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THE LATE PREHISTORY OF THE NILE VALLEY: THE REDEMPTION OF AFRICA

NİL VADİSİNİN SON TARİHÖNCESİ DEVİRLERİ: AFRİKA'NIN KURTULUŞU

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Tarım ve hayvan yetiştirme gibi iki ayrılmaz bileşeni olan Neolitik'leşme, bir bütün olarak Nil Delta'sına ulaştığında, çobanların çöl bölgesine yayılmaları sonucu yön değişikliğine uğrar. Bu nedenle Sahra ve Sudan çiftçiliği, her nekadar kendi içinde açıkça belirgin olmasa da,doğrudan avcı kültürler üzerine kuruludur. Levant'da bileşik ekonomiyle nitelenen ve esnekliğe sahip bir modeli içeren tarım, buradaki yeni ekonominin etkilerini gideremez ve değişim, geçiş modelleri olmaksızın, çok daha belirgin hale gelir. Göçebe çiftçilerin oluşturduğu Akdeniz kültürlerinin olağanüstü bölgeselleşmesine karşıt, Afrika örneğinde, öncüsü bilinmeyen sulamalı bir tarım rol oynamıştır. Hem hammadde hem de lüks maddelerin dolaşımında, özellikle çöl bölgesiyle Nil vadisi arasında, simgesel bir iletişim kurulmuştur. Çiftçi gruplar kentleşme sürecine mani olmaktan çok , tam tersine bu süreci hızlandırmışlardır. Çünkü onların kültürel ve sosyo-ekonomik modelleri ve hareketli olmaları sonuç olarak iletişimi ve dolaşımı yoğunlaştırmış ve vadi kısa sürede bir bütünlük kazanmıştır.

Introduction

Pastoral nomads have always had, in both past and present societies, a negative connotation, as they lack those reference points upon which urban societies are based, such as cities, monuments and writing. Nomads have more often than not been considered as historically irrelevant and have consequently rarely been studied in archaeology, one of the few exceptions being the great nomads of the Asian steppe whose culture is characterised by rich funerary tumuli. Nomads have on occasion been cited as the possible intermediaries between separate areas, a vehicle of transmission of items and cultural traits that belonged to other people (cf. A.M. Khazanov 1984, 209). The nomadic lifestyle, in addition, appears to be so arduous that it has usually been considered to derive from intolerable environmental constraints that have prevented human groups from settling.

Besides being ethically opposed to this unscientific attitude, I have, ever since I began my studies, developed a deep curiosity for these unknown cultures. In this regard, there are two important things I had the fortune to learn from my teacher, Salvatore M. Puglisi: first, that histo-

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ry proceeds along alternative pathways, and, second, that most historical processes, particularly in the ancient world, were carried out by nameless, archaeologically invisible people (S.M. Puglisi 1959,14). In this perspective, which was not fashionable in my teacher's time, societies normally neglected by archaeologists, such as those of herders and pastoralists, might be viewed as potentially important movers of historical events, thus deserving deeper investigations than they have previously been the object of.

The most obvious such context is Saharan and sub-Saharan Africa, which represented both the largest development basin and the longest record for pastoral nomads, and had been the subject of the lowest level of studies and scientific debate on this topic. It was therefore in these regions, and particularly in the Nile valley in both Egypt and Sudan, that I started my field activities. The aim of these researches was the definition of the local sequences and the reconstruction of a distinct model of cultural development, extracted from the context that is peculiar to Africa as opposed to those in the Near East or Europe. In this regard, one of the most intriguing problems is how pastoral people fitted into the pre-dynastic and dynastic Egyptian economic and social system.

The exodus

The earliest evidence of agricultural practices in Africa is dated to around 7000 BP in the Fayum and at Merimde Beni Salama, in the Nile Delta (J. Kozlowski, B.Ginter 1993), while domestic sheep and goat are recorded in the southern part of the western desert of Egypt around 6200 BP (F. Wendorf et al.1984). The two components of the so-called "Neolithic package", imported from the neighbouring Levantine regions, split almost immediately upon their arrival in Egypt. Sedentary agriculturalists settled along the Nile, while nomadic pastoralists spread out over the Saharan desert, under the selective pressure of the extreme environmental characteristics in the Nile valley: a particularly fertile alluvial plain, bordered, with no transitional band, by a particularly arid desert. In the mixed economy established in the Delta, cereal cultivation prevailed from the very beginning (W.Wetterstrom 1993). The prosperity of the agricultural communities on the edges of lake Fayum and between the Nile branches of the Delta is attested by the remains of rich crops preserved, to this day, in storage pits dug in the ground in the numerous sites of the Fayum A culture (G.Caton-Thompson 1934). It is this fertile environment that constituted, slightly later, the solid economic base of the dynastic State. From this area, several transmission routes, which have yet to be fully identified, split into different directions towards the interior: one southwards, towards the middle Nile regions, that led slowly to the spread of agriculture along the valley; others, with an exclusive pastoral component, towards the surrounding deserts, east and west of the Nile (K.Sadr 1991). The pastoral economy quickly moved into the Saharan regions, from Libya, around 6000 BP, to Chad, in 5800 BP, reaching Sudan in 5600 BP. The exact timing and routes of this spread over such an extensive territory are, however, still highly speculative (cfr. A.B.Smith 1992).

According to an untested traditional hypothesis (I.Caneva 1999), food producing groups reached northern Africa from the Levant by crossing the only land connection between the two continents, i.e. northern Sinai. Recent proposals, however, also include alternative or complementary maritime communication routes: as these are already attested from the Levant, or the Cilician coast, to at least as far down as Cyprus (J.D.Vigne et al. 1999, O.Bar Yosef 2002), their extension further south is quite possible. A further proposal, according to which isolated pastoral groups may already have reached upper Egypt from south-western Sinai, via the Suez gulf, one thousand years earlier than groups from the north (A.Close 2002), does not change the general picture of the dynamics of the spread of Neolithic communities in northern Africa. Between 6000 and 5500

BP, animal breeding, including ovicaprids and bovids, along with minor hunting, was the prevailing subsistence economy throughout the arid zones of northern Africa, with some pastoral groups having once again converged on the Nile valley.

The highly conjectural level of this picture is due to the exiguous data available on animal domestication in Africa, where the loose nature of the soil and the peculiar settlement mobility of the pastoral people did not help preserve animal bones. In addition, African pastoral groups tended only rarely to slaughter animals, nourishing themselves instead on animal by-products, such as milk, yoghurt, cheese and blood, which are archaeologically invisible. The only evidence of by-product exploitation, dating at least as far back as the beginning of the 3rd millennium BC, can be found on cow hides often used in the Kerma burials, in Nubia, that show scars on the neck of adult animals probably due to repeated blood extractions. (Chaix: pers. communication). In order to avoid the difficulties encountered when trying to document animal breeding directly, many archaeologists have preferred to identify Neolithic societies through other types of evidence of social change, such as settlement stability and size and, above all, the presence of pottery (cf., among others, G.Camps 1974: 217), which is considered to provide indirect evidence of food production. As a result, the peculiar aspects of pastoral cultures were once again marginalised, with greater attention being paid to aspects shared by these cultures with the agricultural cultures, which are much more familiar to us.

The dynamics of pastoral development in territories in which pastoralism is the prevailing culture have instead recently been investigated in some areas of the Libyan Sahara (S.Di Lernia 1999), where traces of concentrated flocks of local animals such as *ammotragus lervia* were found in stratified human occupation deposits in the cave of Uan Afuda. The *ammotragus lervia* is an animal that was, unlike other domestic animals, never systematically bred. This finding suggests that a developed form of animal taming and flock control, other than domestication, was in act and confirms the need to consider domestication as an elastic notion that varies according to the ecological conditions in which it was performed.

The arrival

Levantine domestic animal pastoralism spread throughout the Sahara, favouring the development of new cultures, whose rather quick and homogeneous expansion over this huge terrory testifies to the tremendous power of the new economy. It is probably due to this expansive wave from the Sahara – and not following the Nile valley up from Egypt - that domestic sheep and goat were finally introduced into Sudan, more than 1000 years after they first arrived in Africa, and about 3000 years after they were first domesticated in the Levant (J.Peters et al. 1999). The new economy, together with the related new social organisation, were very rapidly adopted in the Nile valley, totally replacing hunting and fishing, between 5800 and 5500 BP, and have lasted ever since. Indeed, a significant peculiarity of the history of the Sudan is its unchanged pastoral tradition, which has resisted various attempts at integration by both agriculture and industry.

Sudanese prehistory contains a simple sequence of "Mesolithic" hunting-gathering cultures that lasted several millennia before the even longer-lasting sequence of pastoral cultures. The arrival of the Saharan herders was preceded by the brief appearence of hunter-gatherers of the same origin, characterised by a peculiar impressed pottery decoration, the dotted wavy line. The economic and settlement model of these desert newcomers almost overlapped the local model, though with less emphasis on the exploitation of the riverine environment (I.Caneva 2000). The appearance of these herders in the Sudanese Nile valley is dated to around 6100 bp, which suggests that this was a

short, though widespread event that immediately preceded the establishment of the pastoral economy. This migration towards the Nile is therefore the key to understanding the beginning of pastoralism in Sudan. Taking into consideration the quick growth of pastoralism in the central Sahara at about the same time as the appearance of the dotted wavy line culture in the Nile, the most likely explanation is that the establishment of the new economy in the Sahara immediately led to the replacement of some hunter-gatherer groups and to the expulsion of others, which were gradually pushed towards, and beyond, the marginal zones of their territories, up the Nile.

What is less clear is the reason for the immediate success of the pastoral economy in different environments, such as the central Sahara and the Nile valley and its surrounding arid regions. Neither environmental nor demographic stress is revealed by the sedimentological, botanical, pollen and zoological studies carried out in these areas (B.Marcolongo, A.M.Palmieri 1988; A. Lentini 1988). The results of these studies point to a rather gradual onset of arid conditions, which led, for instance, to a progressive reduction in animal size, probably compensated for by the intensification of hunting (A.Gautier 1988). In addition, this economic change does not seem to have brought any practical benefit as regards human health, since both the new lifestyle and the low protein nutrition resulted in an overall reduction in body size and increased fragility, accompanied by the appearance of a variety of anaemias (A.Coppa, A.M. Palmieri 1988). The impact of the decline of hunting and the growth of animal breeding on the environment must have been even more negative, with the multiplication of both bred and wild animals leading to the overexploitation of the vegetal cover.

However, besides the possible existence of constraints of an environmental nature, the spread of the new economy could not have occurred without other, positive consequences, which the extension of the phenomenon suggests are likely to have been intrinsic to the new economy as opposed to being related to external factors.

A fundamental difference can be observed between the Levant and Sudan as regards the adoption of animal breeding. In the Levant, the presence of agriculture integrated with animal breeding produced a range of combined economic options that could be adapted to various ecological situations, and resulted in relative economic stability in all the communities, as well as in marked demographic growth. In the Sahara and Sudan, by contrast, the pastoral economy was the only option for all the environments; moreover, this economy was established directly over the hunting economy, without being mediated through agriculture. Considering the social and ideological differences between hunters and herders, i.e. between resource exploiters and producers, the change in northern Africa must have been more marked than in the Levant, where other forms of food production had been established long before and had led to a series of gradual changes: there was no variability in the economic models, no economic stability and, consequently, no perceptible demographic growth. The adoption of one economic system or another is a non-anodyne choice that results in a chain of changes in all sectors of life, from the type of residence, the agents and timing of activities, to all the cultural aspects, including the notions of territory, social prestige, family ties, labour investment, ideology and symbolic expression. Among the most peculiar aspects shared by all forms of food production is the delayed return of collective labour investment and the possibility of "capitalizing" food resources. Both aspects, though not particularly beneficial to biological and practical survival, are extremely significant in determining the type of social relationships within the group in terms of internal cohesion (=delayed return) and mutual aid in emergencies (=capital). It is probably in this type of social reorganisation and cooperation that the most advantageous factors

of the new economy lie. Archaeological traces of this phenomenon, though not immediately perceptible, can be found in the growth of the social inequality (=capital) that followed the introduction of food production in Sudan, as reflected in the appearance of different grave goods in late Neolithic cemeteries, as well as in the appearance of the cemeteries themselves (=group cohesion). It is also possible that the foundations for this change had already been laid down in the Nile valley Mesolithic communities through the long practice of sedentarism and the consequent stability of social roles during the preceding millennium. A similar idea of mental adaptation to food production has also been hypothesised for Egypt (J.D. Clark 1971). This might explain a rapid, substitutive form of expansion of this model in Saharan Africa, which in turn produced the highly homegeneous characteristics of the pastoral cultures throughout the Sahara and Sudan, which contrast with the remarkable regionalism of the agro-pastoral Neolithic cultures in the Mediterranean basin.

The Early Neolithic

The long list of C^{14} dates for the early Neolithic of central Sudan ranges between 5800 and 5500 BP. The phenomenon of the full adoption of animal breeding was therefore accomplished, throughout the Sudanese Nile valley, in the few centuries immediately following the migration towards the Nile of the Saharan Mesolithic hunters (I.Caneva 1988). In spite of these foreign origins, the earliest Neolithic phases in the valley are represented by local cultures, with high Nilotic formal aspects, that express the local traditions in the impressed pottery decoration, or in the raw material (mainly rhyolite and basalt) used for the lithic industry. The genesis of the Neolithic cultures of the Sudanese Nile valley can therefore be attributed to a process of interaction between the local riverine, sedentary cultures and the external Saharan nomadic cultures, which had already started in the final Mesolithic phases. The Saharan Mesolithic cultures had partially modified the territorial organisation of the local groups and reduced their earlier wide territorial exploitation, markedly restricting their seasonal hunting system (I.Caneva, E. Santucci 2004). Most of the early Neolithic groups were concentrated in the alluvial plain, on both banks of the river, or in other favourable niches in the desert, as is the case at Shaqadud (A.E.Marks, A. Mohammed-Ali 1991). The early Neolithic is represented by several sites, all located in the Nile valley. The western desert, from which the first herders came, has not yielded cultural traces belonging to this phase, suggesting that this territory was crossed but not "colonised" by the Saharan herders. The same goes for the regions east of the Nile: the first herders obviously did not consider the desert an interesting option.

The earliest Neolithic cultures of central Sudan contrast with the cultures that preceded them not only in the restricted location of the Neolithic settlement sites, which all lay within the plain, but also in their much simpler territorial organisation, characterised by the absence of function-specific sites of varying sizes and locations and with different tools and materials. The deposits in all of the investigated sites (Geili, Shaheinab, Kadero, Islang, Zakiab and so forth), were thinner than those from the previous cultures. They contained much smaller amounts of animal bones and molluscs, as well as fewer and smaller pottery fragments. On the eastern bank of the Nile, the Neolithic sites are never found stratified over the previous ones, but established directly on the alluvial deposits of the previous Nile bed. Nor are the sites riverine. The Neolithic groups relied on a completely different range of foods: principally milk and blood, with some meat, instead of the consistent meat, fish and mollusc diet of the Mesolithic people. This is reflected in their skeletal structure, which is much smaller and frailer than that of their robust ancestors, an observation confirmed by the chemical composition of their bones. Vegetable foods, though probably included in the diet, never exceeded minimal

quantities, as shown by the bone chemistry and by the virtual absence of tooth decay.

A certain continuity with the previous tradition is apparent in the lithic and bone industry as well as in the pottery (forms, fabric and decoration): numerous stone querns and pestles, thousands of microlithic quartz geometrics, bone harpoons, and round pots with sand tempered fabric and impressed decoration, obtained mainly by means of the rocker technique. This basic toolkit was, however, complemented by new raw materials, such as rhyolite, and new tool types, such as chisels and gouges, while much more complex decorative motifs covered the walls of the pottery vessels, which often have a glossy finish and a wider range of shapes and sizes.

The traditional traits gradually disappear in the course of the development of these cultures in the subsequent centuries, with a gradual decline in the original local component. There is, instead, a more marked difference from the local Mesolithic cultures in funerary habits. Human burials were so frequent in the Mesolithic sites that the hypothesis that the dead were laid immediately under the floor of the huts in the village seems plausible (M.Arioti, I.Caneva 2004). Graves attributable to the early Neolithic phase are, instead, rare, suggesting that they were not included in the settlement sites but grouped, from the very outset, in separate areas. In the later phase of the pastoral Neolithic, the growing number of graves appears to be inversely proportional to the decreasing number and size of settlement sites.

The late Neolithic

The development of these cultures is marked by the gradual intensification of nomadism. The process of desertification, which was probably accelerated and extended by human activities, in turn triggered other transformation processes. Settlement strategies were modified to such an extent that only campsites, which are archaeologically almost invisible, seem to have been used. They were established along the main wadi, in an inner belt, far from the Nile. They display thin deposits and poorly preserved animal remains. As regards the implements, pottery vessels and milling stones are reduced in both number and size; the vessels include smaller ovoid pots with thin walls made with a new, vegetal tempered fabric. In the lithic industry, specialised implements are replaced by raw *ad-hoc* flakes (I.Caneva, A Gautier 1994). The few bone remains include both wild and domestic remains, while fish and fresh water molluscs are definitively excluded from the nutritional spectrum. The varied pottery composition suggests a progressive enlargement of the clay supply zone, a further indication of the instability of the settlements (V.Francaviglia, A.Palmieri 1988).

The late Neolithic cultures display individual characteristics in both the pottery decoration (I.Caneva, A.Gautier 1994) and composition of bred animals. The evidence of both mobility and the concomitant presence of different groups in the same territory suggests that a more complex territorial notion was developing. It may have accompanied the rise of conflict over terrorial rights. Strong social differentiation emerges in the ornaments and goods that accompany the dead for the first time. The sites excavated along wadi el Kenger, approximately 8 km east of the Nile, are dated between 5500 and 5000 BP. From this time onwards, cemeteries are the only visible remains of the human presence in the region. The concentration of human burials in special areas may have originated in the traditional habit of burying the dead under the hut floor, with the notion of "home" being transferred from the insecurity of a seasonal hut to the relatively greater stability of the animals' house, the collective animal enclosure. The growth of mobility may have favoured the man-animal identification process which is widespread among pastoral people (M.Arioti, I.Caneva 2004). In spite of the archaeological invisibility of these enclosures, evidence of this custom may be found in the cemetery of

Kadero, where the deposits are characterised by a high organic component, while direct evidence of human occupation is lacking (L. Krzyzaniak 1991).

This burial phenomenon became the characteristic trait of the populations of the Nile valley for the following millennia. Not only do the cemeteries represent the only archaeological evidence available for these periods, but they seem to constitute the most stable reference point in the territory for the people who used them. For example, the Geili cemetery lasted for several thousand years with both primary and secondary burials belonging to Neolithic, Meroitic and Medieval cultures testifying to a notion of a permanent cemetery location among nomadic groups. In the graves, vessels and precious objects are concentrated in far larger quantities than in the settlement sites. Different social positions are underlined by the layout of graves, which either intersect or surround a central one (J.Reinold 1991). A further indicator of social difference may be the accompanying goods, which include non-utilitarian items, such as strange vessels, cosmetic palettes and human figurines, while more direct symbols of individual power are stone mace heads of a type that is preserved in the dynastic iconography in Egypt.

The increasing nomadism may heve been due to ecological constraints, either related to the advance of the combined phenomena of desertisation and desertification, or to the pasture requirements of growing flocks. According to another hypothesis, however, the establishment of true pastoral nomadism is always related to State societies, at the periphery of which it emerges and develops in a contemporary, parallel manner (K.Sadr 1991): these marginal communities are encouraged to assume a complex structure similar to that of the State in order to be able to interact with it.

This is indeed what happened in the Nile valley between the emerging élites of pre-dynastic Egypt and the Nubian pastoral tribes as regards the organisation of the exchange system of African prestigious raw materials between 4000 and 3500 BC. The seminomadic Sudanese groups became involved as intermediaries in the long-distance trade with the southern regions (H.Å.Nordstrom 1972 ; B.Trigger 1976). Sophisticated social relationships emerged in both areas, with a parallel expression of wealth, on the one hand, and the widespread, large-scale circulation of prestigious raw materials and objects, such as ivory, ebony, animal hides, ostrich feathers, perfumes, turquoise and gold (from the south), as well as agricultural products (from the north), on the other.

The greatest concentration of people is found in large cemeteries, such as those at Kadada, in central Sudan, and Kadruka, in Nubia, along the Nile, which perhaps correspond to the most important market places upon which the desert tribes from the inner regions converged cyclically. At Kadada, for instance, different funerary rites are documented in different areas of the cemetery, all of which are contemporary and display the same pottery style, which suggests that the cemetery was used by different groups, each with its own, separate area. It is worth noting that a similar hypothesis can be advanced for the huge predynastic cemeteries in Egypt.

The Nubian trade intermediaries went on to be "Egyptianised" at the beginning of the dynastic power, giving rise to various cultures that opposed Egypt, with varying success, in the following millennia. The loss of trade pushed the residual herders back into the inner regions and, consequently, archaeological silence. In central Sudan, about 3000 years after the beginning of the pastoral model, the Meroitic civilisation once again displayed a complex territorial organisation, with the involvement of pastoral people in the urban economic production.

Conclusion

The beginning of food production was characterised by markedly different aspects and con-

sequences in the Levant and in northern Africa, particularly as regards the beginning of animal breeding. The most significant conclusion to draw from this brief overview is that, unlike the Levant, where the phenomenon gave rise to a remarkable cultural regionalism, Saharan Africa achieved, through pastoralism, an unprecedented cultural unification that had important historical consequences.

The expansion of late Neolithic pastoral populations with similar cultural characteristics covered a huge area, extending from central Sahara to the Nile valley and, in Sudan, from Jebel Moya, 200 km south of Khartoum, to the Kerma region, in Nubia, more than 1000 km to the north (J. Reinold 1991). Long-distance pastoral nomadism therefore already existed in the Nile valley in the fourth millennium BC late Neolithic. Further north, contacts with the predynastic cultures of middle Egypt are attested by the presence of Sudanese pottery features, such as the ripple ware decoration or the black topped red vessels, already found in the Badarian culture. In the whole of the Nile valley (both Egyptian and Sudanese) the exchange processes were accelerated during the fourth millennium BC, with the circulation of raw materials and manufactured products over a huge territory which, in turn, led to a remarkable degree of "richness" in both the sedentary and nomadic populations. It is this trade aspect that was the most advantageous outcome of the adoption of pastoralism in Sudan, its success not being biological or environmental, but cultural, with desert nomadism affording the best opportunities for territorial enlargement and exchange intensification. The first "capitalisation" was thus experienced, laying the foundations for the first forms of social inequality in the late Neolithic cultures of central Sudan, the Nubian A groups and the earliest predynastic communities in Egypt.

Besides the emergence of social complexity in the Sudanese late Neolithic cultures through the trading activities with the Egyptian predynastic élites (H.Å.Nordstrom 1972), a further interesting aspect of this phenomenon is the birth of a system involving different cultures in the same activity, in complex symbiotic relationships, which contrasts with the autarchy of the earlier cultures. According to some authors, it was the exchange of certain raw materials, such as gold, that stimulated the exchange trajectories (B.Trigger 1985); others observed that, in most cases, pastoral nomadism developed at the edges of state societies (K.Sadr 1991). These two phenomena, i.e. the development of state societies and pastoral nomadism, have, however, never been seen as contextually and mutually related, but rather as a rather unbalanced centre-periphery relationship.

Exchange relations between the valley and the desert and between the northern and southern regions must, instead, have triggered a dynamic of reciprocal influence, characterised by both interdependence and conflicts, well before any centralised structure was established in the valley (I.Caneva 1992). This means that the emergence of the dynastic State in Egypt could not possibly have ignored the pressure widely exerted by pastoral people on the exchange system in the surrounding territories. It is probably this pressure that led to a kind of parallel cultural unification, in the valley and in the pastoral hinterland, the latter most probably preceding and, in some way, laying the foundations for the archaeologically more visible and politically stronger unification of the valley. Far from having hampered the urbanisation process in Egypt, pastoral groups most probably played, on the contrary, an essential role in the phenomenon on account of their socio-economic diversity and mobility.

REFERENCES

ARIOTI, M., I. CANEVA, 2004,
"Sepolture di pastori nell'Africa nord-orientale", *2° Convegno Nazionale di Etnoarcheologia*, (Eds.) M. BAROGI, F. LUGLI RAFFAELLI, Rimini,194-201.

BAR-YOSEF, O. 2002,
"Early Egypt and the Agricultural Dispersals", *Magic Practices and Ritual in the Near Eastern Neolithic*, (Eds.) H.G.GEBEL, D.HERMANSEN, C.HOFFMANN JENSEN, Senepse 8, Berlin, 49-65.

CAMPS, G. 1974,
Les civilisations préhistoriques de l'Afrique du Nord et du Sahara, Paris, Doin.

CANEVA, I.,
1983,ed., "Pottery using gatherers and hunters at Saggai (Sudan): pre-conditions for food production." *Origini* XII, 7-278.
1988.ed., *El Geili. The History of a Middle Nile Environment 7000 BC - AD 1500.* B.A.R. Int. S. 424, Oxford.
1992. "Pre-dynastic cultures of Lower Egypt: the desert and the Nile". *The Nile Delta in Transition*, (Ed.) E.C. van den BRINK, Tel Aviv, Pinkhas (1990), 217-224.
1999 "I pastori del Sudan: simbiosi e competizione ai margini delle società urbane". *Società di Pastori d'Africa e d'Asia*, (Eds.) M. ARIOTI , B. CASCIARRI, La Ricerca Folklorica 40 , 23-28.

CANEVA, I., A. GAUTIER, 1994,
"The Desert and the Nile: Sixth Millennium Pastoral Adaptations at Wadi el Kenger (Khartoum)". *Archéologie du Nil Moyen*, 6, 65-92.

CANEVA, I., E. SANTUCCI, 2005,
"Late hunter-gatherers of Central Sudan: land use and settlement pattern," Acta *Nubica, Proceedings of the X International Conference for Nubian Studies, Roma 2002*, (Eds.) A. ROCCATI, I. CANEVA, Roma.

CATON-THOMPSON, G., 1934,
The Desert Fayum. London.

CLARK, J. D., 1971,
"A Re-examination of the Evidence for Agricultural Origins in the Nile Valley", *Proc. Of the Prehist. Soc.* 37, 34-79.

CLOSE, A., 2002,
"Sinai, Sahara, Sahel: the Introduction of Domestic Caprine to Africa", *Tides of the Desert, Heinrich Barth Institut*, Köln, Universität zu Köln, 459-69.

COPPA, A., A.M. PALMIERI, 1988,
"Changing Dietary Pattern at Geili", *El Geili. The History of a Middle Nile Environment 7000 BC - AD 1500.* (Ed.) I.CANEVA, B.A.R. Int. S. 424, Oxford.

DI LERNIA, S., 1999,
Uan Afuda Cave, Firenze, All'insegna del Giglio

FRANCAVIGLIA, V., A. PALMIERI, 1988,
"Ceramic Fabrics and Source location in the Khartoum Province", *El Geili. The History of a Middle Nile Environment 7000 BC - AD 1500.* (Ed.) I. CANEVA, B.A.R. Int. S. 424, Oxford, 345-358.

GAUTIER, A., 1988,
"Notes on the Animal Bone Assemblage from the Early Neolithic at Geili", *El Geili. The History of a Middle Nile Environment 7000 BC - AD 1500.* (Ed.) I. CANEVA, B.A.R. Int. S. 424, Oxford, 57-63.

KHAZANOV, A.M., 1984,
Nomads and the outside World. Cambridge, Cambridge University Press.

KOZLOWSKI, J., B. GINTER, 1993,
"Holocene Changes in the Fayum Lake Moeris", *Environmental Change and Human Culture in the Nile Basin and Northern Africa*, (Eds) L. KRZYZANIAK, M. KOBUSIEWICZ ,J. ALEXANDER, Museum Poznan ,Poznan, 327-36.

KRZYZANIAK, L. 1991,
"Early farming in the Middle Nile Basin: recent discoveries at Kadero (Central Sudan)", *Antiquity* 65, 515-32.

LENTINI, A., 1988,
"Preliminary Pollen Analysis at Geili (Sudan): the Changing Vegetational Pattern", *El Geili. The History of a Middle Nile Environment 7000 BC - AD 1500.* (Ed.) I. CANEVA, B.A.R. Int. S. 424, Oxford, 49-56.

MARKS, A. E., A. MOHAMMED-ALI 1991,
The Late Prehistory of the Eastern Sahel. SMU, Dallas.

MARCOLONGO, B., A.M. PALMIERI, 1988,
"Dynamics of the Natural Environment in the Geili Area", *El Geili. The History of a Middle Nile Environment 7000 BC - AD 1500.* (Ed.) I.CANEVA B.A.R. Int. S. 424, Oxford, 35-48.

NORDSTRØM, H.Å., 1972,
Neolithic and A-group Sites, Uppsala, S.J.E..

PETERS, J., D. HELMER, A. VON DER DRIESCH,
M. SANA SEGUI ,1999,
"Early Animal Husbandry in the Northern Levant", *Paléorient* 25/2, 27-48.

PUGLISI, S. M., 1959
La Civiltà Appenninica. Roma.

REINOLD, J., 1991,
-Néolithique soudanais: les coutumes funéraires.-, *Egypt and Africa*, (Ed.) W.V. DAVIES, London, British Museum Press.

SADR K.,
1991 *The Development of Nomadism in Ancient Northeast Africa*, Philadelphia, University of Pennsylvania Press.
2002, "Ancient Pastoralists in the Sudan and in South Africa", *Tides of the Desert*, Heinrich Barth Institut, Köln, Universität zu Köln, 471-85.

SMITH, A.B,. 1992,
"Origins and Spread of Pastoralism in Africa", *Annual Rev. of Anthrop.* 21 ,125-41.

TRIGGER, B.,
1976 *Nubia under the Pharaonhs*, London, Thames and Hudson.
1985 "Land and Trade as pattern in Sudanese History", *Studi di Paletnologia in Onore di Salvatore M.Puglisi*, (Eds.) M.LIVERANI, A.PALMIERI, R.PERONI, Univetsità di Roma "La Sapienza", Roma, 425-32.

VIGNE, J.-D., H. BUITENHUIS
"Les premiers pas de la domestication animale à l'ouest de l'Euphrate: Chypre et l'Anatolie centrale ", *Paléorient* 25/2, 49-62.

WENDORF, F., R. SCHILD, A. CLOSE, (Eds.), 1984.
Cattle Keepers of the Eastern Sahara. Dallas, SMU.

WETTERSTROM, W. 1993.
"Foraging and Farming in Egypt: the Transition from hunting and gathering to horticulture in the Nile valley", *The Archaeology of Africa: Food, Metal and Towns*, (Eds.) T. SHAW, P. SINCLAIR, B. ANDAH, A. OKPOKO, London, 165-226.

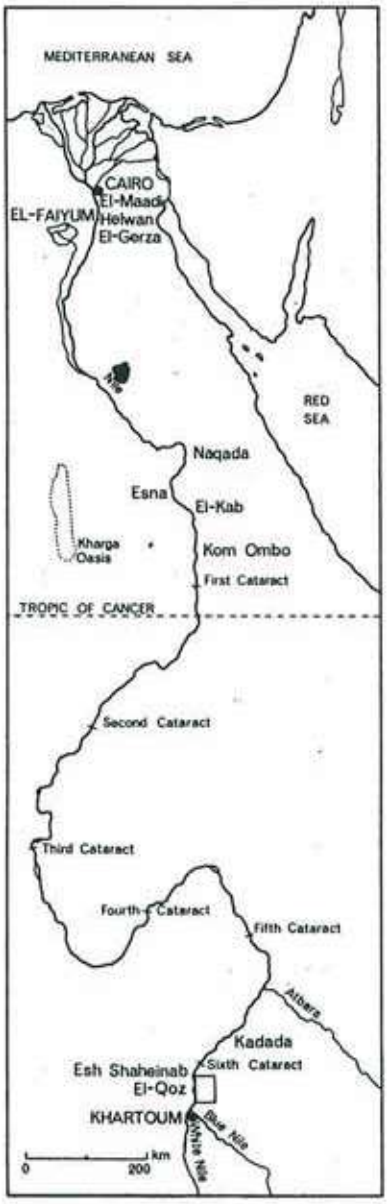

Fig.1: Map of the Nile valley

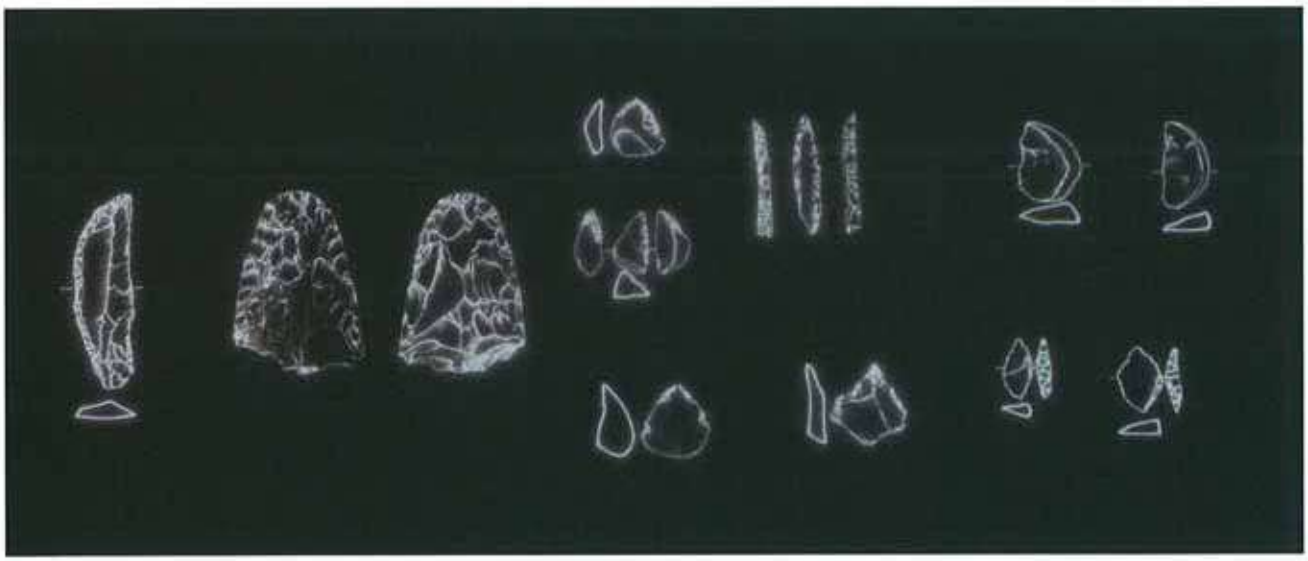

Fig.2: Geometric microliths, Early Neolithic.

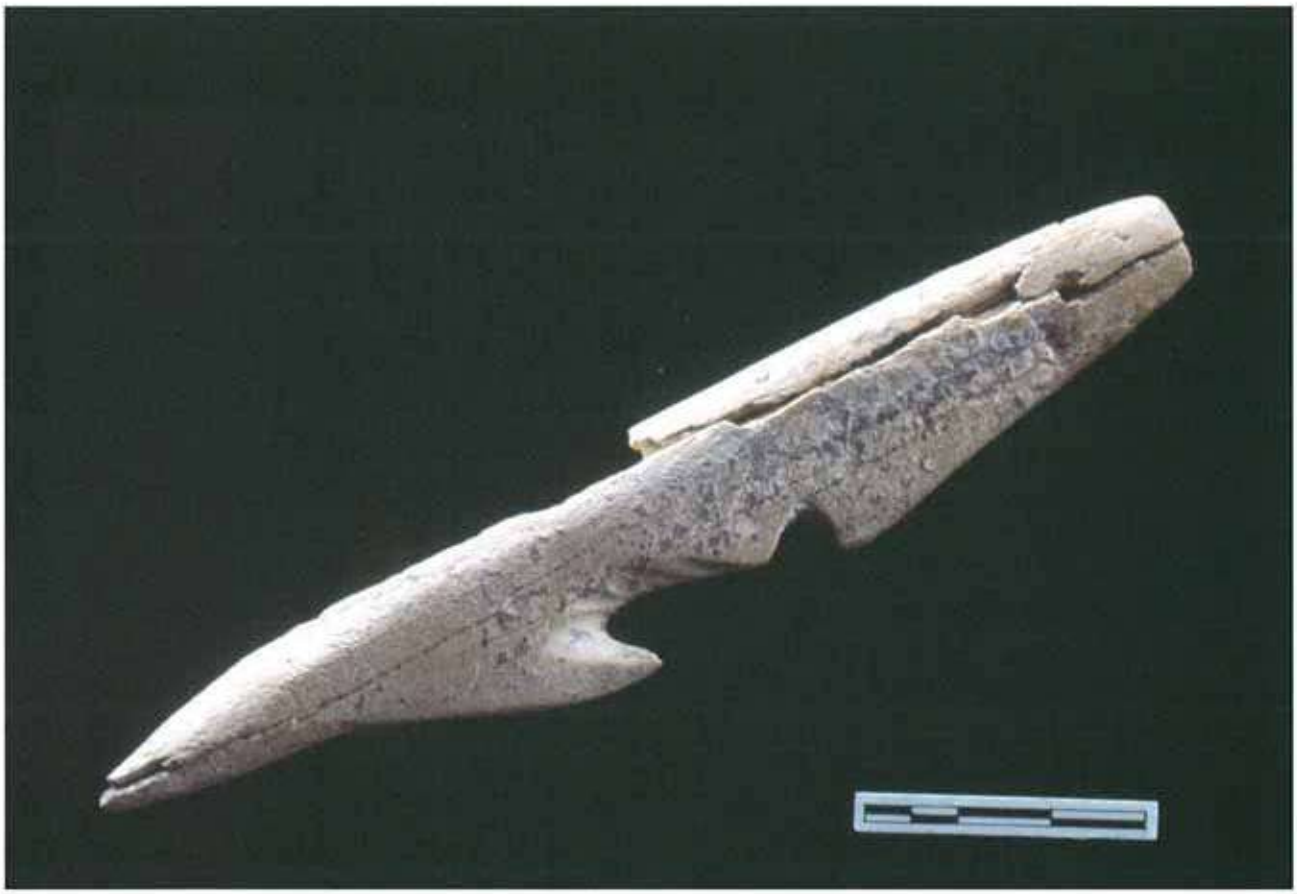

Fig.3: Bone harpoon, Early Neolithic.

Fig.4: Spheric funerary pot, Late Neolithic.

Fig.5: Rhyolite celts and axe, Late Neolithic.

Fig.6: Figurines and ornaments, Late Neolithic.

Fig.7: Stone mace heads, Late Neolithic.

Fig.8: Present day nomadic huts.