of economy, a set of social relations or a cultural phenomenon".

Many archaeologists (e.g. Dennell 1983; Zvelebil and Rowley-Conwy 1986) have equated the word 'Neolithic' with 'agriculture', and proceeded to discuss the developments of the period concerned as if all of the cultural and social innovations were subsidiary to the inception of farming. This is not to deny the significance of the origins and spread of agriculture. Farming had originally spread from its origins in the Fertile Crescent (an area in the Middle East where the origins of agriculture are to be found) to southeast Europe through population movement or through the movement of ideas and material culture (Sherratt 1990; Thomas 1999; Whittle 1996). The British Isles were amongst the last locations in Europe to become Neolithic. It is important to stress that the precise mechanisms by which cultivation and herding came to be undertaken in different parts of the Old World may have varied considerably (Thomas 1999). While in some cases the availability of domesticates may have immediately brought about far-reaching changes, in others the first moves toward agriculture and pastoralism may have taken place in the context of other changes which may have been of equal or greater significance to the communities concerned.

In the Near East, the intensification of the exploitation of plants and animals appears to have developed in quite different ways in two different areas, the Levant and the Zagros

(Redman 1977. 534). In the Zagros foothills, a heavy reliance upon herded animals seems to have developed, together with relatively small and architecturally simple settlements like Ali Kosh and Jarmo (Redman 1977. 536). In the Levant, however, the first instances of house building, cultivated barley and legumes and symbolic paraphernalia involving the use of human skulls all preceded the domestication of animals (Clark 1977. 54). In this area one can well argue that it was the development of a settled way of life and a richer ceremonial and cultural existence which fostered the domestication of plants and animals rather than vice versa.

Western European definitions of the Neolithic answer this question by focusing on subsistence economy as the defining criterion. For example, Ammerman and Cavalli-Sforza (1984. 35) state explicitly that they 'adopt an economic approach to the classification of sites and cultures: the Neolithic transition refers to the shift from hunting and gathering to food production,' (by which they mean food production based upon domesticated cereals and animals). However, in the literature of Eastern Europe, the appearance of pottery at a site is normally enough to classify it as Neolithic. As a result, pottery-using hunting and gathering cultures of the Baltic tend to be called Neolithic in the eastern European literature, but Mesolithic in western European accounts. As a further complication, it is becoming clearer that even where the key constituents of the food producing revolution (domesticated animals, domesticated cereals, permanent settlement and storage) arrived contemporaneously, certain features of a developed farming economy emerged only much later.

Following up the current debate on the appropriate definition of the Neolithic age, Childe (1952) argued that the Neolithic stage,

which he considered a ‘revolution’, was in fact the ability of mankind to produce food by plant cultivation and animal breeding. Confirming Childe’s arguments, the most current, reasonable and comprehensive definition of the Neolithic is proposed by Renfrew and Bahn (1998: 543). They state: “Neolithic is an Old World chronological period characterized by the development of agriculture and, hence, an increasing emphasis on sedentism”.

This definition suggested that the Neolithic is a convenient socio-economic development rather than being a technological one.

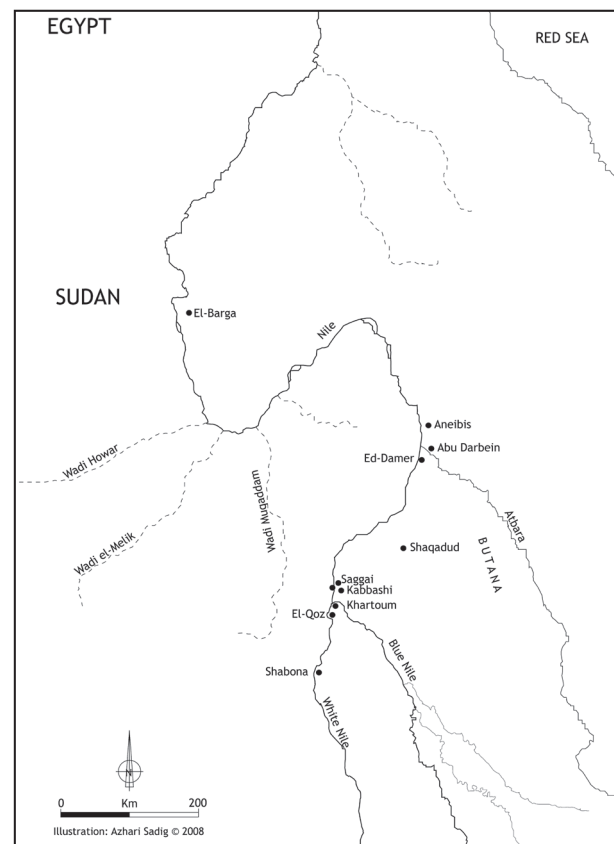
2. The Concept of Neolithic in Sudanese Archaeology

Most studies of the Neolithic in the Middle Nile region (Map. 1) are based on a definition that does not fully confirm the above definitions. While these studies cover a large temporal and geographical area, it is interesting to note that, with very few exceptions, most of them focus on sites that reflect no more than one aspect that forms the definition of the Neolithic. This is an important point because this focus also defines a general concept of Neolithic and its relation with the Mesolithic culture that reflect also major traits of this stage (pottery, grinding and polishing of stone tools).

Arkell (1949, 1953) excavated two sites near the Nile River in the Khartoum area in Sudan that laid the foundations for early understandings of Mesolithic and Neolithic lifeways in the Sudan and northern tropical Africa. The material from one, Khartoum Hospital Site, was used to delineate the key characteristics of the “Khartoum Mesolithic”. The other, Shaheinab Site, assigned to a later date, was crucial in the characterization of the “Khartoum Neolithic.” Though the assemblages from these sites shared a number of characteristics, they differed significantly in others. They had in common

evidence of microlithic stone industries; grinding equipment; pottery with characteristic “wavy-line” and “dotted wavy-line” motifs; barbed bone points; and a substantial quantity of wild animal bones with a significant component of fish, crocodile, and hippopotamus bones (Haaland 1992; Sutton 1974, 1977). Domestic animal bones, specifically from sheep and goats, were absent from Khartoum Hospital site but present at Shaheinab site. The shared characteristics of these sites suggested a common cultural background for the Early Holocene foragers of the Nile Valley. Some of these foragers later shifted to food production, with small livestock husbandry.

From Arkell’s (1949, 1953) perspective, Khartoum “Neolithic” people adopted livestock husbandry through their links to the ancient Near East. In this period it was believed that the Neolithic revolution took root in the Fertile



Map. 1: Khartoum Mesolithic Sites.

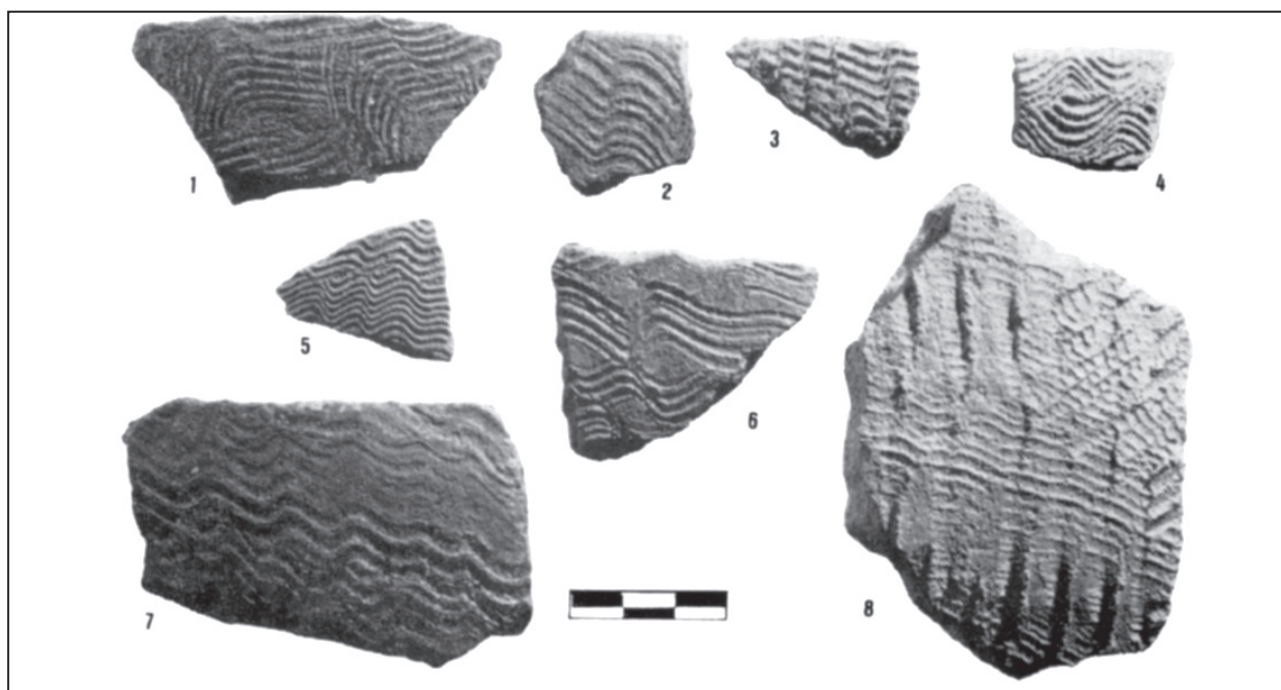


Fig 1: Wavy Line pottery from the Khartoum province (except No. 8). (Source: Garcea 2006)

Crescent, and spread from there to the rest of the Old World (Camps 1980; Childe 1936; Kuper 1978). The Sudanese sites immediately achieved the status of critical places attesting a north–south and east–west expansion of the new Neolithic life style. As conceived by Childe (1936) this new way of life included the practice of agriculture and animal husbandry; heavy food-processing equipment, in this case grindstones and grinders; and sedentary communities living in emerging permanent settlements that later resulted in an urban revolution.

2.1 The “Mesolithic”

Arkell introduced the term «Khartoum Mesolithic» (Map 1) to designate the assemblage recovered from the Khartoum Hospital site. He justified its applicability by the lack of direct evidence for domestication. The site is characterized by evidence for hunting and fishing subsistence pattern highly adapted to the riverine environment. The material

culture includes microlithic tools and hand-made “wavy-line” globular ceramics (Fig. 1), but there is no indication of plant or animal domestication. Despite criticism, (Mohammed-Ali 1982), usage of the term continues to predominate in the literature.

The available data on the Khartoum Mesolithic has greatly increased in the last few years through the work of several archaeological missions. At present, both “Mesolithic period” and “Early Khartoum” are used in the archaeological literature (Caneva 1983a; Clark 1989; Fernández et al. 1989; Haaland and Magid 1995, Marks and Mohammed-Ali 1991, El Amin 1992) and others with wider research goals (Kuper 1989).

Later scholars elaborated and extended Arkell’s concept of a Sudanese Neolithic based on loose similarities in the patterning of cultural remains. Barbed bone points and pottery decorated with “wavy-line” and “dotted wavy-line” motifs achieved the status of type fossils

in Africanist archaeology, and came to be used by almost all archaeologists in their effort to understand the dynamics of Early Holocene societies of the Sahara and the Nile (Aumassip 1978; Kuper 1978). The Sudanese Nile Valley was considered as the core area from which a new, intensive hunter-gathering lifestyle spread during the Early Holocene (Haaland 1992).

Further north, in Lower Nubia, the pottery seems to appear only later, around 4500 BC, in late-Shamarkian. To the south of Lower Nubia, this type of pottery is known, as well as in central Sudan, in Upper Nubia, and up to Lake Turkana in northern Kenya, although there are significant gaps in spatial distribution.

In the Middle Nile Region, there are early dates for wavy line and dotted wavy line pottery from Saggai (Caneva 1983b), Sarurab (Khabir 1981. 160–161; Mohammed-Ali 1982. 173), Kabbashi Haitah (Caneva et al. 1993. 226–228), Shabona (Clark 1989. 389), Shaqadud (Mohammed-Ali 1991. 87–88), Abu Darbein, el-Damer, and Aneibis (Haaland and Magid 1992) and from el-Barga near Kerma (Honegger 2004). From Saggai a suspect date, based on Pila shell, of 10060±150 bp, was obtained from the Mesolithic assemblage (Caneva 1983b.149). It is, in any case, the earliest date so far obtained for a ceramic-bearing site not only in the Sudan but also in the whole of Africa and the Middle East. Four other radiocarbon dates, based on Pila shell, were obtained for the site ranging between 7410±100 bp (T-5025) (cal. BC: 6269±112) and 7230±100 bp (T-5024) (cal. BC: 6117±93) (Caneva 1983b. 152).

The earliest date from Sarurab, 9370±110 bp (HAR-3475) (cal. BC: 8652±165), was in association with various types of wavy line pottery, ground stones, microlithics, and bone harpoons (Khabir 1981. 160–161, 1987; Mohammed-Ali 1982. 173). Further north, in

the Atbara reach, wavy line and dotted wavy line ceramics are well dated at Abu Darbein, el-Damer, and Aneibis Mesolithic settlements. The wavy line and dotted wavy line were radiocarbon dated at Abu Darbein by eight samples ranging between 8640±120 bp (T-8624) (cal. BC: 7760±158) and 7700±140 bp (T-5728) (cal. BC: 6598±151) (Haaland and Magid 1992. 23). El-Damer has yielded 13 radiocarbon dates, seven of which were obtained from graves. The oldest date is 8390±50 bp (T-7485) (cal. BC: 7455±65), whereas the youngest is 7260±110 bp (T-8631) (cal. BC: 6145±103). Aneibis has provided 17 radiocarbon dates, providing a time span ranging from 8230±120 bp (T-8643) (cal. BC: 7265±157) to 6820±170 bp (T-7481) (cal. BC: 5743±151) (Haaland and Magid 1992. 23).

According to these dates and other pottery elements, the Mesolithic was divided into two main periods, an early and a late, dated 8600–6500 BC and 6500–5500 BC respectively. The earliest sites are located at Abu Darbein, el-Damer, Saggai and Sarurab. El-Qoz, Kabbashi and Shaqadud yielded stratigraphic sequences with late Mesolithic material following that of the early Mesolithic. Late Mesolithic pottery is represented by impressed dotted wavy lines, which replaced incised wavy lines. According to Mohammed-Ali and Khabir (2003), the archaeological evidence from the Central Nile Valley indicates that both types were present at Khartoum district sites in all layers from the beginning of the occupations. Hence, the dotted wavy line was not an outcome of the wavy line, as Arkell has suggested (Arkell 1949. 84–85, 1953. 68). In the Sahara-Sahel context, dotted wavy line pottery appeared earlier (e.g., Tagalagal, ca. 9500 bp: Roset 1987; Bir Kiseiba, ca. 9100 bp: Connor 1984; Ti-n-Torha, ca. 9000 bp: Barich 1987; Nabta Playa, site E.7.8, ca. 8800 bp: Banks 1980) than the wavy line pottery

(e.g., Amekni, ca. 8300 bp: Camps 1969; Delibo Cave, ca. 7300 bp: Bailloud 1969).

Some scholars, including Mohammed-Ali (1973, 1982), believed that the Khartoum Hospital site was one of the Neolithic sites. He stated that the Early Khartoum site «has a cemetery of more than 17 burials which indicates a settlement with stable sources of subsistence; pottery that showed a highly distinctive and evolved type of decoration as well as polished tools and microlithics, makes it difficult to avoid the conclusion that it is a (Neolithic Culture) whether they practiced domestication or not.» (Mohammed-Ali 1973. 91)

It is not enough to have a permanent settlement for establishing a Neolithic way of life. Permanent settlements with or without burials were documented, i.e. from Near East and south-west Asia, where different localities were used as semi-permanent and/or permanent dwelling, but people were combining hunting with intensive collecting and incipient domestication of some plant species, in their economies (Mellaart 1975. 283-284).

Khartoum Hospital site was a semi-permanent settlement occupied by hunter-gatherers. However, their economy necessitates seasonal movements away or in the vicinity of their «base site».

For all that has been cited above, the logical conclusion is that the site of Khartoum Hospital and other similar sites (i.e. Saggai, Tagra, Aneibis, etc.) are not Neolithic sites.

Even the term Mesolithic is not applicable because it is evident that the term “Mesolithic” has not been used elsewhere to indicate sites that combine a lack of evidence for food-production with a well-developed ceramic technology. Such a use would require redefinition of the Mesolithic itself, and of the boundaries between it and the Neolithic. For a long time

the term Mesolithic was simply a catch-all for the time between the glories of Paleolithic art and the economic and social ‘revolution’ of the Neolithic. Clark. G. (1980) recorded the reasons why the term Mesolithic tended to be avoided by archaeologists (e.g. Childe) earlier in the last century and charted the first uses of the term. A more positive definition of the period is that it begins with the invention of geometric microlithics; the interval between the Magdalenian and this shortened Mesolithic is then reclassified as the Epipalaeolithic. This can confuse the wide-ranging reader; however, as the term Mesolithic is rarely employed in the archaeology of southeast Europe and southwest Asia. Instead ‘Epipalaeolithic’ is generally used to describe any assemblages after the main Würm glaciation that has a microlithic component (Shaw and Jameson 1999. 394).

Moreover, like the other major divisions of prehistory, the Epipalaeolithic is associated with fundamental socio-economic (as well as technological) changes. The Epipalaeolithic hunter-gatherer-fisher groups of the Central Sudan were involved in a complicated process of innovation which is revealed by the presence of pottery production, food processing, the exploitation of a wider range of food resources, and sedentism, with the side effects of higher female fertility and population growth (Haaland 1995). In this respect, there is general agreement that the Epipalaeolithic economy made increasing use of plant foods, although the direct evidence for this remains relatively puny. Some scholars have been tempted to see ‘pre-adaptations’ to domestication of animal and plant resources (at different times) in the intensifying use of plant resources, suggesting that a primitive form of animal husbandry developed in the Epipalaeolithic (Shaw and Jameson 1999. 394). They also point to the domestication of the dog, the development of

storage facilities and associated semi-sedentism, and the social developments reflected in the advent of ‘cemeteries’ in some regions and the increasing deposition of grave goods (Brass 2007).

Arkell’s work at Shaheinab demonstrated it was an occupation site with remains of ash, pottery with different decorative patterns (Fig. 2), numerous amounts of lithic artifacts, shells and bones of domesticated animals. This site is first of its kind in the area of Khartoum which could be called Neolithic (called Khartoum Neolithic and Gouge culture also). Some main characteristics of «Khartoum Neolithic» were largely evident in Sudan and the Sahara. The term Khartoum Neolithic has been applied to a number of assemblages which share some general features with that of Shaheinab but lack any evidence for food-production. The Khartoum Variant, one of the Neolithic industries of Northern Sudan (Shiner 1968a; 1968b), was so named on the basis of a few broad similarities in ceramic motifs to the Khartoum Mesolithic but not to the Khartoum Neolithic. However, it lacks the features that are diagnostic of either and there is no evidence for food-production in the Khartoum Variant.

While pottery and domesticated animals might well co-occur, the question arises as to what degree they can be characteristics of every Neolithic site in North and Central Sudan. Does the absence of a food-production economy in sites that share other characteristics of the Khartoum Neolithic mean they were not Neolithic?

With reference to the evidence available so far, I think that most probably at Shaheinab settlement and other Neolithic sites the people practiced a traditional food gathering economy supplemented by a few domestic animals. Most of the Neolithic sites in the area did not lack

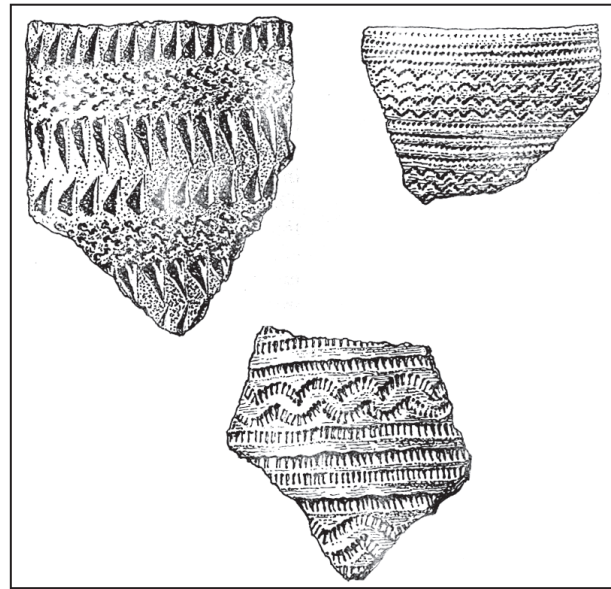


Fig 2: Vessel sherds from Shaheinab Site (Source: Arkell 1953).

evidence indicating the importance of hunting, gathering and fishing. On the other hand, no evidence for domesticated grains has been found yet. With reference to the definition of the Neolithic mentioned above, the special criterion of the Neolithic in North and Central Sudan is the presence of domesticated animals on “some” of the Neolithic sites.

Pottery and grinders were well developed in Epipalaeolithic sites in the two regions. But these geographical distributions, patterns of pottery and lithic production and usage, and product development are all supportive of the idea that describing the Neolithic of North and Central Sudan in terms of the “invention” of food-production is incorrect; it was rather a period of establishing technological industries based on much earlier inventions.

Consequently, the terminology used in this article is based on this definition, although the terms used are not the restrictive ones but rather terms that have been adopted from general archaeological usage. Therefore, the term “Neolithic” will be reserved for sites containing evidence of similar known “Neolithic” elements

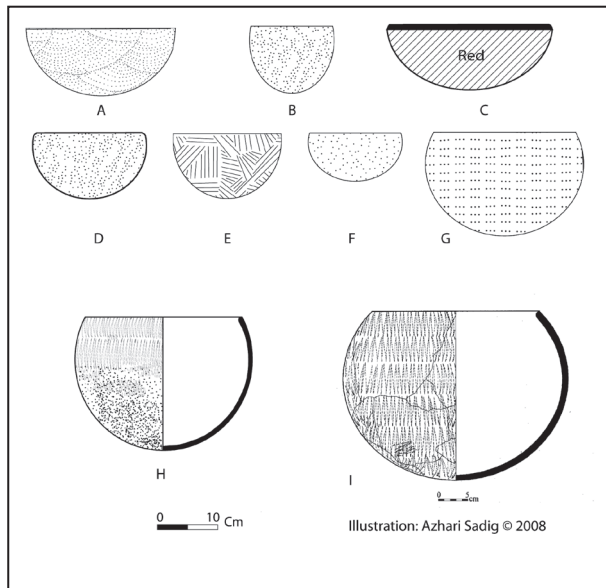


Fig 3: Decorated vessel sherds from es-Sour (Source: Sadig 2011).

along the Middle Nile. The difficulty with using this type of terminology is that there is no one agreed standard and many terms have different definitions, depending on the user.

2.2 The Neolithic:

The introduction of domestic animals to Central Sudan during the Neolithic period must have had effected aspects of the life of the inhabitants. Current knowledge of the chronology and the relations between Sudanese and Saharan areas suggest that domestic stock were introduced from the Sahara as it became drier. Cattle, sheep, and goats appear by the 6th millennium bp. Local assemblages of lithics and ceramics show continuity, indicating that any movement of Saharans into the region was small-scale, and culture contact was more important to the socioeconomic change than migration. Clusters of especially rich graves of men, women, and children at Kadero-I argue for differences in wealth, but there is no evidence for social stratification. Pastoral intensification and a decrease in wild animal use are also evident at some sites in the Middle Nile after

5300 bp. Despite these developments, the spread of herding was patchy: at Shaqadud, east of the Nile, subsistence still focused on wild resources as late as 4000 bp.

However, whatever this social organization might have been like, it should have left some material manifestations of its structure. The increasing importance of domesticated animals, for example, would be associated with the emergence of more individualized rights and responsibilities in economic management and this would have led to an increased social differentiation within such communities. The important question here is the organization of such chiefdoms. Comparative ethnographic material indicates that an internally differentiated society is based typically on nuclear families or small extended families of limited span and that it is thus associated with private property.

It seems that, in spite of many excavated sites, evidence for social organization of the people of the Neolithic in Central Sudan will be limited to that derived from burial information. Although the hypothetical social classes reflected in graves were not observed in the settlements, currently available evidence seems to indicate that the burial grounds at el Kadada and Kadero-I illustrate well the process of the increasing concentration of goods and power by a social "elite"- toward the end of the Neolithic (Geus 1984, Krzyżaniak 1992).

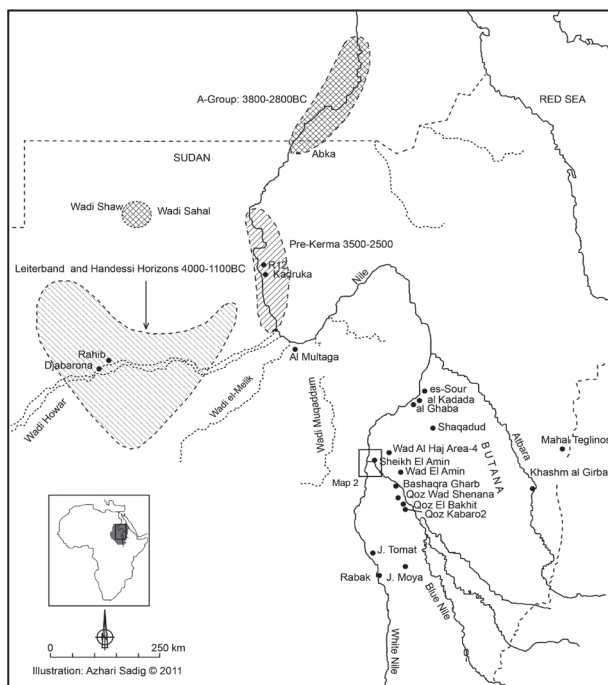
It is clear that the social structure in Central Sudan during the Neolithic period exhibited more or less inseparable economic and settlement patterns, which are in turn witness to developmental stages extending from the Early Neolithic to the complex picture of the Late Neolithic.

Most of the Neolithic sites in Sudan (Maps 2 and 3) are generally large and the occupation layers tend to be of considerable thickness,

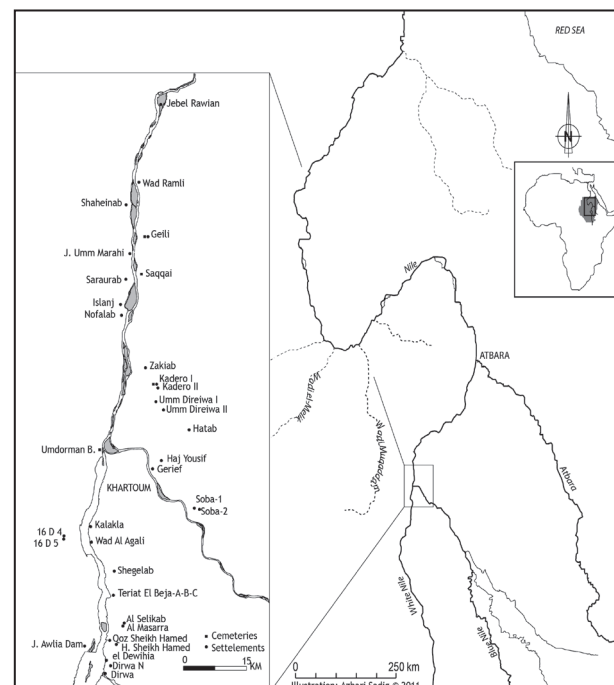
suggesting long periods of occupations. Cemeteries associated with some of the sites (Kadero I, el Kadada and el Ghaba) are a further support and an interpretation of long, or at least regular, seasonal occupations. Most Neolithic sites in this region, especially in the Khartoum area, are situated on the alluvium and they are all located on natural mounds slightly elevated above the alluvial plain. They are also heavily deflated both by erosion and by human activities such as house building and by tracks passing across the sites. Furthermore, most are disturbed by later burials, mainly Meroitic graves and, less frequently, Christian and Moslem graves. In Central Sudan there are 16 sites studied with some details: three on the west bank of the Nile (Shaheinab, Nofalab, and Islang), seven in the east bank of the Nile (Geili, Kadero I, Kadero II, Zakiab, Um Direiwa I and Um Direiwa II, and the site of Haj Yusif on the east bank of the Blue Nile). Three are located along the White Nile and Gezira plain (Rabak, Jebel Tomat and Jebel Moya). Other two sites are located in Shendi area (el Kadada and el Ghaba) and one site in

the western Butana plain (Shaqadud). Recently, Fernández and his team reported the existence of some Neolithic sites along the Blue Nile and Wadi Soba (Fernández et al. 2003. 85-90).

Most known sites are quite large and the occupation layers are of considerable depth, although stratified deposits seem to be lacking in some sites. Cemeteries are sometimes associated. The sites on the west bank in Khartoum area and between the White and Blue Niles besides the sites in Shendi area are today generally close to the water and they were even closer at the time of occupation. The sites on the east bank in Khartoum area lie a considerable distance from the present Nile. The location suggests that the Nile was covering part of the surrounding plain, at least seasonally, perhaps with small lakes and swamps. Interpretations of these patterns were generally based on seasonal movement. Four of the sites on the east bank (Kadero I and II, Um Direiwa I and II) shared certain features. They are large, occupying areas of between 10000 m and 45000 m, and they are situated, on average,



Map. 2: Location of Neolithic Sites 1.



Map. 3: Location of Neolithic Sites 2.

about 7 km from the present river. The sites were rich in pottery, grinding implements and lithic materials and had burials associated with them. On the basis of the distribution of these sites and their cultural manifestations, it was postulated that they reflected a settlement pattern related to seasonally specific activities (Haaland 1987). The four large sites were seen as permanent base camps where emphasis was placed upon the exploitation of plants, sorghum cultivation, and the manufacturing of pottery. A small site (Zakiab) was interpreted as a dry season camp where herding and fishing were practiced. It was temporarily occupied and also seen as a place where lithic artifacts were manufactured. The model proposed that a large community occupied a base camp when conditions were favorable for cultivation. During the dry season the inhabitants of each base camp would split into smaller bands and occupy fishing and herding camps along the Nile where conditions would be optimal for these activities. After the rains, equivalent herding camps would be set up in the grasslands of the Butana farther to the east.

Mohammed-Ali and Magid attempted to test this model within the same general area but with sites found on the west bank of the Nile. They showed that the sites on the west bank (Nofalab and Islang) are close to the river and “the Settlement pattern on the west bank does not suggest occupation back from the river as the case of the east bank” (Mohammed-Ali & Magid 1988. 66). They also suggested that the topographical differences between the two banks must have affected local adaptation. In other words the flat alluvial clays of the east bank with their Nile-fed swamps and ponds would allow cultivation to be practiced and would support a rich pasture with a thick cover of vegetation and shrubs.

On the other hand, the eroded sandstone and

pebble conglomerates of the west bank would not permit agriculture, and their stony surfaces support relatively little grass even after the rainy season (Mohammed-Ali & Magid 1988. 66). They suggested a reversed pattern to that proposed by Haaland. Their model assumes that, since the large sites are located close to the river, these sites might have served as base camps, densely populated during the dry season. When conditions improved in the hinterlands, during the rainy season, part of the population might have split into small groups and occupied smaller sites in those areas.

The distribution of raw materials does not seem likely to be a major factor in settlement location. Sources of high quality stone for tool making are very limited in most of the Middle Nile region. The majority of lithic tools were made on Nile pebbles, quartz pebbles, and sandstone, which are commonly available. Most sites have shown no traces of exotic or imported material. Exceptionally in the Khartoum region, small quantities of rhyolite from the Sixth Cataract are found, and more rarely exotic amazonite, from an unknown source (thought by Arkell to come from Tibesti) (Arkell 1953. 4). The two models of seasonal patterns, though based on limited data, are plausible, but the evidence from the region has failed to provide conclusive proof and some problems remain, notably in relation to the possible role and significance of agriculture in subsistence strategies. Another significant problem is the lack of smaller (and more ephemeral) inland sites which could relate to shorter-term seasonal activities. If these were existed, then “it might be indicated that two quite different settlement systems existed on the opposite banks of the Nile River during the Khartoum Neolithic” (Arkell 1953. 67).

A more general problem remains concerning the identification of the most impressive large and artifact-rich sites as permanent settlements,

with a considerable static population. Some of these sites may have been occupied over a long period of time, which could explain the high density of lithic materials, pottery and other debris and, in some cases, the graves scattered in and surrounding the sites. However, it is important to recognize that there is no evidence for dwellings or other permanent structures found in association with any of the Neolithic sites. It is likely that such dwellings were made of perishable materials which will have left relatively few, or no, traces, like those made by the present inhabitants of the region (Arkell 1953).

It is also clear that the sites have suffered considerable erosion and deflation, which will have removed many more ephemeral features. However, the basis for assuming that permanent settlements or what can be called 'proto-villages' existed during this period remains far from clear. If we accept that pastoralism was becoming an increasingly important feature of Neolithic way of life, the role of such permanent centers remains unclear. The large quantities of pottery, lithic and food debris recovered from the sites are certainly not what we might expect from relatively mobile pastoral communities. Arioti and Oxby have drawn attention to special activities happened on such large sites (Arioti & Oxby 1997). They partly accept Haaland's suggestion that rather than a permanent settlement, Kadero might be interpreted as a special meeting place or a herders' gathering place used for collective ceremonies and feasts with ritual killing of animals. Those people would have lived scattered in the Nile hinterland for the rest of the year (Haaland 1987). This suggestion depends mainly on the presence of so many cattle bones in the site.

A similar suggestion may be offered for the remarkable site at Shaqadud. This site has a long prehistoric sequence marked by

exceptionally rich and deep deposits protected in one of the rare caves present in the Sudan as well as in a massive midden deposit outside the cave (Marks & Mohammed-Ali 1991). The combination of sites showed a superimposition of settlement debris dating from the earliest Epipalaeolithic to the full development of the Neolithic, therefore lasting in total about 4000 years (Marks 1991).

Arioti and Oxby (1997. 110) suggested that the Butana is close enough to the Nile "to hypothesize that the groups living there practiced some sort of transhumance towards the narrow riverine zone" and "thus the Butana region could have been the main home of herder-hunters who only camped near the river during the dry season". There is insufficient existing evidence to prove this hypothesis. According to Winchell (1992. 531), there are common pottery decorations between late Butana Group, Jebel Moya, and early Shaqadud Cave. These may also suggest some form of cultural connection.

The introduction of domesticated animals into the Central Sudan during the Neolithic period must have had effects upon the settlement patterns. The productivity of animals depends on their access to pasture and water throughout the year and on the risk of disease to which they are exposed (Haaland 1987. 207). The problem is to trace this effect upon the social organization. The social organization is obviously not observable for archaeologists from the Neolithic sites in the Central Sudan. On the contrary, the social status, which is reflected in the variability of grave goods, is not clear in the settlements.

However, whatever this organization might have been, it should have left some material manifestations of its structure. The increasing importance of domesticated animals, for example, would be associated with the

emergence of more individualized rights and responsibilities in economic management and this would have led to increased differentiation within such communities (Haaland 1987. 207).

Indeed, burial practices might reflect some relation to other aspects of human life such as economic practice or political power. Haaland (1987. 223) suggested that among the people inhabiting sites between Sabaloka and Jebel Awlia “a greater complexity in cultural traditions evolved, probably involving stronger political organization”. It is difficult to understand the stability of the southern and northern limits of the distribution of this cultural tradition. One possibility is that the political organization of the people carrying all the manifestations at the Khartoum Neolithic tradition required a certain surplus production which could not be realized outside the distribution area (Haaland 1987. 223). It seems that, in spite of many excavated sites, the social organization of the people of the Neolithic in Central Sudan will be limited to burial information. The hypothetical

social classes reflected in the graves were not observed in the settlements. However, presently available evidence seems to indicate that the burial grounds at el Kadada and Kadero I seem to illustrate well the process of the increasing concentration of goods and power by social “elite” toward the end of the Neolithic.

It is clear that the social structure in the Central Sudan during the Neolithic period exhibited more or less inseparable economic and settlement patterns which are in turn witnessed by certain developmental stages from Early Neolithic until we reach the complex picture of the Late Neolithic. Although the degree of permanency varies from one site to another until its zenith at Kadero I and el Kadada, all the way through we still have mobile patterns which started to have regular schedules within the microenvironments in the later times.

Further north, it seems that the 6th millennium witnessed major changes in settlement patterns. Early 6th millennium sites throughout Lower Nubia ranged from ca. 20 to 4200 sq. m in size,



Fig. 4: Pottery Vessels from the Cemetery of R12 in the Dongola region (Source: <http://www.isiao.it/en/attivita-istituzionali/attivita-di-ricerca/centro-scavi-e-ricerche-archeologiche/sudan>).



Fig. 5: Pottery Vessels Leiterband Horizon the Wadi Howar Region (Source. In: Wildung (ed.), 1997).

and many of these small sites ended by 3000 B.C. It is difficult to reconstruct the economic aspects of the Khartoum Variant groups, given the rarity of faunal remains. No animal domestication is evidenced, and the remains are primarily of fish and fresh-water mollusks, particularly *Aetheria elliptica*, indicating that these people were still very much directly dependent on riverine resources. The frequent occurrence of grinding stones and ostrich eggs at these sites serves to indicate both the exploitation of local wild plants and the hunting of the ostrich. Evidence of hunting is very clear in the material of Abkan sites in Lower Nubia. Although the economic subsistence is not represented in the archaeological remains of Abkan sites, one of the largest and best known finds of Nubian prehistoric art was at Abka, closely associated with occupation remains at the Qadan and Abkan industries of the Final Stone Age and the Neolithic. Curiously, in view of the presumed subsistence activity of the people who lived at Abka, there are no representations of fish, although one semi-abstract design might be

a fish trap (Myers 1958. Pl. xxxiv). Although Perkins (1965) considers that the fauna from the Abkan site ASG-G-25 at Wadi Halfa to be wild, his 'large bovids' may very well also have been domestic cattle (Grigson 1991. 133). The collection from this site contains catfish, Nile perch, ostrich eggshell, Egyptian goose (*Alopochen aegyptiacus*), hare, gazelle, large bovid and wild ass. Domestic goat (*Capra hircus*) seems to be represented by a single distal epiphysis found in the upper layer of the site and may be Terminal Abkan or intrusive (Grigson 1991. 222). Another Abkan faunal assemblage was described briefly by Carlson (1966. 53-62) and includes fish, hare, gazelle and remains of a large bovid which could have been domestic cattle at least for part of it. The scanty knowledge does not permit an unquestionable affirmation that the Abkans already were practicing animal husbandry, though it seems that they may have combined gathering and hunting with pastoral activities.

Although no direct evidence of food production has been found from the two

cultures, the dominance of small sites in the Khartoum Variant, both along the river and far at least 20 km west of the Nile, has been interpreted as evidence of a pastoral economy. Evidence of hunting is very clear in the material of Abkan and Khartoum Variant sites. Although economic subsistence is not represented in the archaeological remains of Abkan sites, it seems that the Abkan people were essentially exploiting the river valley, judging from the remains of mollusks and fish (*Lates niloticus*, *Clarias*). Land-based creatures, such as the gazelle, the ostrich and the goose (*Alopochen aegyptiacus*), are also represented among the faunal remains. Finally, the metatarsal bones of domestic goat may possibly be linked with the Abkan stratum at site AS-6-G-25, excavated by the Scandinavian Joint Expedition (Nordström 1972).

The second change in settlement patterns happened at the end of the 6th millennium. By 5000 B.C., the number of sites in Dongola region reflects a quite intensive occupation throughout the area (Welsby 2000.135). These sites may have been seasonal and have been linked to populations practicing animal husbandry, who occupied the alluvial plain during the dry season while seeking pastureland. The settlement structures consisted of oval huts, rectangular buildings, wind-breaks located to the north of the hearths, and a series of palisades. The faunal remains recovered from the graves at site R12 near Kerma (Map 2, Fig. 5) indicate that domestic livestock was very important, but collecting and hunting were not minor activities, as shown by the large amount of hippopotamus teeth, gazelle bones and bivalves (Pöllath 2008. 77). The graves contained a wide variety of faunal remains including different animal products, eggshell, mollusk shells, bones and teeth, worked into ornaments and other tools. Cattle were certainly most important, as is

demonstrated by the large amount of tools made from cattle bones and by the burciana that were a sign of wealth, power and influence. Lambs buried with the deceased indicate that sheep also played a vital role in burial customs.

The Neolithic people of Upper Nubia had a mixed subsistence economy, including animal husbandry, hunting and gathering. Major faunal resources for subsistence were probably available within the region. As discussed before, the R12 faunal assemblage reveals an increase in exploitation of domestic animals, especially cattle. The faunal profiles seem to suggest that hunting wild animals, including some very large game, such as elephants, appears to have been a significant activity in the community, though it is difficult to say whether elephants were present in the vicinity of R12 during the Neolithic. The finds from this cemetery are exclusively ivory objects, which are not helpful in answering this question. The evidence of wild animals shows that the Nile Valley inhabitants exploited the aquatic resources and went on hunting trips, exploiting the River Nile itself as well as the riparian forest zone and the adjacent semi-desert (Pöllath 2008. 73).

Systematic survey and excavations along Kerma basin and Wadi el-Khowi, in the Northern Dongola reach, provide us with detailed information about Neolithic society. The number of sites in this region suggests a quite intensive occupation throughout the area (Welsby 2000. 135). Cemeteries currently appear as isolated mounds, in a landscape which is flat today. Seventeen cemeteries have been located; only five of these were tested, three were excavated entirely and three are in the process of excavation. Since they cover the 6th to the 4th millennium in date, they inform us about the evolution of the funeral customs and the modifications of the social relations in these first communities practicing agriculture

and cattle breeding.

One of the most important cemeteries in the area was discovered at Kadruka (Map 2), in the Kerma Basin. This consists of medium-sized Neolithic cemeteries, including wealthy graves that have been tentatively interpreted as those of local chieftains (O'Connor 1993: 13). The most impressive example comes from cemetery KDK 1 where, according to its discoverer, grave 131, located at the top of the burial mound, displays the wealthiest grave furniture ever found in Nubia and Central Sudan in a Neolithic context. The other pits have been arranged around it, expanding out to form concentric circles using the first burial as a focus. Reinold did not use this discovery to infer a related territory that would have been controlled by the owner of the grave, but he concluded that such a finding implied expanding societies, in other words, societies with growing territories, that are a prelude to the emergence of kingdoms (Reinold 1991: 28). The majority of pits are located on the high part of the kom, between contour lines 230.70 m and 231.10 m. The remainder, nearly a quarter of the total, is situated on the lower part around 230.20 m. Initial observation indicates distribution ordered by gender. The higher are generally male burials, while the lower are female (Reinold, 2000).

Another cemetery, R12, may give a reasonable picture of a Neolithic Nubian society and may contribute to unraveling problems about the cultural and chronological sequence of the Neolithic in Nubia (Salvatori and Usai 2008). This cemetery, according to 14C determinations, was used for about 600 years, with the excavation revealing different grave layers, in spite of strong erosion which especially affected the northern and southern periphery in particular. This long use was responsible for graves frequently cutting into each other and for other disturbances. Apart from the risk of

mixing of material, careful stratigraphic control often confirmed a chronological order among the different inhumations.

This also means that, unfortunately, many skeletons were found incomplete. Erosion caused extensive damage to both the skeletal and archaeological material. As wind/water cleared part of the original soil of the mound, some of the graves appeared on the surface with bones in a very fragile state and the pottery abraded to such a point that the original surface treatment was sometimes hardly recognizable. Much can be learnt about crafts, ideology and society, from these 170 graves.

Investigations in the el-Multaga area (Map 2), located near Korti and ed-Dabba, brought to light Neolithic burials differing from other known local and contemporary burial sites. The skeletons lay under mounds in contracted positions inside pits just large enough to contain them. Grave goods were not regular and rather poor. The excavators are of the opinion that such practices probably relate to local nomadic groups (Peressinotto et al. 2003: 54). They also argue that the lack of grave concentrations and the scarcity of grave goods, which are among the most striking differences from other cemeteries, seem to indicate an adaptation based on nomadism, which is probably connected with the exploitation of the great wadis that join the Nile in that area. On the other hand, burials of adults and children, whatever their age at death, do not display any significant difference. The diversity of their orientations and positions fits in with what is known from the other sites of the same cultural horizon, but the contracted position of the lower limbs, which involves the use of straps, is greater here than anywhere else. The writer did not mention if this is greater in number of occurrences, or in the extent of the contraction.

The cemeteries at Kadruka, Kerma and el-Multaga provide us with a remarkable record, displaying many similarities with the sites of Central Sudan and testifying to a common link between the cultures. There are, however, variations that may be interpreted as different modes of evolution or different regional adaptations. These cemeteries display many points in common, especially in material culture. The similarities and differences seem to translate to homogenous populations and indicate a rapid evolution of the social order of the communities.

The situation in the western plains along Wadi Howar is different. Only few graves were discovered (Jessi 2008). A disturbed grave in a pit in the site of Abu Tabari has been excavated. Charcoal from the pit was dated to around 3200 BC (Jessi 2008. 66). A much better preserved grave was excavated at another dune habitat. Among the offerings were one small axe and two decorated vessels. The grave was dated according to pottery decoration to the 4th and 3rd millennia BC (Jessi 2008. 66).

Much evidence also demonstrates the extension of different cultural development in eastern region of Sudan. While far removed from developments in the northern riverine areas of Sudan, there are indications that these eastern populations were also engaged in long-distance exchange networks from an early date (Edwards 2004). Objects made from porphyry (lip plugs and mace heads), for example, the closest source of which lies some 300km to the north-east in the Red Sea Hills were already reaching the southern Atbai during the late fourth millennium BC. During the Gash Group, 3rd millennium BC, a mixed economy is indicated for the site at Mahl Teglinos where wild game is present throughout the deposit while riverine and domesticated cattle, sheep and goats fauna are only found in the upper levels.

Plant cultivations seems to have been practiced as there are numerous grinding stones, storage pits and the seeds or imprints of *Hordeum* sp., *Ziziphus* sp. and Leguminosae (Sadr 1991. 53)

3. Chrono-cultural Framework:

3.1 Central Sudan:

Many radiocarbon dates were obtained from the Neolithic sites in the Sudan. These dates indicate that the Neolithic in the Central Sudan ranges between 4985±142 (cal. BC) and 1988±126 (cal. BC) covering a period of at least 3000 years. Most of the sites flourished during the 5th millennium BC, others extended till the 4th and 3rd millenniums BC, while the sites of Shaqadud, Islang 2, and Jebel Tomat extended till the first decades of the 3rd millennium BC and the end of the 2nd millennium BC; in the case of Jebel Moya, until the end of the 1st millennium BC. From the available dates from Neolithic sites in Central Sudan, it is possible to recognize the following Neolithic sequence in the region (Fig. 6):

1. The Neolithic sites of Um Direiwa I, el Ghaba, Islang, Rabak, Shaheinab, Kadero I, Kadero II, Zakiab, Nofalab, Shaqadud Midden, Geili, Es-Sour, Islang 2, Nofalab, Tamanyat Sharq, El Kanger middle, El Kanger East, Sheikh Mustafa, Sheikh el Amin, El-Ushara and Guli, and the earliest pottery from Jebel Moya, date their first occupation to the 5th millennium BC.
2. There are a few sites from Central Sudan, such as Um Direiwa I, Um Direiwa II, el Ghaba, Islang, Rabak, Shaheinab and Kadero I, whose culture debris extends from the 5th millennium BC to the end of the 4th millennium BC.
3. The sites of Sheikh Mustafa (6295±215 bp cal. BC: 5210±230) and Rabak (6020±130 bp cal. BC: 4950±170) provide the earliest

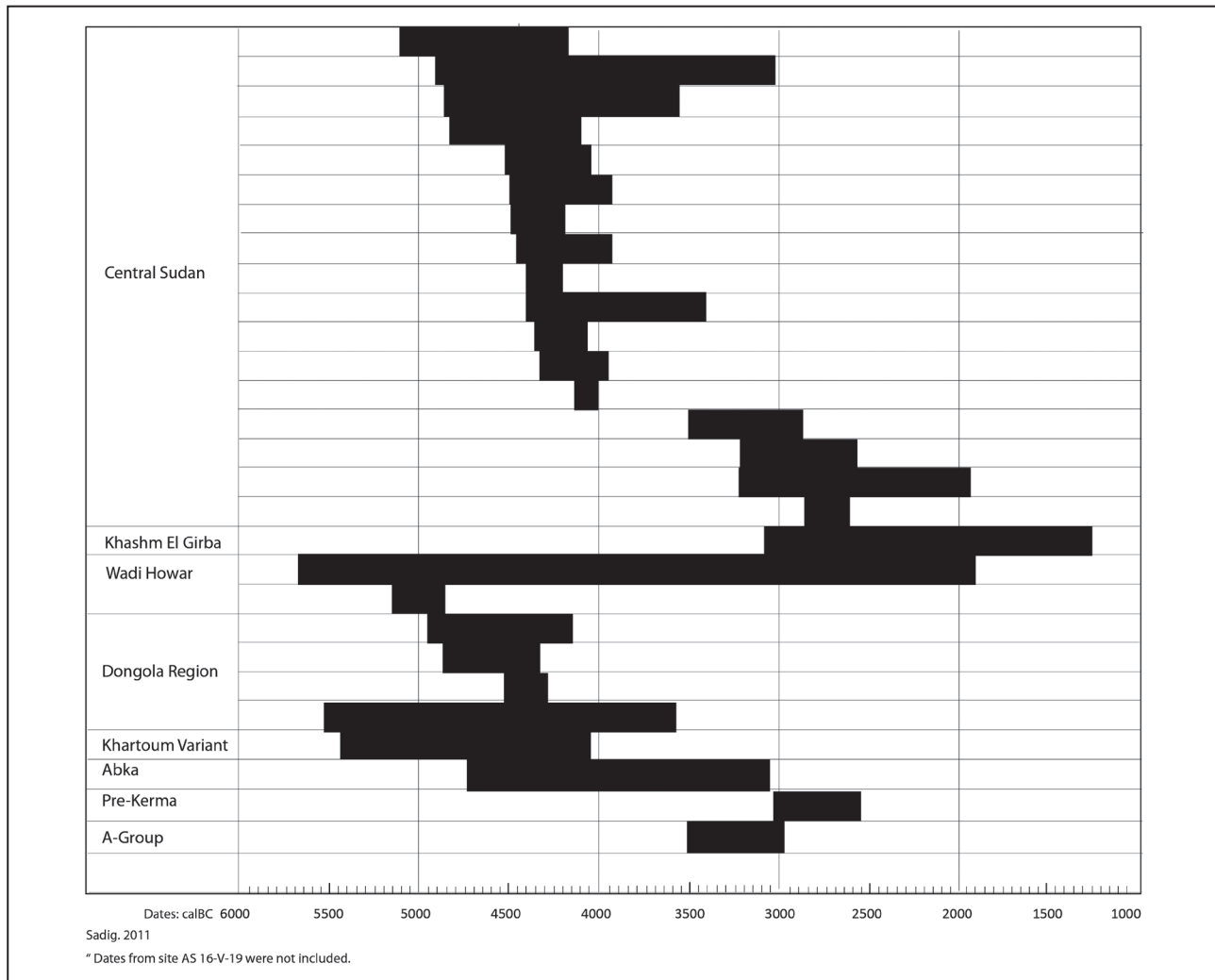


Fig 6: Distribution of some Radiocarbon Dates available for the Neolithic.

dates of the Neolithic. The latest includes typical Shaheinab material and therefore could be the earliest site known to date that shares similar material with the Khartoum sites.

4. The cemeteries of el Ghaba, Kadero I and el Kadada provide a continuous Neolithic sequence from the beginning of the 5th to the very end of the 4th millennium BC.

Throughout Central Sudan, there was a considerable variation in the duration of the Neolithic. In Khartoum region the structure and chronological relations between different sites varied widely. Nevertheless, I hypothesize

that the sites accommodated similar economic systems, typified by various modes of similar goods. Considerable variation existed in the time duration of every site. Chronologically, the western bank sites were remarkably different from those on the eastern bank.

Sites with almost exclusively early Neolithic style cultural material on the west bank, e.g., Shaheinab, Islang and Nofalab, survive for about 860 years (Map 3). By contrast, on the east bank, surveys and excavations suggest that a longer duration of occupation existed at sites like Kadero I (Krzyżaniak 1978). The eastern bank sites extended for about 1000 years. There are no large differences in the

two microenvironments and the Neolithic life appears to have been similar. The short duration of the western bank sites may be due to other reasons and the limitation of archaeological research must always be considered.

The so-called Late Neolithic term is applied to some sites that share similar material culture, graves, and subsistence economy. Some sites, namely Shaqadud Cave site, are related to this period although they exhibit exclusively local material culture and mode of life. Other sites, e.g. Es-Sour, have dates belonging to the Late Neolithic although they maintained and continued without any changes throughout their time-span. There is, however, sufficient evidence to show continuity in these sites and to suggest that they represent a continuous cultural tradition. An unknown sequence of occupation can be traced through the 4th millennium BC. This means that any attempt to divide the Neolithic period of Central Sudan must include specific studies of the material culture and modes of life. Any division must not be restricted to chronology; it must also be applicable to the whole cultural elements of every site.

There are no sites in the Khartoum area, except Nofalab2, that yielded a C14 date after ca. 3000 BC. According to Khabir (per. comm. 2011), the dates from Nofalab2 (4230±220 bp (cal. BC: 2860±320), 4130±220 bp (cal. BC: 2690±270) were found in full association with pottery and lithic finds that are akin to Shaheinab and other related sites (equivalent to what he has termed “a late Khartoum Neolithic Horizon”). The absence of gouges - typical of early and classic Neolithic criteria - coupled with the steady increase of more refined pottery in this occupational level mixed with ashes seems to reinforce this suggestion (Khabir 2006). With these dates, it seems that Shaheinab phase lasted far longer than

originally thought. The sites of el Kadada, El-Ushara, Jebel Tomat, Shaqadud Cave, and Jebel Moya offer a different panorama, with dates in the 4th and 3rd millennia BC. The current Jebel Moya chronology is early 5th millennium BC, 3000-800 BC, 800-100 BC. Shaqadud Cave sheds more light on the chronology of Central Sudan since Shaqadud Cave is the only site that survived during the late 2nd millennium BC.

There are also some surface sites discovered along the Begrawiya-Atbara road during a survey which contain some material stylistically similar to the 3rd millennium pottery at Shaqadud (Mallinson et al. 1996). These sites need a detailed study but their existence holds potential for future investigation of the cultural history of Central Sudan.

However, the time span of the Neolithic of all the sites situated along the Nile from Shendi to Rabak extends to the beginning of the 4th millennium BC. Most settlement sites in Central Sudan were most likely terminated during the fourth millennium BC except the sites of Nofalab2 and Shaqadud (A). Dates of Jebel Tomat and Jebel Moya arrange between cal. BC 2710±130 and cal. BC 2770±110, while the dates from Shaqadud (A) and Nofalab2 arrange between cal. BC: 2860±320 and cal. BC: 1990±130. There are only two 14C dates from Jebel Moya which give the same date with the same error range and are unassociated with any demonstrable culture remains or graves. This scanty of sites during the period between 3000 to 1000BC has been attributed as “a gap” in the late prehistoric occupation of riverine Central Sudan (Haaland 1981, 1984, 1987, Shinnie 1984, Reinold and Krzyżaniak 1997, Mohammed-Ali 1986, Caneva 1994). The deteriorating climate, environmental pressure and the carrying capacity of the Nile environment, the shift to nomadic pastoral agriculture, the change in settlement pattern

associated with economic process, and others, has been suggested as the major factors for this “gap”.

In my view, the chronological sequence of the Neolithic period has been build up in accordance with radiocarbon dating in certain areas. In addition, the comparative approach has not been used in studying the reasons for the development that Northern Sudan witnessed through its long history, whereas Central Sudan followed its own trajectory of development since the end of the Neolithic period. Though this comparative study may be theoretical in its appearance, it may contribute highly in identifying the factors behind the unique development in Northern Sudan. Central Sudan was not lacking such economic motives because it witnessed recognizable technological and economic development during the later prehistory. This may be due to the methodology adopted in Central Sudan that concentrated on the prehistoric periods, the Neolithic period in particular, without connecting it with any other historical period.

The evidences from el Kadada show that small amount of material could be compared with Late Neolithic finds further north, including in Late A-Group contexts around 3000BC. This includes some distinctive decorated bowls very similar to examples found in the A-Group “Royal cemetery” at Qustul (Geus 1984. Plate 12, Williams 1986. Figure 34). These include frequent occurrence of circular or sub-circular grave shafts, super imposed burials, and a large quantity of grave goods inside the shafts. Undecorated sherds, related mainly to quite coarse, black-topped red wares, were found in the Neolithic site of Es-Sour, 15 km north of el Kadada (Fig. 3) (Sadig. 2005, 2008a, 2008b). Such black-topped red wares have been found at Shaheinab (Arkell 1953. 75) and Geili (Caneva 1988. 110). They are also

reported to have been quite common at Kadero, el Kadada and among the pottery assemblage of the A-Group of Lower Nubia (Nordström 1972. 88-89) and are consistent with the relatively late c-14 date obtained for the site at Es-Sour (Wk23036: 5296±48 bp, Wk23037: 5330±54 bp, Wk23038: 5180±48bp) (Sadig. 2008a). These dates slightly earlier than the oldest dates from el Kadada (GIF-5770: 5170±110 bp (Geus 1981) cal. BC: 3990±160).

Potentially, even later material has also been found in a single burial on the edge of Jebel Makbor, ca. 5km away from the river (Lenoble 1987). There, a contracted burial beneath a stone cairn was associated with pottery which has similarities with material of the late third and second millennia BC from Dongola Reach. According to the findings at the 4th Cataract, the finds from Jebel Makbor are apparently of Kerma horizon and influence. This may point out to an emergence of different burial custom in the edge of Butana, dating back to the end of the second millennium BC.

Along the riverine Central Sudan, some evidence may indicate that some populations continued to live in the region. The recent finds of tumuli at Umm Singid (Wadi Kanjer, Khartoum North), dated to 3220 bp (cal. BC: 1506) (Caneva 2002), and with some cross-hatched pottery similar to that of the Nubian Pan-Grave culture in Northern Sudan and the Mokram group in Eastern Sudan, ancestors of the present-day Beja Cushitic-speakers (Sadr 1990), appears to be a further support for the existence of some population in the Khartoum region during the middle of the second millennium BC. There is also late materials from Khartoum Hospital (Arkell 1949) and Saggai (Caneva 1983a), which has been almost completely ignored in research so far. Arkell (1949. 49) noted that some of later sherds found in this site might belong to a ware also found at

Jebel Moya and “not earlier than the Napatan Age”. Arkell also noted some sherds dated to what he termed as “protodynastic date” (1949. 95). Sherds from two or three fine red ware bowls were attributed to “Pan-grave ware”... ..“seems to be that they come from a Pan-grave” burial” (Arkell 1949. 95). In Saggai, Caneva (1983a. 28) reported late Neolithic graves that are differ totally in shape as well as their depth from late Neolithic graves in the region. These data, along with those from Khartoum hospital site need more detailed analysis in terms of cultural identity.

The site of Shaqadud in the western Butana presents a different panorama. Identification of Shaqadud as a Neolithic site is far from the truth; Shaqadud is a complex site, which includes several sub-sites and several occupation phases, including a distinctly “Post-Neolithic” one (Shaqadud Cave). The occupation at the site continues through to ca. 2000BC. Pottery from the site also bears comparison with northern traditions of the third millennium BC, with black and red burnished wares and heavily incised decoration. The Atabai plains east of the Nile in Eastern Sudan increasingly appear as culturally distinct from the riverine areas by the fifth millennium (Mohammed-Ali 1985. 26). Neolithic sites have been located in this area, contemporary with the last half of what has been designated the Kassala phase; there occurred a group of over fifty sites termed “Jebel Mokram”. This phase has been generally dated to around 2nd millennium B.C. and is characterized by seasonal occupations of nomadic groups who moved into the Butana and the Atbai (Mohammed-Ali 1985, Fattovich et al. 1984. 182). The evidences from areas south of Khartoum (University of Khartoum Survey along the White Nile) (Eisa 1999, Sadig 2010), suggest that there might have been a widespread late Neolithic occupation along

both Niles (White and Blue Niles (Fernandez et al. 2003) and in the hinterlands away from them. Levels at Rabak site are datable to the fourth millennium BC (Haaland 1987. 45). Link with interior of Gezira are indicated by the presence of very similar pottery at Jebel Moya, Jebel Tomat and other sites (Haaland 1984). The Jebel Moya pottery found at Rabak has one associated date in the uppermost layer, early 3rd millennium BC. The occupation at Tomat continued into the 3rd millennium BC (later than any Late Neolithic site in the Khartoum-Shendi region). Shells from the site, found at a depth of 60-80 cm, in a soil pit dug by Williams in December 1971, yielded a date of 4540 ± 200 years bp (cal. BC: 3250±260) (in Clark 1973. 57). This may be an indication that the beginning of the settlement may be as early as 3000 B.C. but the date should be treated with caution until it can be verified.

New dating is thought to comprise three main temporal phases at Jebel Moya between ca. 5000–100 BC. Phase I (Early 5th millennium BC) was identified by the presence of diagnostic dotted wavy line pottery; however, the original settlement horizon was said to have been destroyed by the later inhabitants (Gerharz 1994). This is what Gerharz claim, but the only evidence we actually have are some pottery sherds. Surviving site features, including all graves, date to Phase II (ca. 3000–800 BC) and Phase III (800–100 BC). Gerharz (1994. 330) regards the phase II as a distinctive heterogeneous culture that combined elements of various outside groups. Pottery motifs, vessel forms, lip-plugs, and stone tools of the Butana Industry (ca. 3rd millennium BC), on the Ethiopian border in the Atbara drainage, are said to bear some resemblance to those at Jebel Moya, although this has been disputed (Winchell 1992). C-Group and Kushite influences in pottery are also evident (Clark 1973, 1984;

Clark and Stemler 1975). The presence of imported Kushite (Napatan and Meroitic) grave items is evidence for long-distance trade.

The Jebel Moya complex is characterized by the ceramics which as a rule were decorated along the rim portion of the vessel (banded) within impressed or incised designs (Haaland 1987: 220). The exterior surfaces of these vessels have usually been wiped or smoothed, while burnishing is rarer. However, there are few examples of incised ceramics (if any) in the pre-Napatan aspect of the Jebel Moya ceramic complex and there is a total absence of ripple, red-finished, or black-topped ceramics. The fact that these particular kinds of the ceramics do not exist in the Jebel Moya complex is probably a good indication that the Jebel Moya complex post-dates the late Neolithic and “post Neolithic” developments farther to the north, and a post-3000 BC date for the beginning of the Jebel Moya complex would be in line with this assessment. Burnished ceramics which are so common in the late Neolithic of el Kadada and the sites of the Khartoum Province are not as frequent (however Jebel Tomat may be an exception) in the Jebel Moya ceramic complex. Furthermore, wiped surfaces which do appear in the Jebel Moya ceramics are not common in the late Neolithic sites farther to the north. Renewed analysis of the Jebel Moya cultural materials will address these and other outstanding questions (Brass 2009).

Similar material from Rabak has been discovered near Kawa (40km north of Rabak), and at Soba (30 km south of Khartoum). Surface collection from the White Nile (Dwahiaya site near Jebel Awlia), Central and west Gezira (Qoz sites) seem likely to relate to a ‘late’ phase of a Neolithic occupation and this is confirmed at the sites of Kabarao and Qoz Bakheit.

The argument concerning the end of the

Neolithic period lead to the continuous shortcoming reflected on each explanation. The negligence of marginal areas (e.g. White Nile and Gezira plain) makes the problem of the discontinuity of settlement restricted to Khartoum area. So, there is no chance to speak about such a discontinuity in other areas that do not include a similar number of excavated sites as in Khartoum area.

I assume that in the late 2nd millennium BC/ early 1st millennium BC we do not find much archaeology because people in this region were quite mobile. But even if this is true, they must be buried somewhere. Therefore to confirm their existence we need to identify their graves, even though it will be much more difficult to find materially-poor sites of “mobile” pastoralists. All the analysis and new collections, including the important data in the sites of Singid and Jebel Makbour, underscore how much excavation still remains to be done to fill in the sizable gap that exist in the archaeological record of Central Sudan. Much of what is known about the early history in this region comes in fact from a total of only few excavated sites. The sites of Singid, Jebel Makbour, and Jebel Moya represent only three scattered data points on vast and largely different landscapes. Available archaeological evidence from these sites fills part of this gap, but the gap remains un-filled between these sites and the first appearance of the Kushite people in Central Sudan.

There is a need of a new survey in Shendi-Meroe region to try and find new sites. Basically virtually no survey work has been done in this region, and that is what is needed. The recent discovery of the Neolithic site of Es-Sour is a good example of the lack of systematic surveys in this region. The site of Meroe has seen much archaeological interest since the beginning of the 20th century, mainly focused on its Kushite and post-Meroitic remains. However, relatively

little systematic surveys have been carried out in the surrounding region. For this and other reasons, the Department of Archaeology, University of Khartoum, began a new survey project, concerned with sites of all periods in the region to the north of Meroe, extending as far as Mutmar. Survey and test excavations were begun within a concession held by the Department directed by Ali Osman during 2004 and by the author during January-February 2005 (Sadig 2005). One site discovered during this survey was located east of the village of Es-Sour, north of the Royal City of Meroe. This large Neolithic site does not appear to have been previously recorded although it is located no more than ca. 750m from the last archaeological unit labeled by Garstang in the city of Meroe area (i.e. M622). This is the first substantial Neolithic site discovered in the neighborhood of Meroe, and bears many similarities to the large Neolithic site at el Kadada, which lies about 30km upriver from Meroe.

Four assemblages can be recognized in the Neolithic context of Central Sudan from this description. These assemblages share some Neolithic traits with the type-site of Shaheinab but they also lack some of the main traits of that site:

1. Classic “Early Neolithic” Horizon: sites contain typical Shaheinab material, especially the gouges (Geili, Nofalab and Kadero I).
2. Terminal “Early Neolithic” Horizon: sites share some traits with Shaheinab but lacks the gouges (Rabak, Jebel Tomat, and Nofalab2).
3. Late Neolithic Horizon Type A: found at sites like el Kadada, where the site is partly contemporary with the late period of other two assemblages but reflects more sophisticated material culture than them (Es-Sour). Some similar material has also come from a small cemetery at Geili, partly overlying the Early Neolithic settlement (Caneva 1988).
4. Late Neolithic Horizon Type B: this horizon contains different sites with archaeological materials that differ partially from riverine sites (Shaqadud (A), Jebel Moya (Phase II) and Jebel Tomat).

The first and second horizons cover the ‘Early Neolithic’ of the Middle Nile, broadly spans the fifth millennium BC, while the third and the fourth horizons related to the ‘Late Neolithic’, runs through the fourth into the early third millennium BC. The late Neolithic clearly continues much later in some parts of the Middle Nile, even if we still know relatively little about the later prehistory of many regions.

3.2 North Sudan:

The relative chronology of the Neolithic in Lower Nubia (Abka and Khartoum Variant) is largely derived from technological and typological comparisons of pottery and lithic artifacts from assemblages in the Second Cataract area, where most of the relevant sites lack any clear stratigraphic data (Shiner 1968a: 611ff). For example, the analysis of a few potsherds of a type normally associated with Abkan industry in the CPE Khartoum Variant site (2016) led Shiner (Shiner 1968a: 629, 1968b: 778) to suggest that the two industries were contemporary and “in, at least, occasional contact”. On the other hand, Nordström (1972: 17) suggests that the Abkan industry received its ceramic traits from the latter phase of Khartoum Variant. The main site in the Abka area (No IX) comprised several occupation levels, with Khartoum Variant material at the bottom of the stratigraphic sequence; the various strata overlying the Khartoum Variant made up the Abkan sequence.

The data does not necessarily indicate that the

two industries were contemporaneous. Till now there is no direct evidence on the chronological relationship between the Abkan and Khartoum Variant, or between either and the other Neolithic sites in Central Sudan. There are, however, some fairly strong indirect evidence (supported to some extent by C14 dates) that the Abkan occurs after the Khartoum Variant. Again, if it is supposed that the Abkan predates the Khartoum Variant, with the conclusion might be that “certain traits [were] common to both industries and with the presence of a few sherds associated with the Abkan in Khartoum Variant sites” (Mohammed-Ali 1982. 143). Nordström’s assumption suggests that there are ceramic affinities which link the Khartoum Variant with Arkell’s Khartoum Mesolithic although the characteristic features of Khartoum ceramics, wavy line and dotted line, have no representation at the Khartoum Variant sites.

From the available dates from Khartoum Variant and Abka, it is possible to recognize the following Neolithic sequence in Lower Nubia (Fig. 6):

1. Excluding the dates from sites AS 16-V-19, WHW-7 and South Buhen, the Khartoum Variant industry belongs to the 6th millennium BC, or survives into it.
2. The Abkan industry belongs to a part of the 5th millennium BC and survived during the 4th millennium BC.
3. The chronology of Abkan and Khartoum Variant covers the entire 5th millennium BC and part of the 4th millennium BC. Unfortunately, no cemetery has been excavated, and the few and poorly published investigated settlements (Myers 1958; 1960, Shiner 1968b, Carlson 1966, Nordström 1972) can provide only a pale image of these cultures.
4. One of the main problems in Lower Nubian

sequence is the labeling of certain sites with different terminologies. This is the case with the two sites (DW5 and DW4) attributed to so-called (Post-Shamarkian). The two sites each consist of large concentrations, measuring some 250 x 50 meters in area but very shallow in depth, made up mainly of chert and quartz debitage but also including an element of Egyptian flint. The sites have yielded two radiocarbon dates: 5600±120 bp (DW5: cal. BC 4470±119) and 5220±50 bp (Wadi Halfa WHW5. cal. BC 4070±80) (Hassan 1986, Nordström 1972. 8). According to Nordström (1972. 96), the Post-Shamarkian “should be regarded as a local counterpart to the Khartoum Variant and the Abkan, which both display a much wider geographical distribution”.

Around Kerma and Dongola, several sites dating from the Neolithic period were discovered. The University of Geneva excavated one of the best-preserved Neolithic habitation sites in this area. It occupied the same location as the eastern cemetery of the Kerma civilization. It was buried under several dozen centimeters of Nile silt, and was uncovered in an area revealed by wind erosion. This site is part of a group of several stratified Neolithic settlements. They had all been subject to erosion by the Nile before being covered by flood silt, showing that this location was reoccupied on several occasions and that it was not protected from Nile floods (Honegger 1997. 116). These sites may have been seasonal and have been linked to populations practicing animal husbandry, which occupied the alluvial plain during the dry season while seeking pastureland. The sites yielded hearths and postholes, as well as pottery, stone objects (flints, grinders and grindstones) and faunal remains. The species represented consisted mainly of cattle and domestic caprines. An isolated human bone was also

found, indicating that graves were dug nearby. The settlement structures can be reconstructed from the posthole alignments. They consisted of oval huts, rectangular buildings, wind-breaks located to the north of the hearths, and a series of palisades, some of which seem to have formed enclosures (Honegger 1997. 116).

Many other Neolithic sites were discovered south of Kerma and along paleo-channels of the Nile. Jacques Reinold, working immediately to the south in the area around Kadruka from 1986, suggested that the settlement sites lay along the bank of a branch of the Nile running in the bed of the Wadi el Khawi, which lies close to the plateau (Reinold. 2000).

Derek Welsby (2000. 131), who worked in the area between the sites investigated by Reinold and by the Royal Ontario Museum, defined the Neolithic sites as “appearing to be much more dispersed and are extremely large. They are difficult to determine archaeologically as the vast spreads of occupation material gradually fade away in some areas, but in many others their edges are masked by the extensive dune fields”. It seems that, in spite of the many sites discovered, it is too early to suggest the functions of these occupations, although they appear to occur over much of the survey area and cover a much greater percentage of the concession area than the sites of the other periods (Welsby. 2001. 569).

Elsewhere, Welsby defined these sites as “occupation scatters” rather than as settlements, due to the absence of occupation mounds. He added that “this may be the result of post-Neolithic erosion and one should bear in mind that the occupation scatters of today may have been permanent settlements in the Neolithic period” (Welsby. 2001. 569). Very occasionally hearth-like features were noted, which may have been associated with the Neolithic occupation

and these, along with pits, are one of the most prevalent features of the recently discovered Neolithic settlement under the eastern cemetery at Kerma (Honegger 1997. 116).

The University of California Dongola Reach expedition reported some Neolithic occupation in the area between Hannek and Al Khandag on the west bank of the Nile (Smith 2003. 164-165). Smith (2003. 164) suggested that the presence of large sherds and bone eroding out alluvial deposits, along with possible pitting, indicate that most of these sites were cemeteries, although no graves were found.

More recent researches recorded small surface Neolithic sites displaying mainly lithics and ceramics. These sites were located within the new area of Al Multaga, near Genetti, “a resettlement area related to the construction of the Merowe Dam” (Peressinotto et al. 2003. 54). The small size of the settlements, the lack of grave concentrations and the scarcity of grave goods contrast with what is known from other sites of the same horizon excavated in Central Sudan and Nubia (Peressinotto et al. 2003. 35-39).

With regard to the Neolithic in the Fourth Cataract area, results will be forthcoming soon, when the individual missions publish their results. Numerous prehistoric sites were recorded by each mission within their concessions. However, most of these were represented only by traces of sites or only by single finds redeposited in secondary geological context. The rare example of slightly better preserved strata also does not allow us to develop sophisticated studies of prehistoric settlement and culture. Apart from the abundant settlement sites, in a few cases fragments of funerary vessels were noted. However, the only one confirmed prehistoric cemetery known from the Fourth Cataract is the late Neolithic

necropolis at Umm Melyecta – originally not identified as of that period nor funerary character (Osypiński. Abstract, internet material).

A separate element of the project was research at three of the resettlement areas in the vicinity of the Fourth Cataract– at Multaga, New Amri and Wadi Mukabrab. Garcea mentioned a late Neolithic site near El Kurru but it possesses no Neolithic settlement patterns characteristic of this area (Garcea 2000. 137-147). The site is identified by a large quantity of lithics scattered over an area of 50 m². Generally it has more similarities to sites in the area of Debba-Korti than the sites in southern Central Sudan. The SARS group identified only one Neolithic site in the Kirbeka-Amri area during 1999 survey season. It is located on a flat area among rocky outcrops, and has an appreciable amount of pottery of Epipalaeolithic and early Neolithic date, as well as lithic materials (Welsby 2003. 28, Fuller 2004).

Further north, in Dongola region, the excavations of the Neolithic cemeteries at Kadruka, R12, and El Multaga added valuable information to the typology of the early and late Neolithic remains, their absolute chronology and burial customs.

Some pottery sherds from the oldest graves at the R12 cemetery in the Northern Dongola Reach (Salvatori and Usai 2008. 33-38), are typical to some sherds mentioned in Nordströms' description of Abka pottery. This cemetery produced also few but very characteristic cortex scarpers, typical of the Abkan lithic complex (Salvatori and Usai 2007. 325). Pottery similar to that of the older graves found at this cemetery is recorded in Letti basin (Usai 1998. 419). The presence of similar cultural traits all along this part of the Middle Nile valley is clear when we consider the pottery found in the Multaga graves, in the Southern Dongola

Reach, in the most recent graves at R12 and in the graves of Kadruka 1 cemetery in the Kerma Basin. Although there are now numerous age determinations on the Neolithic sites of this part of the Middle Nile region, their number is still hardly enough to develop a detailed, firm chronological framework. However, the dates from Multaga, R12 and Kadruka 1 are sufficient to present a general chronological framework of the Neolithic period in this part of the Middle Nile region.

The C14 dates from Multaga, R12 and Kadruka 1 contribute to establish a Neolithic phase to the second half of the 5th millennium BC. According to Salvatori (2008. 143) it is possible to recognize the following Neolithic sequence in Upper Nubia (Fig. 6):

1. An early Neolithic phase in the cultural sequence of Upper Nubia starting around 6000 cal. BC. Unfortunately, the el-Barga Early Neolithic actually covers only the first half of the 6th millennium BC and a gap of almost five hundred years separates it from the Middle Neolithic A at Kadruka cemetery and el-Barga settlement.
2. The 5th millennium BC is well represented by some of the Kadruka and el-Multaga.

In Lower Nubia, the Abkan Neolithic is followed by the so-called A-group culture that according to C14 determination can be dated to mid 4th and mid 3rd millennium BC. Evidence related to the so-called "A-Group" Culture is located along the Nile between Kubbaniya, north of Aswan, and Melik en Nassir, south of the Second Cataract (Nordström 1972). Among the main areas, substantial differences in the archaeological remains were noticed. They can be summarized as follows: typology of the shafts of tombs; pottery; evidence associated with the burials; other materials included in the grave goods.

Almost nothing is actually known about Upper Nubian cultures during most of the 4th millennium BC. The last date refers to the beginning of the so-called Pre-Kerma period discovered in Kerma region. Chronologically, the Pre-Kerma period lies between the end of the fourth and the beginning of the third millennium. The Pre-Kerma period is C14 dated between the end of the fourth millennium and the beginning of the third millennium BC.

Western and Eastern Regions:

In the 1980s, a vast programme of multidisciplinary research was undertaken in the desert west of the Nile in the zone of potential contacts between North Africa, the central Sahara and the Nile valley. Directed by the universities of Cologne and Berlin, this project, the “Besiedlungsgeschichte der Ost-Sahara” (BOS), set out to follow the development of human groups over the last 10000 years, investigating the economic and cultural responses that made to the processes of environmental change, which were sometimes totally drastic in their impact.

Work has continued since 1995 under the aegis of the interdisciplinary research project ACACIA (Arid Climate Adaptation and Cultural Innovation in Africa). Surveys and excavations have been carried out not only in Wadi Howar but also in adjacent areas to the north and south (Jessi 2008). Among the areas that have been investigated, is the Wadi Shaw in the Laqiya Arbain Oasis, a contact zone between southern Egypt and the northern Darfur (Schuck 1989). A short survey and a small area of excavation conducted in 1982, resulting in the discovery of 90 sites associated with lakes of the sixth and fifth millennia BC. A wavy-lined sherd was found near an elephant molar in a sandy layer between two lacustrine deposits, thus providing a terminus ante quem of 4600 BC. Other sherds

derive from contexts that are sometimes less precise, bearing a typical hatched decoration (Laqiya type), the distribution of which seems to extend over a distance of nearly 300 kilometers, as far as Wadi Howar. The Radiocarbon analysis of a bone associated with pottery of this type produced the date 4250±350 BC.

Finally, the Wadi Howar, located precisely at the southernmost limit of the ACACIA, constituted a natural corridor, during favorable climatic phases, linking the massifs of eastern Chad with the plateaus bordering the Nile (Jessi 2008). The first inhabitants of the Wadi Howar, who appear to have already been using pottery, settled there in about 6000 BC, colonizing the edges of the wadi and the surfaces of consolidated dunes. They exploited the permanent aquatic resources during the dry season and the seasonal pastureland during the humid months. The earliest assemblages include a microlithic toolkit, pierced discs of hard stone, abundant grinding materials, and sherds of a Khartoum Mesolithic type.

A later phase is characterized by pottery of Laqiya and Shaheinab types. The radiocarbon dates indicate a long spell of occupation during this period, covering the third and second millennia BC, thus in a sense filling the gap marking the end of the Sudanese Neolithic. A significant change occurred at the beginning of fourth millennium BC with the onset of what has been termed Leiterband horizon (ca. 4000-2000 BC) (Map 3, Fig. 3, Fig. 5). During the 4th and 3rd millennia BC, the Leiterband Horizon extended over large areas of the southern Libyan Desert (Jessi 2008). The analysis of pottery from Leiterbands' site Djabarona 84/13 showed that the oldest phase of the Leiterband complex finds parallels in the Khartoum Neolithic, whereas the later phases show greater affinity with regions to the west of Wadi Howar, such as the Ennedi, or even sites in Mali (Jessi

2008. 68). Later, with the increasing aridity, Handessi horizon (2200-1100 BC) dominated in the middle Wadi Howar (Map 3). Sheep and goats were added to the herds and hunting became important again. During the Handessi Horizon the Ennedi Erg region and Lower Wadi Howar were no longer suited for permanent settlement due to increasing aridity. Lower Wadi Howar was, however, still used as an important thoroughfare. Site distributions show a growing concentration along the Middle Wadi Howar after the third millennium BC, thereby reflecting the climatic change with increasing aridity spreading from north to south.

Further east, surveys beyond the River Atbara have identified many sites on the steppes between the Atbara and the Gash, known as the 'Saroba Phase', for which dates in the fifth millennium BC have been suggested (Fattovich et al. 1984). Parts of this area seem likely to have still been swampy, at least on a seasonal basis. The local populations seem to have remained essentially hunter-gatherers, with evidence for the hunting of mainly smaller mammal (e.g. small bovids, warthog, and monitor lizards) as well as the collection of Pila shells. The eastern region increasingly appears as culturally distinct from the riverine areas by the fifth millennium. Domestic livestock seems to have reached the region rather later than areas further west, probably in the later fourth millennium BC, and is associated with the 'Butana Group', sites lying along the Atbara and palaeochannels of the river Gash which at that time flowed west to join the Atbara.

During this period the channel of the Gash seems to have progressively moved east, reaching its present course in perhaps the second millennium BC. Hunting and the exploitation of aquatic resources were still important among what may have been relatively settled groups. The pastoral element seems to have become

more prominent during the third and early second millennia BC, identified as the 'Gash Group', occupying and exploiting the Gash Delta, with settlements of varied size scattered across the alluvial plain (Edwards 2004. 64). Some have deep in situ deposits suggesting that they were stable, long-occupied settlements, while others were quite ephemeral.

A mixed economy is indicated for the site at Mahal Teglinos where wild game is present throughout the deposit while rivicine and domesticated cattle, sheep and goats are only found in the upper levels. Plant cultivation seems to have been practiced as there are numerous grinding stone, storage pits and the seeds or imprints of *Hordeum* sp., *Ziziphus* sp. and Leguminosae (Sadr 1991. 33). Culturally similar groups may also have existed further north and north-east towards the Red Sea coast (Arkell 1954).

4. Final Remarks:

The terms "Shaheinab" or "Early Khartoum" should be retained only as terms for a cultural phenomenon. Because they are used both as terms for a time period and cultural phenomenon, it is ultimately confusing. "Khartoum Variant" is a poor name for the "Neolithic" of part of Lower Nubia. Firstly, Khartoum Variant chronology is based on generally similar features in the Early Khartoum Mesolithic rather than the Shaheinab Neolithic, and there is no way to define increasingly fine distinctions in time as more data should permit. In part this is because the Khartoum Variant material is defined on the basis of a limited number of sites and is difficult to connect with Shaheinab sites, which are producing considerable samples under conditions of modern stratigraphic excavation. Moreover, the claim that there are ceramic affinities which link the Khartoum Variant with Arkell's Mesolithic is unfounded because the

characteristic features of the Khartoum pottery, wavy line and dotted wavy line, have no representation at the Khartoum Variant sites.

In my opinion it is clear that for defining Neolithic these criteria (pottery, microlithic and polished tools) are incomplete contradiction to the current definition of a Neolithic culture. There are many different names which can be utilized for purely chronological terminology, but in the end accepted general terms like Early Khartoum and Shaheinab were used in this paper to distinguish sites that characterize the Mesolithic and Neolithic periods. These terms should not be applied in all cases, since sites distinguished by local variations should not be forced into the general classificatory categories. The material culture of the Neolithic and Mesolithic sites suggests they belong to different chronological periods. The absolute dates from different sites definitely prove this with certainty. They differ chronologically as well as in many different aspects of the material culture for every site. Some sites contain typical Shaheinab material, e.g. gouges, and others do not. For example, the site of Rabak is recognized as typical Shaheinab site although it lacks gouges. Geili, with rhyolite gouges and incised ware corresponds to the Shaheinab assemblages and could be chronologically close to it.

The Neolithic is simply a label that archaeologists have applied to a period in prehistory to distinguish it from others (the Bronze age, Iron age and so forth), primarily on the basis of social, economic and technological traits. We now understand the Neolithic not simply in terms of marking the appearance of agriculture and the adoption of new technologies, but as a very complex social phenomenon that represent new ways of understanding the world as much as anything else. From its beginnings in the near east around 10.000 years ago, it is now recognized to have varied greatly in

character over time and between regions, and to have spread by various mechanisms involving both colonization and indigenous adoption and change.

At one time all the human beings in the world were hunters, gatherers and fishers, essentially they were collectors of food not producers. Indeed, some groups of people continued to live in this way until recent times and in many places lived quite well. Nevertheless, during the last 10,000 years or so major changes took place, in which most humans came to control their sources of food, so that they could produce it at will.

The Middle Nile region Neolithic formed through gradual changes and values found among the early Holocene hunter-gatherers. Certain elements of Neolithic life, such as pottery were continued from the native Mesolithic. Other aspects, such as pastoral life ways, are thought to represents inter-regional contacts.

Far up the Nile, in the Sudan, the stone-using people of Esh Shaheinab had domesticated goats and cattle about 6000 years ago but fishing was still important and they had pottery similar to that of their hunter-gatherer predecessors at the site of Early Khartoum, in the same region. Certain elements of Neolithic life, such as pottery were continued from the native Mesolithic. Other aspects, such as pastoral life ways, are thought to represents inter-regional contacts.

In addition, wild sorghum, finger millet and panicum were exploited and might have been cultivated, hunting and fishing being marginal activities. By about 5000 years ago there were other farmers along the middle Nile, cultivating wheat and barley and herding sheep, goats and cattle but it is remarkable that the earliest evidence for cultivated sorghum is only about 2000 years old. This indigenous African cereal must have been domesticated much earlier,

because it was already being cultivated in Saudi Arabia and India, where it was not indigenous, some 4500 years ago.

The definition of these events must bear in mind that the Neolithic culture in Sudan is characterized by rapid spread within different environmental regions in different periods. Discussions of the spread of Neolithic pastoralism go beyond these

spatial, chronological and cultural limitations. Moreover, in the central Nile around Khartoum, the development of Neolithic economy and society is generally due to increasing emphases on herding while in the north, much evidence also demonstrates the extension of long-distance material exchanges in the Middle Nile during the 5th-2nd Millenniums BC.

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ملخص: انتشرت ثقافات العصر الحجري الحديث في السودان في المناطق الوسطى والشمالية والشرقية والغربية، في الألف الخامسة قبل الميلاد. ويعد تعريف العلاقات الزمنية بين المواقع الأثرية والمناطق التي توجد فيها، من أكثر المشاكل أهمية في دراسة التغيرات التي حدثت فيها على مدى آلاف السنين. لقد تم استخدام عدد من المصطلحات لوصف هذه المراحل الزمنية، أدى بعضها إلى تعقيد الأمر أكثر فأكثر. إن مخلفات الثقافة المادية لمواقع العصر الحجري الحديث المختلفة، يشير إلى أنها تنتمي إلى فترات زمنية مختلفة. وقد زادت الحفريات الواسعة في هذه المواقع من معرفتنا عن التطور الثقافي لفترة العصر الحجري الحديث، جنباً إلى جنب مع نتائج الأعمال السابقة في الشمال وفي السهول الغربية وفي شرقي السودان ووسطه؛ ما أدى إلى فهم أفضل لتعريف ثقافة العصر الحجري الحديث في هذه المنطقة. في هذه الورقة، نناقش، باختصار، تعريفنا للعصر الحجري في السودان، والحالة الراهنة للبحوث في مجال العصر الحجري الحديث في تلك المناطق.

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