THE MESOLITHIC PERIOD IN EASTERN SUDAN: ARCHAEOLOGICAL INVESTIGATION AT UA 50 (WADI MARMAREB, KASSALA REGION), PRELIMINARY ANALYSIS AND RESEARCH PERSPECTIVES

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Introduction

In Sudan, many prehistoric sites, over the course of time, have been severely damaged by post-depositional disturbances due to various factors: erosion, burrowing animals, human activities in subsequent ages (Neolithic, Meroitic, post-Meroitic) up until the construction of Muslim graves on the surface. These conditions form the basis of our as yet limited knowledge of the evolution of the Mesolithic culture in Sudan. These factors are also affecting the study of the Mesolithic period of Eastern Sudan, currently in progress using data derived from surface collections.

In 2015, the Italian Archaeological Expedition to Eastern Sudan (IAEES) conducted a systematic excavation in the area of Wadi Marmareb, near Kassala. One of the goals of this excavation consisted of furthering knowledge of the earliest phases of the cultural sequence of Eastern Sudan (this cultural sequence was drawn up in the 1980s and 1990s).

An initial survey in this area dates back to 2010, when the IAEES, in collaboration with the National Corporation for Antiquities and Museums (NCAM), investigated the area around and outside the city of Kassala. The aim of this paper is not only to present the results obtained from the archaeological investigation carried out on the UA 50 site but also to describe preliminary analysis carried out on the ceramic collection.

Preliminary Surveys East of the Atbara River

In 1917, a preliminary survey east of the Atbara river in Eastern Sudan took place, when Crowfoot arrived in Kassala and noted its main site, called Mahal Daqlianūs, presently known as Mahal Teglinos (Crowfoot 1928). Later, scholars such as Kirwan in the thirties, Sandison in the forties and Delany in the fifties, visited the area but did not publish their results.

In 1971, Joel L. Shiner worked around the city of Kashm el Girba, on the Atbara river. It should be noted that these initial activities east of the Atbara river took place during an almost parallel investigation by Karl H. Otto who dug the Neolithic site of Shaqadud near the Meroitic site of Naga in Butana between 1963 and 1964. While Otto’s findings were never published, Shiner’s work resulted in an articulate yet unpublished report. Unfortunately, these pioneering activities of Shiner were conditioned by political events.

Thanks to the survey work conducted by Shiner, three groups of sites were identified and described: the first group is characterized by pottery similar to that of the Early Khartoum, decorated with vertical holes in the wall filled with clay balls attached to the surface, defined as “knobbed ware”. Some lithic artefacts and grinding tools as well as abundant remains of fauna such as fish, small mammals and shells were associated with this first group; the second group is characterized by Sheheinab-type ceramics attributable to the Khartoum Horizon Style and ceramic knobbed ware; the third group, the Korak Group, is characterized by orange or red ceramics, a burnished surface or, occasionally, a surface treated with red slip, with no decoration (Shiner et alii 1971; Fattovich et alii 1984).

The 1980s Archaeological Investigations of the Italian Archaeological Mission in Sudan, Kassala, and of the Southern Methodist University (Dallas, USA) in Eastern Sudan

In 1980, the Italian Archaeological Mission in Sudan (Kassala) of the Istituto Universitario Orientale di Napoli, directed by Rodolfo Fattovich, started excavations in the Gash Delta area. The area under investigation included the plains from Jebel Gulsa, along the Eritrean border, to Eriba Station and from Jebel Tukulabab to a palaeo-channel at Shurab el-Gash. The aim was to reconstruct, through archaeological and paleo-environmental data, the history of settlement in this region from the Stone Age to the advent of Islam.

In the 1980s, a collaboration between the Italian Mission, conducting research in the area of the endorheic Gash Delta, the University of Khartoum and the Southern Methodist University of Dallas began, thus initiating the Butana Archaeological Project at Khashm el Girba on the Atbara river. The aim was to gain more knowledge about the history of Eastern
Sudan and, in particular, to clarify the relationships between environmental change, economic developments (including the introduction of food production) and settlement systems (Fattovich et alii 1984). The aim of the Butana Archaeological Project was, in particular, to verify the existence of interactions between the Nile Valley and Eastern Sudan during the Neolithic period (Fattovich et alii 1984, 174).

Over the course of two field seasons, the Butana Archaeological Project led the surveys and excavations in two distinct areas as well as a brief exploration of an intermediate area. The first westernmost area was 50 km east of the Nile Valley and included the site of the shelter of Shaqadud. The second area, 320 km southeast, was located near both the Atbara river and the town of Khasm el Girba, extending eastward in the direction of the Gash Delta.

Between 1980 and 1995, the Italian Archaeological Mission, during numerous field surveys and excavations, worked around the city of Kassala and the southern Gash Delta area.

During the research carried out by the Italian Mission and the Joint University of Khartoum/Southern Methodist University of Dallas, 143 sites were identified, 100 of them located along the Kassala-Shurab el Gash axis. They included remains of settlements and cemeteries with tumuli. Settlements were perhaps temporary encampments and/or small compounds, semi-sedentary settlements and permanent residential villages (Fattovich 1994). These sites date back to a period between 6000 BC and 1800 AD.

Using the data obtained from this research in the South Atbai, in the area between the Atbara river valley and the eastern edge of the Gash Delta, it was possible to create a chronological and historical-cultural sequence called the Atbai Ceramic Tradition (A.C.T). It began in the 6th millennium BC and ended in the 2nd millennium AD (Fig. 1).

On the basis of preliminary ceramic work, a space-time diagram was constructed. It summarizes the development of the Atbai Ceramic Tradition. Within these phases, it is possible to identify regional facies or contemporary groups that share a similar level of complexity but at the same time present certain differences in their pottery production.

Of particular interest is the characteristic scraping technique, used not only as a surface treatment but also as a decorative element¹. First used in the 6th millennium BC, it should be noted that this ceramic tradition peculiar to Eastern Sudan was not significantly influenced by contact with the Nile Valley or the Ethiopian Highlands.

The main stages of the development of the cultural sequence identified in this area are the following:

1) Pre-Saroba phase (6th millennium BC), represented by some groups of sites located between the Gash and Atbara rivers and by the sites of the Amm Adam Group, in the Gash delta area;
2) Saroba phase (5th millennium BC), characterized by the sites of the Malawiya Group (Malawiya Group), included in the area between the Gash and Atbara rivers;
3) Kassala phase (4th - early 1st millennium BC), represented by three groups of sites (Butana Group, Gash Group, Jebel Mokram Group);
4) Taka phase (early 1st millennium BC to the late 1st millennium AD), represented by the Hagiz group sites (Hagiz Group), situated between the Gash and the Atbara rivers, and by some Khatmiya group sites (Khatmyia Group), east of the city of Kassala.

The Taka phase is followed by the Gergaf Group sites, located between the Gash and Atbara rivers, dating to the middle of the 2nd millennium AD.

In this paper, we will focus on the earliest stages of the cultural sequence.

The Pre-Saroba Phase

The pre-Saroba phase, according to Fattovich (Fattovich 1989; 1990) and Fattovich, Marks and Mohammed-Ali (1984), was characterized by ceramic material which came from two groups of sites: the Amm Adam Group, located in the Northern Delta, and by the Group near the city of Kashm el-Girba. While the Amm Adam (AAS 1, ES 2, ES 4) ceramic, known as knobbed ware, is characterized by protuberances and by cylindrical cavities visible in the fracture which correspond to each protuberance, the pottery from the Kashm el-

¹ Scraped pottery is the main feature of the local cultural sequence called Atbai Ceramic Tradition from the 6th millennium BC to the 1st millennium AD. This technique is obtained by incising the fresh clay with a tool (Fattovich et al. 1984; Fattovich 1989; 1990).
Girba (KG) site has impressed decorations that echo those of the Mesolithic period in the Nile Valley. In particular, the ceramic from KG 14 site dating back to the 6th millennium BC can be stylistically compared to the Khartoum Horizon style in Central Sudan. Wavy-Line pottery fragments, identical to those of the Early Khartoum, were also identified in the site of Mahal Teglinos (K1), Kassala, and near the Atbara river (Fattovich 1989).

Surveys conducted in more recent years between the Gash and Atbara rivers have recovered pottery similar to that of the Nile Valley in the Mesolithic Age, characterized by impressed decorations echoing the Rocker Stamp motif. Between the areas of the Gash Delta and Atbara, differences emerged regarding the use of resources: the Gash sites seem to attest to a strategy based on the exploitation of coastal resources, while the Atbara site seems to indicate an economy based mainly on savannah resources.

Thanks to on-going stratigraphic excavations in the Khartoum area, the presence of Dotted Wavy-Line fragments with pottery decorated with Incised Wavy-Line motifs dating back as far as the Mesolithic period has been reported. This data might suggest that some Dotted Wavy-Line fragments were also present in the “pre-Saroba” sites in Eastern Sudan. Furthermore, also fragments of scraped surfaces (scraped ware), a feature that is peculiar to the Eastern Sudan Ceramic Tradition (Atbai Ceramic Tradition) dating back to the 6th millennium BC, were also recovered from various Mesolithic layers at the site of al-Khiday 1 (16-D-5), in central Sudan, dating back to the beginning of the 7th millennium BC, with more numerous fragments dated to the middle of the same millennium (Salvatori 2012, 428).

Therefore, the mixture of knobbled ware, impressed ware and scraped surfaces is possibly not due to post-depositional processes, nor to the close proximity of the archaeological material, but rather reflects an actual co-presence of these elements. In addition, knobbled ware pottery and scraped ware, found both in pre-Saroba and Malawiya Group sites, may support the hypothesis of continuity in the development of the regional ceramic tradition starting from its earliest stages. The chronology of Eastern Sudan sites is based on radiocarbon analysis that suggests, for the pre-Saroba sites, a date of the second half of the 6th millennium BC, which could be confirmed by new comparisons with the Nile Valley.

The Malawiya Group Sites

Most sites related to the Malawiya Group are located in the steppes between the Atbara and the Gash rivers (Fattovich 1990; 1994). The chronology of this group is based on radiocarbon dating that place it at around the middle of the 5th millennium BC.

The pottery is characterized by sandy temper, with smooth surfaces, light brown in colour, with impressed decorations. They are comparable to the Khartoum Horizon Style, but the typical Wavy-Line, Dotted Wavy-Line and other typical motifs of the Early Khartoum are not present. As mentioned above, there are also knobbled ware ceramics found at these sites.

In 2015, moreover, the IAEES carried out a survey in the Jebel Abu Gamal (JAG 1), on the border of Eritrea. This survey highlighted the presence of a high concentration of knobbled ware fragments, possibly ascribable to this phase (Fig. 2).

This is an important piece of data because it attests to the presence of ancient ceramics, previously found only in the Gash delta, also in the southernmost part of the region.

Archaeological Investigation at UA 50: A Preliminary Study of the Ceramic Materials

In 2010, activities resumed in Eastern Sudan with the Italian Archaeological Expedition to the Eastern Sudan (IAEES) of the University of Naples “L’Orientale”, directed by Andrea Manzo, in collaboration with the National Corporation for Antiquities and Museums (NCAM). One of the goals of the mission was to increase knowledge of the phases of the cultural sequence of the region (Manzo et al. 2011). In 2015, we focused on the UA 50 site, noted during the previous surveys of the 2010 and the 2011. In fact, many interesting ceramic fragments belonging to the most ancient phases of the cultural sequence were recovered (Fig. 3).

In 2014, Mauro Cremaschi participated in the Italian Mission and, during geological surveys, he investigated the area of Wadi Marmareb as far as its confluence in the Atbara. The scholar noted that the pottery, which appeared on the surface of the site, in all likelihood dated back to a period of time between the Early Holocene and the Middle Holocene. Therefore, in 2015 the Mission
returned to this area to begin a systematic excavation. The main goals were the following:

1) to obtain, through excavation and the study of related materials, information on the most ancient phases of the cultural sequence of eastern Sudan;
2) to dig a shell midden to get, through radiometric analysis, more accurate historical information.

UA 50 is a 130 × 60 m site located in a flat area characterized by a high concentration of archaeological material. The site is partially disturbed by modern farms and tyre tracks left by cars (Fig. 4). At first, the archaeological investigation allowed for the opening of two trenches: UA 50 I (Trench I) was an 8 × 8 m excavation unit, and UA 50 II (Trench II) was a 2 × 4 m excavation unit, located north of Trench I (Fig. 5). Along the course of the wadi, a section was cleaned. The aim was to detect the presence of archaeological layers containing Mesolithic materials.

In Trench I, a high concentration of shells was observed during the first visits to the area. In addition, some burials were also present in the same area, probably from the 2nd millennium BC. The shell midden (SU2) dated to 5000 BC\(^2\), characterized by medium-large shells, probably *Pila wernei*, containing archaeological material: ceramics, animal bones, and lithic artefacts (Fig. 6). This data could suggest an economic model based on the exploitation of coastal resources, wildlife and, maybe, wild plants available during the wet phases in northeast Africa and, more specifically, in this region.

During the study of the excavation documentation, a preliminary analysis of the substantial quantity of finds, in particular of the pottery, was carried out. The study of the ceramic fragments, combined with radiocarbon dating, provided important information about the earliest phases of Eastern Sudan. In this study, each single fragment was analysed, taking into account the following attributes: parts of the vessel (rim, wall, base), surface treatment (internal and external), core, inclusions, size and shape of the inclusions, decoration and comparisons. This information provided the basis for the creation of an initial database, in Excel format and in English.

Regarding the descriptions of fabrics, types of inclusions, porosity and colour of the fresh fracture, the Vienna System for the Classification of Ceramics in the Nile Valley was referred to (Nordström, Bourriau 1993) as well as Nordström’s work, published in 1972, on Nubian ceramics. The system developed by Isabella Caneva (Caneva 1987; 1988; Caneva, Marks 1990) was consulted for the description of techniques and decorative styles.

The ceramic collection, dating back to the Late pre-Saroba phase, consisted of fragments of large hemispherical bowls of 20-34 cm diameter with a rounded base whose wall thickness varied between 0,5 mm and 1,4 cm (Fig. 7). Most of the fragments had a course fabric with grains of quartz and mica. The grains of quartz were, usually, medium/large-sized and were observed in both sub-angular and sub-rounded shapes. These inclusions were often observed not only in the fresh fracture but also on the surface of the fragments. The majority of the collection consisted of decorated sherds, the decoration possibly extending across the whole outer surface. However, a few examples of undecorated sherds were also noted.

Some problems that arose during the study were caused by the fragments from the SU 1 and the superficial collections because of their particularly small size and poor conservation conditions which made it difficult to define certain characteristics. Once again, important elements have been highlighted: in particular, decorative motifs similar to the *Rocker Stamp* ceramic in the Valley and an interesting fragment with a decoration that does not cover the entire surface of the *Incised Wavy-line* fragment (Fig. 8).

**Preliminary Remarks**

Thanks to the excavations carried out in 2015, it has been possible to begin a study of the eastern Sudan culture during the Mesolithic period, based on data from UA 50 stratigraphic excavation, analysing ceramic material and subsequently creating a database for data collection. Over the course of the study, we have recognized two types of fabric: the first coarser, characterized by inclusions of sub-angular quartz in various sizes and abundant traces of clear mica (Fabric I); the other, more sandy and characterized by fragments of black stones (Fabric II), with very little trace of mica.

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\(^2\) Beta 437225: 6090±30 BP.
Two main decorative motifs have been identified: Rocker Stamp (R.S) and Alternate Pivoting Stamp (A.P.S), both known to have been used in the Nile Valley during the latter phase of the Mesolithic period, and both went on to become more widespread mainly during the Neolithic period. The antiquity of the site, as evidenced by the study of the pottery fragments, was also confirmed by radiocarbon analysis of the shell midden.

In the near future, we will create a typological sequence of the ceramic material and a classification of fabrics based on archaeometric analysis to allow for a more accurate identification of the fabrics.
References


Fig. 1 - Atbai Ceramic Tradition (A.T.C) sequence created after the investigations conducted in the 1980s (after Fattovich et alii 1984)

Fig. 2 - Knobbed ware sherds collected by IAEES during the 2015 field season at Jebel Abu Gamal (photos by Alessia Cesaro)
Fig. 3 - Map showing the location of the Pre-Saroba and Malawiya Group sites recorded in 2010 and 2011 by IAEES and NCAM staff (map elaborated by Vincenzo Zoppi)

Fig. 4 - UA 50 site. November-December 2015 field season (photo by Alessia Cesaro)
Fig. 5 - Topographical map of UA 50. The map shows the excavation units (Trench I and Trench II) investigated during the 2015 field season (topographic survey and map elaborated by Vincenzo Zoppi).

Fig. 6 - Late pre-Saroba shell midden (photo by Alessia Cesaro)
Fig. 7 - Two large bowls from UA 50 I SU 2 (drawing and photos by Alessia Cesaro)

Fig. 8 - UA 50 I SU 2, variety of pottery decorations (photos by Alessia Cesaro)