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## Towards Study of the Social Organization and Settlement Patterns of the Neolithic Communities in Central Sudan

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**Abstract:** This paper presents general outlines of the social organization and settlement patterns of the Neolithic societies in Central Sudan from the VIth to the late IVth millennium BC. It uses the available information on settlements and cemeteries from this region as well as the Dongola region to present the structure of the communities and their settlements. It also discusses in brief the similarities and differences between the cemeteries and settlements in the two regions. The paper concludes that, in spite of many excavated sites, evidence for the social organization of the people of the Neolithic in Central Sudan, as well as Dongola region is limited to burial information. Although the hypothetical social classes reflected in the graves were not observed in the settlements, available evidence seems to indicate that the burial grounds at al Kadada, Kadero-I, Kadruka and el Multaga illustrate well the process of the increasing concentration of goods and power by a social «elite» towards the end of the Neolithic.

### Introduction

Since Arkell's excavations at the Neolithic site of Shaheinab, completed by the end of the 1940s (Arkell 1953), the interest in the Neolithic culture-history of the central Nile Valley has increased significantly, especially during the last forty years. After the end of the Aswan High Dam campaign, the field-research shifted to Central Sudan. Since then, large-scale excavations have been carried out in this area (Map 1) at sites such as Geili, Kadero-I, Islang, Nofalab, Rabak, Um Direiwa, al Kadada, al Ghaba, and Haj Yousif (Caneva 1988, Krzyżaniak 1978, Mohammed-Ali 1982, Haaland 1987a, Geus 1984, Fernandez 2003).

These excavations have greatly increased our knowledge of the cultural development of the Neolithic period, together with the results of the previous work in Nubia and Central Sudan. Yet, there are still some questions regarding the interpretations of its cultural significance. One of the basic research problems facing scholars is the social organization of the Neolithic groups.

Emphasis has long been laid on the need for archaeological research to that can answer such problems. This article will discuss two types of evidence concerning the social organization. These include the study of the main settlements and associated burials in Neolithic sites in central Sudan.



Map 1. Neolithic Sites in Central Sudan



### Neolithic Cemeteries:

Although burials have long been recognized as a source of information about past human populations, only recently have systematic, quantified attempts been made to enlarge our understanding of cultures through analysis of burial practices (Harrold 1980: 195). Ucko (1969: 257) has made five observations about the interpretation of burial practices, which may be summarized as follows:

#### Burial activities are not proof of after-death beliefs.

Grave goods and offering objects are not always essential and necessarily inside the grave.

The quantities of the grave goods do not indicate the social status. In other words, the absence of grave goods does not mean poverty or low social status.

Large funerary structures do not always reflect the social organization in that society.

The variation of body orientation differs from one society to another.

Although more recent studies (e.g. Marcus and Flannery 1992, Hill 1992: see the references) look at different ways in which we might be able to detect something of past ritual practices or belief systems, there are still numerous questions that can be and have been addressed with the use of mortuary data in general and Neolithic Sudan mortuary data in particular (see below). Given that an appreciation of the nature of social organization, political organization, and economics are critical for our understanding of Neolithic culture, this study incorporates those areas as needed. The mortuary data sets used here lend themselves to studies of these topics.

On the evidence of the first excavations at Shaheinab, Arkell suggested that Early Neolithic

people were not burying their dead. Only since the late 1970s have significant numbers of burials been excavated at Kadero-I, Geili in the Khartoum region, al Kadada and al Ghaba in the Shendi region, and at Kadruka, R12 and El Multaga in Dongola Reach. At present, we are restricted to evidence from these cemeteries since no substantial cemeteries have yet been identified in other areas.

#### Kadero-I:

Krzyżaniak, in his excavations at the cemetery of Kadero-I, focused essentially on the analysis of grave goods. He aimed in particular at the definition of social inequality among the Neolithic population and the emergence of complex societies in the region during the Vth millennium BC (Krzyżaniak 1992: 267-273). The Early Neolithic graves at Kadero-I were divided into four classes according to the richness of their furnishing (fig 1). Their spatial distribution in the cemetery was also analyzed. The application of this kind of methodology, however, largely depends on the extent of the cemetery and on the number of contemporaneous graves we are able to study. His classes are:

Class I: is composed of 38 burials (69%). These graves contain no furnishing. They only contain skeletal remains of both sexes and



Fig 1 . Kadero-I, Tomb 60. Source: Wildung, Dietrich, (ed). 1997



children of different ages.

Class II: is composed of 4 burials (7.2%). They contain a single pottery vessel in each grave with skeletal remains of both sexes and children of different ages.

Class III: five graves of this class (9.2%) contain 1 to 3 pottery vessels and/or utility ware, necklace of carnelian beads and other small personal adornments including small lumps of malachite/amazonite. They also contain skeletal remains of children.

Class IV: Eight graves of this class (14.5%) are demonstrably the richest in this cemetery. Their furnishing is composed of fine pottery vessels, as well as beakers, personal adornments, and weapons. These graves contain skeletal remains of one child, six male adults, and two female adults (Ibid: 270).

Krzyżaniak argued that the concentrated burials made up of the graves of class IV and most of the graves of class III represent «the graves of the individuals belonging to the elite of this Neolithic group» (Ibid: 270). The graves of class I and class II, on the other hand, seem to be of «individuals belonging to the lower part of the social pyramid of this group» (Ibid.270).

In the case of Kadero-I cemetery, where quality and quantity of grave goods are used as indication of the social status, that may imply also that social status plays an important part in determining the location of the graves and their orientations. At Kadero-I, the graves of class IV (upper class) occurred in a clear concentration and were located away from the graves of classes I and II (lower classes), while most of the graves of class I were found close to those of class II.

The factors that govern the distribution of the grave goods are not yet clear, but in the cemetery of Kadero-I it is quite possible that social status

played a major role. For example, mace heads, fine pottery vessels, personal adornments made of ivory and semi precious stone were not in general use, but seem to have been confined to the richest tombs.

Krzyżaniak has used this finding to suggest that the presence of a mace-head in a male grave associated with other types of outstanding grave goods is a symbol of power (Krzyżaniak 1978: 169). While this kind of artifact was used as an indication of a Chiefdom (Krzyżaniak 1992: 271), the emergence of human sacrifices, the increasing complexity of the graves and their grouping in clusters in al Kadada and al Ghaba (Map 1) are all factors which point to «a non-egalitarian society» or units reflecting corresponding social (family? ethnic?) associations (Geus 1991: 57-73; Reinold 1987: 17-67).

To conclude this part of discussion there is a possibility that the variations among the Kadero-I cemetery were due to factors suggested by Krzyżaniak. If confirmed, this would suggest that the emergence of a food-producing economy led to a new type of social organization.

#### **al Ghaba and al Kadada:**

A slightly different approach has been taken at the cemeteries of al Ghaba and al Kadada (Reinold. 1987: 17-67; 1991). More emphasis has been given to the social aspects in the analysis of the two cemeteries. Preliminary study of the graves was undertaken with the objective of elucidating the cultural aspects. Subsequently, a series of attributes were analyzed and used to reconstruct a model of burial customs which reflects a degree of social complexity. The analysis was based mainly on the organization of the planning of the graves within the cemetery. Groups with either stratigraphic or topographic relationships were



recognized. These groups were considered to be units reflecting corresponding social (family? ethnic?) associations. The presence of peculiar vessel types and animal and possibly human sacrifices were also regarded as important elements (fig 2).

At al Ghaba the deceased wears the ornaments used for adornment during his life and to which he probably attributed prophylactic powers. Different objects surround the dead, referring to their lifetime activities or social ranks. The whole cemetery seems to have developed along strictly chronotopographical lines, a likely indication of an egalitarian society structure (Geus 1991: 58).

The same situation was observed in the cemetery of al Kadada, but the female pottery figurines were perhaps one of the most important innovations. The purpose of these figurines still remains unclear, although it is often assumed that they have a religious significance.

One of the most important observations at al Kadada cemetery concerns the superimposed inhumations of two and three individuals. A comparative analysis of these burials seems to indicate the presence of human sacrifice in those



Fig 2. al Kadada, tomb of an elite individual with human sacrifice of a youth. Source: Wildung, Dietrich, (ed). 1997

tombs containing three bodies. If confirmed, as Geus said, «this would be the first occurrence of a custom destined to become widespread in later times, particularly in Kerma» (Ibid. 58). Geus argued that the presence of human sacrifices, the increasing complexity of the graves and their grouping in clusters are all factors that point to «a non-egalitarian society in which the elements of social differentiation were beginning to exist» (Ibid. 58).

### El Geili:

The same approach was adopted in the excavation of the Neolithic cemetery at el-Geili in Khartoum Province. New analyses, based on both physical anthropology and bone chemistry, were possible. Besides sophisticated pottery, including pots with a rippled burnished surface and rarely with impressed patterns, the graves contain necklaces, stone palettes for cosmetics, disk mace heads, clay figurines and other objects such as axes or querns (Caneva 1991: 13). Caneva observed some similarities between the Late Neolithic graves goods and those of al Kadada. She assumed that the Geili group was contemporary and «probably had (trade?) links with that of Kadada, but it belonged to a local population which consistently maintained regional relations in its funerary practices» (Caneva 1996: 320).

Although a significantly different interest in funerary data has developed in the archaeological world, which focuses on the information a cemetery can offer on both the ideology and the social context of the associated population, the Central Sudan case is slightly different. The formal examples focus either upon the interpretation of grave goods or upon the distribution of the graves as evidence for the social organization. A combination of the two approaches could be seen in the case of al Ghaba and al Kadada.



The major feature of the four sites was the occurrence of few graves with rich offerings, which might reflect some kind of social status. Variations among the grave goods and their social indications were not confined to one cemetery. The Neolithic graves at Kadero-I, for example, showed considerable variations in their grave goods; while at al Kadada the animal sacrifices, human figurines and others may indicate ritual and/or social aspects. Human sacrifices, if confirmed, may also indicate the social status of the deceased.

**In summary, the four sites reflect the following aspects:**

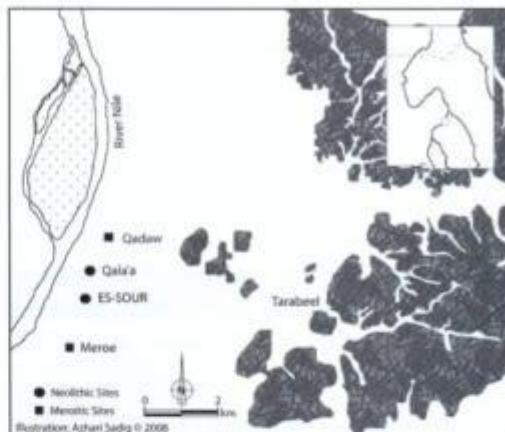
The quality of the grave goods indicates the social status of the deceased. In other words, the variability in burial practices reflects variability in social status.

It is clear that a process of social differentiation had occurred in the Khartoum area during the preceding long period of settled life and that it had been consolidated by the established structure of a pastoral society. Through time, clear signs of newly developing and more sophisticated social relations occurred, as may be seen in the differentiation amongst the graves.

The cause of death might have played a major role in mortuary treatment (animal sacrifices at the site of al Ghaba)

The spatial patterning of graves within cemeteries forms an important dimension of the mortuary practices (for examples the distribution of graves at Kadero-I cemetery).

The relationship between sex and age and the quality and the quantity of the grave goods is not yet clear. Moreover, we do not know the relationship between the different sizes of the grave and the quality and quantity of grave goods. This may be due to the dereliction of the



**Map2. Neolithic sites in es-Sour area near Meroe**

researchers rather than the lack of data.

The occurrence of child burials inside the settlement may indicate that young children were not considered to be full members of the social group. In consequence, they were buried outside the cemetery (Reinold 2000: 65). Some graves were furnished with rich goods such as fine vessels, bucrania and polished axes. These rich grave goods reflect the status of their families in the social group (Ibid. 73). Yet, the complete absence of such graves in the other sites may be due to:

Lack of good preservation and the bad condition of the bones; the children's cemeteries might have been destroyed by natural conditions.

A large number of children were buried elsewhere and not in the same cemetery as the adults.

It might be due to the extent of the excavations. Many graves in the four sites were not excavated, and these might contain more children's graves.

In the light of the data obtained and the conclusions reached by previous studies discussed above, excavations were carried



out at the site of es-Sour in the Shendi Reach (Sadig: 2005. 40-46, 2008).

Es-Sour (16° 57.045' N / 33° 43.133' E) is located c. 35km from Shendi, 1.5km from the right bank of the modern Nile channel (map 2). It occupies an area of c. 176 x 90m, and while generally flat, forms two low mounds on its eastern side. The site has been the subject of excavations by the Department of Archaeology of the University of Khartoum since 2004 (Sadig. 2005. 40).

During three seasons from 2005-2007, 15 test-pits across the site were excavated. The results of these excavations were extremely positive, demonstrating the existence of Neolithic occupation deposits up to 80cm deep in some places, although affected by water and wind erosion, and by some later graves (Meroitic and medieval) cut into the site. Material from the site is similar to that recovered from al Kadada, which lies about 30km upriver, but no associated cemetery has yet been identified at es-Sour. However, as at al Kadada, two burials of infants, contained in large pots, were found within the settlement site.

The settlement debris included large

quantities of shells, domestic and wild animal bones, lithics, sandstone and granite grinder fragments, pottery sherds (fig 5), as well as a small number of bone and ivory tools, and some human figurines.

One important discovery at the site was the presence of pot-burials (fig 6), two examples of such burials being discovered during the test excavations. Unfortunately, the two skeletons

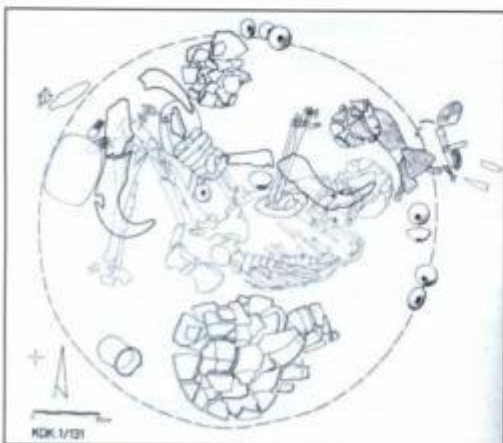


Fig 3. Kadruka. Cemetery No 1, chieftain's tomb  
Source: Wildung. Dietrich, (ed.). 1997



Fig: 4. Kadruka; Human figurine. Sandstone. Source: Wildung. Dietrich, (ed.). 1997

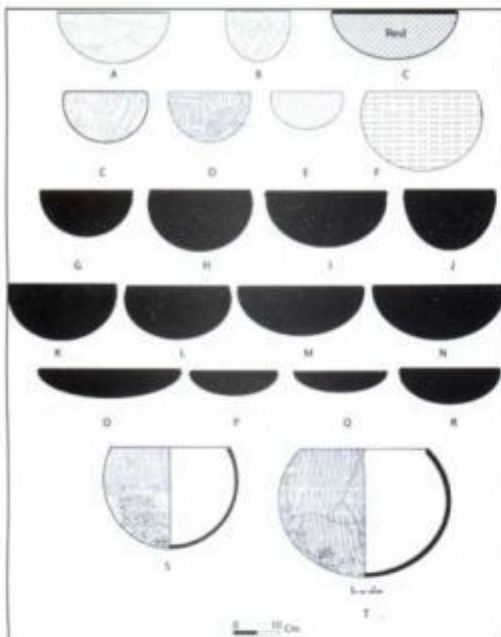


Fig 5. Neolithic pottery from es-Sour site

were much eroded, and were mostly very fragmentary. The two pots containing the burials are large (with a mouth diameter of 35-40cm) and decorated with rocker techniques. Items which might have been offerings associated with the burials were also identified in the form of lower and upper grindstones found just beside one pot, while fragments of ostrich eggs, shells, and one bead may indicate the types of offerings placed inside the pot.

Other finds of potential importance were two fragments of human figurines. The first one is a human head, with no prominent features but appearing very similar to examples found at al Kadada (Ibid. 22). The hair of the figurine is decorated with a hard rippled decoration (fig 7). The other is an incomplete human figurine, comprising the torso of a female (?) body, without decoration. Unfortunately, the uppermost and lowermost parts of the figurine were lost. Although their precise

function remains a matter of discussion, they undoubtedly indicate considerable progress in mortuary concepts (ibid: 2005).

The most distinctive features of the es-Sour material are the high index of flakes, the decorative styles of the pottery, specific types of lithic artefacts and pot-burials, as well as the presence of carnelian beads and human figurines.

A freshwater mollusk (Nile oyster) shells from levels between 20 and 50cm in squares C6, B13 and F7 were radiocarbon dated in the



Fig 6. Pot-burial from es-Sour



Fig 7 Es-Sour : A human head, with no prominent features but it looks very similar to examples found at el-Kadada (Geus 1984: 22). The hair of the figurine is decorated with a hard rippled and incised decoration. Source: Sadig, 2005.



Radiocarbon Dating Laboratory of University of Waikato, New Zealand, yielding the following dates:

Wk23036: 5296±48BP: (Oxcal calibrated: 68.2%: 4230BC-4190BC and 4180BC-4040BC)

Wk23037: 5330±54BP: (Oxcal calibrated: 68.2%: 4240BC-4050BC)

Wk23038: 5180±48BP: (Oxcal calibrated: 68.2%: 4045BC-3955BC)

These dates place the site in the middle Neolithic of central Sudan and perhaps slightly earlier than the oldest dates from al Kadada (GIF-5770: 5170±110 BP) (Geus 1981).

#### Nubian examples:

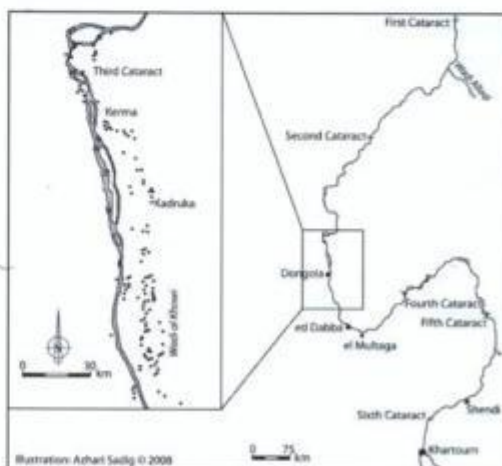
Systematic survey and excavations along Kerma basin and Wadi el-Khowi, in the Northern Dongola reach, provide us with detailed information about Neolithic burial customs (map 3). The number of sites in this region suggests a quite intensive occupation throughout the area (Welsby 2000: 135). Cemeteries currently appear as isolated mounds, in a landscape which is today flat. Seventeen cemeteries have been located; of these five only tested, three excavated entirely, and another three in the process of excavation. Since they cover the VIth to the IVth 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 Kadrūka, in the Kerma Basin. This consists of medium size 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, displayed the wealthiest grave furniture ever found in Nubia and Central Sudan in a Neolithic context (figs 3 and 4). 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 witnessed 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 230.70m and 231.10m. The remainder, nearly a quarter of the total, is situated on the lower part around 230.20m. 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



Map 3. Neolithic settlement in the Dongola Reach



of the Neolithic in Nubia (Silvatori and Usai, 2001: 11-20). This cemetery, according to C14 determinations, was used for about six hundred years, with the excavation revealing different grave layers, in spite of strong erosion which especially affected the northern and southern peripheries. This long use was responsible for graves frequently cutting into each other and for other disturbances. Apart from the risk of the 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 sometimes was hardly recognizable. From these 170 graves much can be learnt about crafts, ideology and society.

Investigations in the El Multaga area, 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 feel that such practices probably relate to local nomadic groups (Peressinotto, et al. 2004: 54). They also argued 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 was 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 to 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 fast evolution of the social order of the human groups.

### Settlement Patterns

The term "settlement pattern" is applied when a group of people occupies a particular geographical region to exploit its resources. The study of settlement patterns means the study of the relationship between the people, particularly prehistoric ones, their environment, and the ways in which they adapted themselves culturally and economically to the environment in which they were living. Studies of the material remains (cultural and biological) are basic to achieving these objectives. Therefore, the study of settlement pattern is very important because it gives us information about the environment, technology and social organization.

Generally, settlement patterns are defined as resulting from the relationships between people who decided, for practical, political, economic, and social considerations, to place their houses, settlements, and religious structures where they



did (Nir, 1983). Another definition, which was put forward by Bruce Trigger, suggests that two approaches have dominated the study of "settlement pattern" (Trigger, 1968: 54).

The first approach is primarily ecological and often appears to be based on the assumption that the "settlement pattern" is a product of the simple interaction of two variables: environment and technology. This type of study tends to be concerned with the size and the distribution of the totality of sites in an area. The second approach uses the data as a basis for making inferences about the social, political and religious organization of prehistoric cultures. This concentrates on the patterning within the individual settlement.

Settlement sites in these definitions are those around which a group of people centered their daily activities. That means a "settlement" refers to a domestic activity. Generally, the distribution of sites is the most important information for any archaeological interpretation because it gives us the clues for answering many questions regarding adaptation. Moreover, the type of settlement sites gives us information, which is very closely related to the environment, technology, and social organization.

The settlement site can also be called "habitation site," and it is the most commonly excavated type of site because these are the places where the prehistoric people lived, and most of the information about the past cultures is retrieved from such sites. It is often the case that settlement sites encompass a group of smaller specialist sites such as quarries, sites for pottery production, tool making, etc.

Most of the Neolithic sites in Central Sudan are generally large and the occupation layers tend to be of considerable thickness, suggesting long periods of occupation. Cemeteries associated with some of the sites (Kadero-I, al Kadada and

al Ghaba) further support an interpretation of long, or at least regular, seasonal occupations.

Table 1 shows that 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 owing to erosion and to human activities such as house building and tracks passing across them. Furthermore, most are disturbed by later burials, mainly Meroitic graves and, less frequently, Christian and Moslem graves.

In Central Sudan there are 16 sites that have been studied in some detail: three on the west bank of the Nile (Shaheinab, Nofalab, and Islang), seven on the east bank (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 the Gezira plain (Rabak, Jebel Tomat and Jebel Moya). A further two sites are located in the Shendi area (al Kadada and al Ghaba) and one is in the western Butana plain (Shaqadud). Recently, Fernandez and his team reported the existence of some Neolithic sites along the Blue Nile and Wadi Soba (Fernandez, 2003: 85-90).

The following generalizations about the settlement patterns of the Central Sudan Neolithic sites may be made:

1. 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 with them.
2. The sites on the west bank in the Khartoum area, between the White and Blue Niles and those in the Shendi area are today generally close to the water; they were even closer at the time of occupation.

The Site	Distance from the water-system	Horizontal extent	Elevation	Average of depth	Topographical location
Shaheinab	600m from the Nile river	40000m <sup>2</sup>	0.7m	70-20cm	Situated on a sandy ridge forming a terrace of an old riverbank of the Nile.
Geili	2km from the Nile river	2700m <sup>2</sup>	4m	c.1.2m	On a sandy clay mound
Kadero-I	6.5km from the Nile river	28800m <sup>2</sup>	1.8m		Located on a low, eroded mound of sand
Kadero II	7km from the Nile river	10000 m <sup>2</sup>	.5m	40cm	On a flat sandy plain
Haj Yusif	5 km east of the Nile River	45000 m <sup>2</sup>		10-20	?
Zakiab	c. 4.5km from the Nile river	2400 m <sup>2</sup>	3m	50cm	On a small mound forming a part of an old river bank of the Nile
Islang	2.2km from the Nile river	6000 m <sup>2</sup>	Unspecified	0.40 m-1 m, (one trench =1.05 m).	Situated on an eroded gravel ridge which seems to be part of an old river bank of the Nile
Nofalab	c. 650m from the Nile river	30600 m <sup>2</sup>	2.3m	40 cm. to 110 cm	On an eroded sandstone ridge
Um Direiwa I	7km from the Nile river	9000 m <sup>2</sup>	1.84m	5-70cm	Located on an alluvial plain mound
Um Direiwa II	7km from the Nile river	10000 m <sup>2</sup>	20 cm	?	Located on an alluvial plain mound
Jebel Tomat	10km east of the White Nile	10000 m <sup>2</sup>	0.5-0.6m	?	Part of an old river bank of the White Nile
Rabak	3km east of the White Nile	16000 m <sup>2</sup>	c. 3.5 m	60-80cm (one Sq=150cm	Part of an old river bank of the White Nile
Shaqadud: S1-A	50 km from the Nile	150m <sup>2</sup>	?	3.35m	Inside a sandstone cave
Shaqadud: S1-B	50 km from the Nile	c. 15000m <sup>2</sup>	?	3m	On a large, unbroken but heavily deflated and eroded midden
Es-Sour	1.5 km from the Nile	c. 15800m <sup>2</sup>	c.2m	60-70cm	On a flat plain

Table 1. Aspects of Settlement Patterns among the Neolithic Sites of Central Sudan

3. The sites on the east bank in the Khartoum area lie a considerable distance from the present Nile. Their location suggests that the Nile covered part of the surrounding plain, at least seasonally, perhaps with small lakes and swamps.

Interpretation of these patterns has been 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 10 000 m<sup>2</sup> and 45 000 m<sup>2</sup>, and they are situated, on average, about 7 km from the present river. The sites were rich in pottery, grinding implements and lithic materials, and burials were associated with them.



On the basis of the distribution of these sites and their cultural remains, it was postulated that they reflected a settlement pattern related to seasonally specific activities (Haaland, 1987a). The four large sites were seen as permanent base camps where emphasis was placed upon the exploitation of plants, sorghum cultivation, and the manufacture of pottery.

One small site (Zakiab) was interpreted as a dry season camp where herding and fishing were practiced. It was considered to have been temporarily occupied and was 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, 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

that "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 the stony surface would have supported relatively little grass even after the rainy season (Ibid, 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 (ibid: 66).

The archaeological evidence of Neolithic subsistence shows that the people practiced subsistence using multiple resources during that period. There is evidence for food production based on animal husbandry around 6000BP. It seems that all the riverine setting of the Middle Nile region during the VIth and Vth millennium BC, was occupied by populations following basically similar mixed economy strategies, which consisted of the following (based on Krzyżaniak 1984: 314). (See fig 8):

1. Riverbank Adaptation: subsistence based on fishing, collecting and hunting, supplemented by small-scale animal husbandry (possibly only of the ovicaprids).
2. Valley-Plain Adaptation: subsistence based

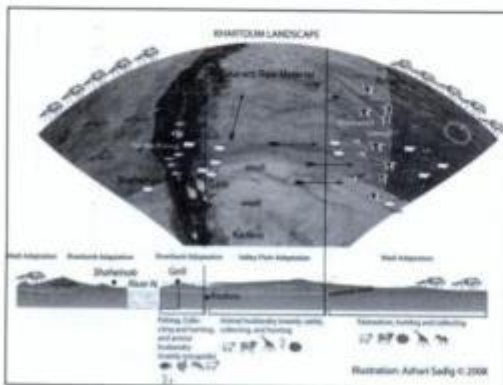


Fig 8. Hypothetical illustration of the economic strategies of the Neolithic communities in the Khartoum Nile environment

on large-scale animal husbandry (mainly cattle) of a pastoral character combined with the intensive collecting (perhaps already with elements of specialization) of seeds of wild tropical cereals, other grasses, tree fruits, mollusks, and some hunting. The evidence from Kerma and Dongola areas is complete enough to allow identification of such an adaptation. Faunal remains from Kadruka and Multaga sites represent a sedentary or semi-sedentary mixed economy population, similar to that of central Sudan. The remains from the Neolithic sites in Central Sudan represent a sedentary or semi-sedentary mixed economy population, which in some cases included cultivation of domesticated plants, and herding of domesticated animals. Haaland has argued that the processes of cultivation started at an early date and constituted the selection pressures which finally led to the evolution of domesticated sorghum (Haaland, 1987a). She also mentioned (Haaland, 1992: 50) that the material from the Neolithic sites such as Kedaro I, Um Direiwa and Zakiab shows that the inhabitants were probably cultivating wild sorghum (*S. verticilliflorum*).

3. Wadi Adaptation: subsistence based probably on pastoralism, hunting and collecting. This adaptation can be observed at the sites of Shaqadud (50 km from the river Nile bank), Sheikh el Amin (18 km), Wad el Amin (25 km), Bir el Lahamda (40 km), and at Wadi Rabob (58 km).

The distribution of raw materials does not seem likely to have been 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 (1953: 4) to come from Tibesti.

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 discovered, 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).

This feature could be observed on the Eastern bank of the Blue Nile where sites are generally located in areas that are far from the current course of the Blue Nile. With the exception of Haj Yusiuf and the two small sites of Soba, all the Neolithic sites discovered in the Soba-Rabob-Hasib areas are at more than 18 km from the Nile: Sheikh el Amin (18 km), Wadi el Amin (25 km), Bir el Lahamda (40 km), Wadi Rabob (58 km). This model of Neolithic occupation, with fewer but larger sites located further-inland than in the earlier Mesolithic period, can be compared to that proposed previously by Krzyżaniak (1978) and expanded by Haaland (1987a). According to their location with respect to the Nile, the settlements had a different socio-economic orientation: dry season camps in the alluvial plain, exploiting the aquatic resources (male and female activities), base sites occupied all-year round in the alluvial plain and orientated to cultivation (female activity), and herding camps (male activity) in the Butana savanna during the



rainy season (Haaland 1987b: 216).

A more general problem remains with the identification of the most impressive large and artifact-rich sites as permanent settlements, having 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 material, pottery and other debris and, in some cases, with 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 certainly likely that such dwellings were made of perishable materials which will have left relatively few traces.

It is also clear that the sites have suffered considerable erosion and deflation, which will have removed many more ephemeral features. Hence, 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.

Ariotti and Oxby have drawn attention to the possibility that special activities happened on such large sites (Ariotti & Oxby, 1997). They partly accept Haaland's suggestion that rather than a permanent settlement, Kadero-I might be interpreted as a special meeting place or a herders' gathering place used for collective ceremonies and feasts with ritual killing of animals; the people would have lived scattered in the Nile hinterland for the rest of the year

(Haaland, 1987a). This suggestion depends mainly on the presence of the many cattle bones on the site. This interpretation remains to be tested.

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 at Shaqadud showed a superimposition of settlement debris dating from the earliest Mesolithic to the full development of the Neolithic, therefore lasting in total about 4000 years (Marks, 1991).

Ariotti and Oxby 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" (Ariotti & Oxby, 1997: 110). Yet there is insufficient evidence to prove this hypothesis.

#### **Dongola Reach:**

The situation in the Dongola Reach is very different. Around Kerma and Dongola, several sites dating from the Neolithic period were discovered.

The University of Geneva has excavated one of the most well 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 settlements may have been seasonal, and have been linked to populations practicing animal husbandry who, seeking pastureland, occupied the alluvial plain during the dry season. The site 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 (Ibid. 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 since 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 2002). Derek Welsby, who worked in the area between those 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 define 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" (Welsby 2000, 131).

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 those 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 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 suggested that the presence of large sherds and bone eroding out of alluvial deposits, along with possible pitting, indicate that most of these sites were cemeteries, even though no graves were found (Ibid. 164).

More recent research recorded small surface Neolithic sites displaying mainly lithics and ceramics. These sites were located within the new area of El Multaga near Genetti "a resettlement area related to the construction of the Merwe Dam" (Geus and Yves 2003). 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 (Ibid: 35-39).

#### General Remarks:

The introduction of domestic animals into



the Central Sudan during the Neolithic period must have affected aspects of the life of the inhabitants. Current knowledge of chronology and the relations between Sudanese and Saharan areas suggests that domestic stock were introduced from the Sahara as it became drier. Cattle, sheep, and goats appeared by the VIth 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 than migration to socioeconomic change.

Entry of Saharans may have been eased by prior social links with the Sudan, indicated by trade and common ceramic styles. Compared to the original Saharan herding environments, the Sudanese Nile offered more dependable, productive resources. This area also posed no particular problems for cattle, as it lies within their wild range. Like earlier local hunter-gatherers, pastoralists used large, semi-permanent camps near the Nile, as at Shaheinab and Geili. Domestic animals are the dominant large mammals at many sites, such as Kadero-I (c. 5000–4000 BP), but were added to a wide range of wild animals used by earlier hunter-gatherers. Unlike Saharan pastoralists, herders in this better-watered landscape are thought to have used plants more intensively than their hunter-gatherer predecessors.

Site structure and increased use of grindstones at Kadero-I, Um Direiwa, and Zakiab indicate that, as early as 5000 BP, pastoral groups were cultivating sorghum that was morphologically wild.

Social differentiation appeared among Sudanese herders by the VIth millennium BP. 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 focused on wild resources as late as 4000 BP.

However, whatever this social 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.

The important question here is the organization of such chiefdoms. Comparative ethnographic material indicates that the chiefdom is based typically on nuclear families or small extended families of limited span and that it is thus associated with private property.

In addition, chiefdoms are based on the concept of hereditary inequality: differential status is ascribed at birth (Wenke 1980: 342–343). Chiefs frequently have a divine status; their families have privileged access to material resources, food, foreign goods and so on.

It seems that, in spite of many excavated sites, evidence for the social organization of the people of the Neolithic in Central Sudan will be limited to what is derived from burial information. Although the hypothetical social classes reflected in the graves were not observed in the settlements, currently available evidence seems to indicate that the burial grounds at al 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.

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 witness to developmental stages extending from the Early Neolithic to the complex picture of the Late Neolithic.

Although the degree of permanency varies from one site to another, reaching its zenith at Kadero I and al Kadada, all through we still have mobile pattern, which started to have a regular schedule of movement through the different

microenvironments in later times. Another problem is the relation between settlement patterns and social and ethnic affiliation during the Neolithic. Certainly, much can be learned about the various subsistence patterns of different "archaeological groups," but it is not possible, in the Neolithic period, to go beyond this and attach linguistic or ethnic labels to archaeological cultures, since it is doubtful that much can be learned about ethnic identity in the absence of written information.

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**ملخص:** دراسة للنظام الاجتماعي وأنماط الاستيطان لمجتمعات العصر الحجري الحديث في وسط السودان تتناول هذه الورقة الملامح الهامة للنظام الاجتماعي وأنماط الاستيطان لمجتمعات العصر الحجري الحديث في وسط السودان في الفترة من الألف السادس إلى نهايات الألف الرابع قبل الميلاد. وتستخدم الورقة المعلومات المتاحة عن الاستيطان والحيوانات التي تم اكتشافها في هذه المنطقة، إضافة إلى المعلومات التي وفرتها الأعمال الأثرية في إقليم دنقلا بشمال السودان، وذلك لتقديم صورة عامة لتلك المجتمعات ومستوطناتهم. كما تناقش باختصار سمات التشابه والاختلاف بين أنماط الاستيطان والدفن في هذين الإقليمين. توصلت الورقة إلى أنه وبالرغم من الحفريات المتعددة لمواقع العصر الحجري الحديث فإن الدليل المتحصل عن شكل المجتمع ونظامه في المنطقتين محدود للغاية بما تم الكشف عنه في جبانات تلك الفترة. وبالرغم من افتراض وجود طبقات اجتماعية تعكسها تلك الجبانات على العكس من مواقع السكن، إلا أنه يبدو أن الأدلة المتوفرة في الوقت الحاضر تشير إلى أن جبانات الكدادة والكدرو ١ وكدركة والملتقى تشير إلى تركيز واضح للسلع والقوة بواسطة ما يمكن تسميته بـ«التخبه» وذلك مع نهايات العصر الحجري الحديث في الألف الرابع ق.م.

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