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The chipped stone assemblage of the Tharro Hills (Thatta, Sindh, Pakistan): a preliminary typological analysis

PREFACE.

The scope of this paper is to provide the reader with a first description of the chipped stone assemblage collected by Prof. A.R. Khan at the fortified Amri settlement of the Tharro Hills (Fig. 1). The site is located “about two miles to the southwest of Gujo” (MAJUMDAR 1954, p. 20), in Lower Sindh (Thatta, Pakistan). It lies on a limestone terrace of the Miocene Gaj formation (BLANDFORD 1880 p. 154; RAZA and BENDER 1995 p. 193) that faces the alluvial plain of the Indus towards the east. According to PIGGOTT (1950, p. 77) it consists of an “isolated, flat-topped hill, now inland but on what was the prehistoric coast-line, from which it would have projected as a promontory or as an island in tidal marshes”. When the site was settled, it was lapped by the ocean, and “the coastline was located a good distance north of its present-day location” (FLAM, 1984 p. 79), while Thatta was close to the northern edge of the Arabian Sea (LAMBRICK 1964 p. 119).

The site, which is heavily weathered, is located on an almost circular terrace, surrounded by a stonewall, the east-central part of which shows evident traces of man-made structures (Fig. 2, top). They consist of two stone heaps, some 5 m in diameter, which yielded fragments of ceramic vessels, animal figurines, bangles and chipped stone tools (Fig. 2, bottom). On the site surface, close to the above-mentioned defensive stonewall, concentrations of marine (Ostreidae) and mangrove (Terebralia palustris) shells can be noticed. One sample of Ostreidae was collected for radiocarbon dating from a well-defined context, some 20 cm below the surface, at 24°43’46” Lat N and 67°45’07” Long E. It yielded a result of 5240±40 uncal BP (GrN-27063) (BIAGI 2004), which corresponds to 3480-3300 CAL BC (1 sigma) and 3510-3300 CAL BC (2 sigmas), after detracting a ΔR of 248±24, according to the data provided by VON RAD et al. (1999) for this part of the Indian Ocean.

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Part of the site is distributed beyond the western stonewall, where other traces of the prehistoric settlement and human skeletal remains are visible on its surface, most probably indicating the presence of a graveyard.

The pottery assemblage of the Tharro Hills is characteristic of the Amri Culture (Majumdar 1934, Plates XVI and XVIII; Casal 1964). It is represented by red-slipped vessels with a convex bottom and no handles, while the fine pottery is of a light buff colour with black or red geometric painted patterns.

FIG. 1 – Location of the Lower Sindh prehistoric sites of Tharro Hills (1), Kot Raja Manjera (2), Amri (3), Allahdino (4) and Balakot (5). The dashed line indicates the edge of the hilly area. Scale in miles (drawing by P. Biagi).
Fig. 2 – Tharro Hills: the main deflated, circular terrace on which the prehistoric site is located (top) and Amri potsherds on the surface of one of the small mounds (bottom) (photographs by P. Biagi).
History of the research.

The prehistoric site of the Tharro Hills is mentioned for the first time by H. Cousens (1929, p. 38). In his volume, he wrote that Mr. Carter "at the Tharro near Gujo, between Gharo and Thathah, where there is a wonderful walled Neolithic city, he made a fine collection of flints". A more accurate description of the site was provided by Majumdar (1934, p. 20) who wrote that "the hill rises thirty to thirty-five feet above the plain and has a more or less flat top. In the northern side is occupied by the remains of a series of Muhammadan tombs and a temple, locally known as a Hāt, which has decayed almost beyond recognition. To the south of this is an area extending to about 1,600 feet by 800 feet, which is studded with innumerable chert flakes". On the basis of these finds, the same author (Majumdar 1934, p. 21) was able to conclude that, according to his observations, "the Tharro hill was merely a centre of flint-knapping industry, and not a regular dwelling site".

The chipped stone assemblage of A. R. Khan collection.

The flint assemblage, which is at present stored in the Museum of Prehistory and Palaeoecology of the Department of Geography, Karachi University, was collected from the entire surface of the site by Prof. A.R. Khan, since the beginning of the 1970s. It is composed of 4 precores, 3 cores, 342 instruments, 701 unretouched artefacts (22 complete blades and bladelets, 531 fragmented blades and bladelets and 148 flakes and flakelets), 25 crested blades and 3 microburins. The assemblage is characterised by a very high number of both unretouched (Fig. 3, left) and retouched tools (Fig. 3, right) obtained from bladelets. Most of the artefacts are very fragmented (Fig. 4); this fact has prevented the author from the development of a length-width/thickness scatterplot.

The location of the raw material source employed for the manufacture of this assemblage is still unknown. The nodules consists of medium-sized pebbles of different colours1. The instruments are described following the typology of G. Laplace (1964), while the precores and cores according to that of A. Broglia and S.K. Kozłowski (1983).

**Precores**

Only 4 specimens, 1 of which is parallelepiped (class I/3) (Fig. 5, n. 1) and the other 3 are massive, discoid (class I/1). They are all from flint of grey colour (10YR6/1).

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1 A sample of 100 unretouched artefacts has been considered to check the variability of the flint colours. It gave the following result: light grey 24%, brown 18%, light brownish grey 15%, pale brown 11%, very pale brown 8%, grey 7%, pinkish grey 5%, light yellowish brown, yellowish brown and dark grey 3% respectively, pink 2%, olive brown 1%. Colours of the Munsell Soil Color Charts (2000).
Cores

Are represented by 3 subconical specimens, on thin, plaquette nodules, one of which is corticated. The bladelets are detached, in two cases, from one single, prepared platform (class I/1) (Fig. 5, nn. 3 and 4). The third specimen is a subconical core with bladelet detachments from one single prepared platform and side retouches forming a crest (class I/2). This core shows traces of hard hammering at its distal edge, most probably due to the secondary function of the tool as a hammer, while some traces of hammering can be noticed also at the proximal edge (Fig. 5, n. 2)

Fig. 3 – Tharro Hills: length/width scattergram of the triangles (left) and the complete, unretouched blades/bladelets. Scale in cms (drawings by P. Biegl).
Fig. 4 – Tharro Hills: percentage/width histograms of the fragmented blades/bladelets (width in mm).
Fig. 5 – Tharro Hills: precore (1) and cores (2-4) (2:3) (drawings by P. Biagi and G. Almerigogna).
The instruments

They consist of 342 tools among which are 7 truncations, 6 perforators, 44 geometrics (6 lunates and 38 triangles), 134 backed-retouched instruments (1 backed point, 89 backed blades and 44 backed blades and truncation), 9 dentilicates, 137 retouched blades, 5 sickle blades, 25 crested blades and 3 ordinary microburins.

**Truncations**

7 (narrow) bladelet fragments, which have been grouped in two main classes: 1) normal, rectilinear, straight truncations (T2) obtained with abrupt, deep, direct retouch, with complementary, simple retouch along one side (2 specimens) (Fig. 6, nn. 1 and 2) and 2) oblique, straight truncations (T3), obtained with abrupt, deep, direct retouch (5 specimens) (Fig. 6, nn. 3-6).

**Perforators**

6 specimens, 5 of which are straight (Bc2) and 1 slightly curved (Bc1). The straight specimens have been obtained with two convergent abrupt, deep, direct retouches (Fig. 6, n. 7), slightly concave in one case (Fig. 6, n. 8), or by one direct and one inverse, convergent, abrupt, deep, direct retouches (Fig. 6, nn. 9 and 10). A few show a worn or damaged working edge (Fig. 6, n. 7). The curved type is on a bladelet with two convergent abrupt, deep, direct retouches (Fig. 6, n. 11).

**Geometrics**

Are represented only by 1) lunates and 2) triangles.

1) **Lunates**: 7 specimens (Gm1), all on bladelet, obtained with an abrupt, marginal or deep, direct retouch. One of these is much smaller than the other specimens.

2) **Triangles**: 38 scalene triangles (Gm3), 10 of which almost rectangular (Fig. 7, nn. 4, 6, 14-17, 20-22), obtained from bladelets, among which are fragments of very elongated types (Fig. 7, nn. 29-38). They have been obtained with an abrupt, deep, direct retouch along two sides (Fig. 7, nn. 1 and 2). Most of them show a complementary, simple or abrupt, marginal, inverse, or more rarely direct retouch along the third, left side (Fig. 7, nn. 8-27, 29-38). A few others have a complementary abrupt, deep, direct, continuous or distal retouch along the left side (Fig. 7, nn. 3-7). One specimen is obtained with an abrupt, deep, mixed retouch along the right side and an abrupt, marginal, inverse retouch along the left one (Fig. 7, n. 28). Their pointed edge is often damaged or worn (Fig. 7, nn. 7, 13 and 27), which indicates that they had been employed as borers.

**Backed-retouched instruments**

This group is represented 1) backed points, 2) backed blades, and 3) (double) backed blades and truncations.

1) **Backed points**: only 1 bladelet specimen of partial backed point (PD2) obtained with abrupt, deep, direct retouch along the left side adjacent to an abrupt, marginal, inverse retouch along the same side (Fig. 6, n. 12).

2) **Backed blades**: can be attributed to this group 71 fragments mainly obtained with (semi) abrupt, marginal (LD1) or deep (LD2), direct or inverse retouch. Many of these pieces might be fragments of backed bladelets and double truncation. Other 18 fragmented specimens show an abrupt, deep, bipolar retouch (LD2).
Fig. 6 – Tharro Hills: truncations (1-6), perforators (7-11), backed point (12), backed blades and truncation(s) (13-24), blades with sinuous sides (25-32) and crested blades (33-36) (2:3) (drawings by P. Biagi and G. Almerigogna).
Fig. 7 – Tharro Hills: Amri triangles (1-38) (2:3) (drawings by P. Biagi and G. Almerigogna).
3) Backed blades and truncation(s): 4 complete instruments on a bladelet can be attributed to this group. They are 3 backed bladelet and opposed double truncation (DT2), 1 of which has two straight, rectilinear truncations obtained with an abrupt, deep, direct retouch adjacent to a simple, marginal, alternate retouch (Fig. 6, n. 13), the second two straight, rectilinear truncations obtained with an abrupt, deep, direct retouch adjacent to a simple, marginal, inverse, bilateral retouch (Fig. 6, n. 15), the third two straight, slightly oblique truncations obtained with an abrupt, deep, direct retouch adjacent to a semi-abrupt, marginal, inverse, bilateral retouch (Fig. 6, n. 16), and 1 backed bladelet with double irregular truncation, obtained with an abrupt, deep, direct, direct retouch (DT5). Also this latter instrument has a complementary simple, marginal, inverse retouch along the left side (Fig. 6, n. 18).

Fragments of backed blades and truncations are represented by 31 straight truncations adjacent to a simple or (semi) abrupt, marginal or deep retouch and 9 oblique truncations adjacent to a (semi) abrupt, marginal or deep retouch (Fig. 6, nn. 19-24).

**Denticulates**

Are represented by 9 instruments. They include 1 fragment of bladelet with a notch (D1) at the proximal edge obtained with an abrupt, deep, direct, right retouch, and 8 blades or bladelets with abrupt, marginal or deep, direct, bilateral, sinuous retouch (d2) (Fig. 6, nn. 25-32).

**Retouched blades and bladelets**

137 specimens, mainly with simple, marginal or deep, direct retouch (L1 and L2). Varieties include different types of complementary retouch.

**Sickles**

5 specimens, 4 of which show a sickle gloss parallel to the side, and 1 oblique.

**Crested blades/flakes**

Are represented by 25 specimens, 10 of which are complete and 15 fragmented (Fig. 6, nn. 33-36).

**Microburins**

3 ordinary pieces, 1 of which is proximal and 2 are distal.

**Discussion.**

The Tharro Hills flint assemblage is very distinctive for two main reasons: the manufacturing technique employed for artefacts production and the presence of typologically unique tools. At present it can be compared only with a few industries, which have been recovered during excavations carried out at the contemporary type site of Amri, on the right bank of the Indus (Cleland 1987 p. 100), and the lowermost layers of Balakot (Kot Bala), close to the eastern shore of the Sonmiani Bay, along the coast of Las Bela in Balochistan (Daies...
1974; CLELAND 1987 p. 101). A few parallels can be extended to the assemblages recovered by Prof. A.R. KHAN (1979 p. 71) on the surface of Malir and Kot Raja Manjera, in Lower Sindh. They both are characterised by the abundance of narrow bladelets with a (semi)abrupt retouch. A few similarities exist also with the almost contemporary chipped stone industry from Sheri Khan Tarakai in Bannu district of the NWF Province (KHAN et al. 1987-88). Here pressure-made narrow bladelets, backed blades and truncation and scalene triangles make their first appearance (INIZAN et al. 1994). Conversely it does not show any close parallel neither with the Early (CLELAND 1987; KHAN 2002) and Mature Indus Valley Civilisation assemblages of the same region (KENOYER 1984; VIDALE 2000 pp. 33-40), nor with the poor industry collected from all the different settlement phases at Allahdino (HOFMANN and SHAFFER 1973; HOFMANN and CLELAND 1977).

At present the manufacturing techniques of the Indus Civilisation assemblages are well known thanks to the study of the flint reduction processes of the Rohri Hills workshops (BIAGI and PESSINA 1994; NEGRINO et al. 1996; BROIS et al. 2005) and the analysis of the lithic technology of the industries of the same period (PELEGRI 1993).

The main characteristics of the Tharro Hills flint assemblage can be summarised as follows: occurrence of 1) a remarkably high blade index, as indicated by the percentage of (narrow) blade(let) tools and unretouched artefacts; 2) subconical cores with bladelet detachments departing from one single prepared platform, 3) a high percentage of typical Amri (elongated) scalene triangles obtained with abrupt retouch along two or three sides, which were employed as borers, 4) typical, long, narrow backed bladelets and (double) truncations, 5) (semi)abrupt retouched blade(let)s with sinuous sides.

Contrary to what suggested by some authors (FAIRCOURT 1975; ALLCHIN 1985 p. 132; ASTHANA 1985 p. 203; POSSEHL 2004 p. 446), the Tharro Hills flint industry does not include any microlithic tool, with the exception of a few lunates obtained with the microburin technique, that are to be referred to an earlier settlement, most probably to be attributed to the Mesolithic, a period whose traces are well attested along the Arabian Sea coast of Lower Sindh (BIAGI 2005).

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RIASSUNTO. — **ANALSI TIPOLGICA PRELIMINARE DELL’INDUSTRIA SU SELCE SCHEGGIATA DELLE Tharro Hills (Thatta, Sindh, Pakistan).** — Vengono presentati i risultati preliminari dell’industria litica raccolta da A.R. Khan nell’insediamento della Cultura di Amri delle Tharro Hills, nei pressi del villaggio di Gujo, nel Sindh Meridionale (Pakistan). L’industria, anche se proveniente da raccolte di superficie condotte in diversi anni, si presenta omogenea e ben concorda con i dati forniti dai reperti ceramicici che, unitamente ad una datazione radiometrica recentemente ottenuta, attribuiscono questo insediamento alla metà del quarto millennio CAL BC. L’industria è caratterizzata da una fortezza laminarità. I supporti sono staccati da nuclei subpiramidali su noduli di selce le cui fonti di provenienza non sono al momento note. Gli strumenti più caratteristici sono i lunghi triangoli a due o tre lati ritoccati, con ogni probabilità impiegati come perforatori, le lunghe lame a doppia e doppi troncature e le lame con ritocco semplice oppure a dorso marginale con ritocco sinuoso lungo entrambi i margini. Il presente lavoro definisce per la prima volta le caratteristiche essenziali di un’industria su selce scheggiata di questa cultura dell’età del Rame del Pakistan meridionale.

RÉSUMÉ. — **ANALYSE TYPOLOGIQUE PRÉLIMINARE DE L’INDUSTRIE SILICEUSE SUR ÉCLAT DES THARRO Hills (Thatta, Sindh, Pakistan).** — On présente les résultats des études préliminaires sur l’industrie lithique recueilli par A.R. Khan dans le site de la Culture de Amri des Tharro Hills, dans les alentours du village de Gujo, dans le Sindh méridional (Pakistan). L’industrie, bien que provenant de récoltes de surface de plusieurs années, se présente homogène et bien s’accorde avec les données fournies par le pièces céramique qui, avec une datation au Radiocarbon récemment obtenue, rapportent cet habitat à la moitié du IVe millénaire cal BC. L’industrie est caractérisée par une très forte laminarité. Les support sont détachés de nucléus subpiramidales sur rognons de silex dont on ne connaît pas jusqu’à présent la provenance. Les outils les plus caractéristiques sont les longues triangles à deux ou trois bouts retouchés, très probablement employés comme perçoirs, les longues lamelles à dos à double troncature et les lames à retouche simple ou à dos marginal au retouche sinuose sur les deux bords. Le travail définit pour la première fois les caractéristique essentielles d’un industrie siliceuse sur éclat de cette culture de l’Âge du Cuivre du Pakistan méridional.

SUMMARY. — **THE CHIPPED STONE ASSEMBLAGE OF THE Tharro Hills (Thatta, Sindh, Pakistan): A PRELIMINARY TYPOLOGICAL ANALYSIS.** — The author presents the preliminary results of the typological analysis of the flint stone assemblage collected by Prof. A.R. Khan at the Amri Culture site of Tharro Hills in Lower Sindh (Pakistan). It fits well into the wider picture yielded by both ceramic assemblage and a radiocarbon date, which attributes the site to the middle of the fourth millennium CAL BC. The flint industry is characterised by a high blade index. The cores are of sub-pyramidal type, with bladelet detachments, obtained from nodules of undefined source. The more typical instruments are triangles with two or three retouched sides, which were most probably employed as borers, long backed blades with opposite double truncations, and bladelets with simple or abrupt, marginal, bilateral, slightly concave retouch. The fundamental characteristics of the chipped stone industry of this Chalcolithic aspect of Lower Sindh are described in this paper for the first time.