Archaeological Surveys in Lower Sindh: Preliminary Results of the 2009 Season

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ABSTRACT
In January-February 2009 archaeological surveys were conducted in three different regions of Lower Sindh, from Ranikot, in the north, to the Makli Hills, in the south. They resulted in the discovery of many sites and flint spots within a territory the archaeology of which was previously poorly known. This paper is aimed at the description of these finds, their cultural attribution and, whenever possible, absolute chronology. Particular attention has been paid to the radiocarbon chronology of the sites located on the rocky outcrops that rise from the alluvial plain of the Indus delta, a few of which indicate that seafaring along the northern shores of the Arabian Sea was already active at least since the very beginning of the seventh millennium uncal BP.

1. PREFACE
This paper is a preliminary report of the surveys carried out in January and February 2009 in Lower Sindh, between Ranikot, in the north, and the Makli Hills, in the south. The scope of the surveys, which were part of a joint venture by Ca' Foscari University, Venice (I) and Sindh University, Jamshoro (PK), was to discover new archaeological sites in a territory insufficiently explored, and define their cultural attribution and absolute chronology by radiocarbon dating. Although some parts of the above region had already been surveyed by other authors (see, for instance, MAJUMDAR, 1934; COUSENS, 1998; FRANKE-VOGT, 1999; FLAM, 2006), our attention focused mainly on territories never accurately investigated before. The surveys were conducted by systematic walking in the three main, well-defined areas described in the following chapters (fig. 1).

2. THE REGION AROUND RANIKOT
2.1. RANIKOT
Along the main road from Sann to Ranikot Fort, a few gravel terraces were
systematically surveyed. Flint and other chippable rocks were collected from two different areas 1) 19 km from the fort (25°58′40.114N – 68°03′29.643E), from which comes also one probable blade-like flake (fig. 2, n. 1), and 2) 12 km from Ranikot (25°56′10.258N – 68°01′36.262E), where small flint nodules of several colours were recovered (fig. 2, n. 2). More pebbles of good quality flint of a very dark grey colour (7.5YR3/1) were collected also inside the fortification walls at 25°53′08.687N – 67°54′41.984E. These data reinforce the impression that all the area inside and around Ranikot is favourable to prehistoric settlement due to the abundance of good quality flint from the Ranikot formations (see also ABRO, 1996).

Another brief survey was conducted around the eastern entrance of Ranikot Fort (HASAN, 2006). Acacia sp. charcoal fragments were identified from an exposed surface of the collapsed pillar at Sann (Eastern) Gate (fig. 2, n. 3), from which one specimen was radiocarbon-dated to 160±30 uncal BP (GrA-44671). This result indicates that this part of the fort was constructed (or restored) in historical times, most probably during the Talpurs rule (BIAGI and NISBET, 2009) (fig. 3).

2.2. ARZI GOTH
Further discoveries were made near the Baloch village of Arzi Goth, along the eastern side of the main road from Jamshoro to Amri and Dadu. On the top of a hillock two cairns were recorded at 25°46′01.111N – 68°17′21.779E and 25°46′01.409N – 68°17′20.935E respectively (fig. 4).

A heavily patinated Levallois flint flakelet of yellowish brown colour (10YR5/4) with a faceted platform (fig. 22, n. 6) comes from the top of the same hillock (25°45′59.213N – 68°17′15.452E). Along its northern slope, an exhausted, tiny subconical hypermicrobladelet core, obtained from a very small flint pebble of black colour (7.5YR2.5/1), was collected at 25°46′03.545N – 68°17′18.854E (fig. 22, n. 5).

3. THE REGION AROUND JHIRAK
3.1. KOT RAJA MANJERA (KAFFIR KOTE OR KAFIR KOT)
W. Cole, Deputy Collector of Karachi, was the first to visit Kot Raja Manjera, most probably in 1852. “In a letter addressed to the Secretary of the Bombay Branch of the Royal Asiatic Society”, written in 1853,
describes the ruins of a Buddhist site and a *stupa*. More precisely “two and a half to three miles south of this again (Jhirak), and between the Jarak-Thathah road and the river, is a low flat-topped hill upon which are the remains of a Buddhist stupa” (COUSENS, 1998: 87). According to his description “the flat top of the hill, which is of a small area, appears to have been formerly surrounded by a wall of large stones, the remains of which are in places still traceable” (fig. 5).

The site was later revisited by D. ROSS (1882: 27) who wrote “three miles below Jhirak there is a low hill covered with ruins, called by the natives, Kafir Kot, or Infidel Fort, and supposed to have been erected by Raja Manjhira. Hindu and Buddhist remains have been found here, with very curious inscriptions in old Indian characters”. This information is reported also by M.H. PATHAN (1978: 364), who identifies this site with the city of Manjabari.

The site, called Kaffir Kote by W. Cole, and still nowadays locally believed to be an ancient residence of the infidel king Munjera, was surveyed by Professor A.R. Khan of Karachi University in the early 1970s (KHAN, 1979a: 6). On the top of the terrace he discovered a prehistoric site, which he attributed to the Amri Culture thanks to the presence of typical red-slipped wares and potsherds with painted geometric patterns (KHAN, 1979b: 71), and a rich chipped stone assemblage, including flint micro-drills for beads making. According to his field observations, A.R. KHAN (1979a: 6) ascribed the “stone wall up to 6 feet thick” that surrounds the hilltop, to the Chalcolithic period, and, on the basis of this structure, he considered Kot Raja Manjera a fortified settlement of the Amri Culture.

The site is located on a flat-topped limestone terrace (fig. 6), roughly east-west oriented, along the south-western bank of an ancient meander of the Indus, which at present flows some 5 km to the east, where it forms a semicircular bend, that in prehistoric times lapped the limestone formation on which the village of Lakho Pir is situated. The site’s location seems to have been accurately chosen because of its unique geographic position and, possibly, its strategic importance. According to the field notes by A.R. KHAN (1979a: 7) the site yielded archaeological finds, which he attributed to both Amri Culture and Buddhist period (5th century AD).

A short visit paid to the site in the spring of 2004 confirmed Professor A.R. Khan’s observations. Chipped stone artefacts, among which are 1 bullet core of variegated greyish brown flint (10YR5/2) and laminar
products were collected from the north-western part of the terrace (fig. 7)\textsuperscript{1}.

A systematic survey was carried out on January 21\textsuperscript{st}, 2009, aimed at the definition of the area covered by the Amri Culture settlement. During the survey, 14 main scatters of chipped stone artefacts, ca. 4 m in diameter each, were recorded as well as a few potsherds and very few fragments of marine and mangrove shells, one of which was collected for radiocarbon dating. Their distribution map is shown in fig. 8, while the main characteristics of the assemblages are listed in table 1.

Most of the flint spots were discovered along the central-western part of the northern edge of the terrace, even inside a squared structure described by COUSENS (1998: fig. 17) as “rubble”. Only one spot (number 8) was recorded along the westernmost edge, and two along the southern one (numbers 9 and 10). Chipped stone artefacts were not recorded from the central part of the mesa, where a rectangular stone structure, some 270 m long and 40 wide, is still clearly visible, and along its eastern edge, where Mr. Cole excavated the remains of a stupa. The richest assemblages come from spots KRM13 and KRM14. No traces of fireplaces or charcoal/ash concentrations were recorded during the 2009 survey. The general impression is that the Amri Culture site was located in the central-western part of the terrace, and that it was heavily damaged by the buildings erected on the hill by a Buddhist community, most probably in the 5\textsuperscript{th} century AD.

3.1.1. The chipped stone assemblages
Fourteen distinct spots were recorded by three people who worked at each scatter for some 20 minutes. All together 732 chipped stone artefacts were collected (table 1), mainly obtained from two different types of flint of 1) fine-textured grey colour (7.5YR6/1) and 2) slightly rough-surfaced brown colour (7.5YR4/2) with very small blackish inclusions. The first was mainly employed for the manufacture of small-sized tools among which are drills on microbladelet blanks, the second for the production of blades of a larger size. The precise location of the raw material sources exploited for their manufacture is at present unknown, although the recent discovery of

\textsuperscript{1} The 2004 assemblage consists of 1 bullet core (fig. 7, n. 1), 1 straight truncation on a bladelet (fig. 7, n. 2), 1 backed bladelet with deep, alternate retouch (fig. 7, n. 5), 1 backed bladelet with marginal, direct retouch (fig. 7, n. 4), 2 fragmented blades with simple retouch and a sinuous edge (fig. 7, nn. 6 and 7), 1 fragmented crested bladelet (fig. 7, n. 3), 105 flakes and microflakes, 29 of which are complete and 76 broken, 8 bladelets and 1 broken blade. Many artefacts are burnt.
sources of good quality flint of light grey colour (7.5YR7/1), and traces of mining activity on two different terraces, south-west of Jhimpir, some 20 km to the west-south-west of the site (Biagi and Nisbet, 2010), might indicate that Jhimpir is one of the outcrops exploited by Kot Raja Manjera inhabitants.

The length/width diagram of the complete, unretouched artefacts shows a predominance of flake debitage (table 2); this result is partly due to the very fragmentary state of the products. Nevertheless 178 unretouched blade(let) fragments were collected, most of which are between 7 and 13 mm wide (fig. 9). Bladelets represent the commonest blanks exploited for making tools. A detailed description of the chipped stone assemblages from the fourteen spots is provided in table 3.

3.1.1.1. Discussion
The chipped stone assemblage from Kot Raja Manjera is represented by a noticeable variety of tools among which the most important, from a typological point of view, are abrupt-retouched implements, drills and borers. The tools have been obtained mainly from blades, bladelets and microbladelets, as also suggested by the presence of bullet type subconical cores (fig. 7, n. 1; 12, n. 15; 13, n. 7). They were at least partly produced within the site, as indicated by a few crested blades (fig. 7, n. 3; 10, nn. 17 and 24; 12, nn. 16 and 17) and a great number of waste flakes and flakelets.

Except for one borer (fig. 11, n. 2), the drills are of a microbladelet dimension (fig. 10, nn. 2-5, 9 and 14; 12, nn. 2 and 3; 13, nn. 1-4). According to the traceological analysis, a few of them were employed for drilling (fig. 10, nn. 9 and 14; 12, n. 2; 13, nn. 1, 2 and 4), as it is also possibly supported by the recovery of carnelian bead fragments from spots KRM1, KRM13 and KRM14. This indicates that beads were manufactured within the settlement area. It is important to point out that two of the micro-drills had been utilised as armatures or projectile points, given the presence of impact fractures at their pointed, distal edge (fig. 10, nn. 2 and 4 and perhaps fig. 12, n. 3).

The abrupt-retouched tools are represented mainly by backed blades and bladelets and truncation (fig. 10, nn. 6 and 10) and convergent backed blades and bladelets with a complementary retouch along the opposite side (fig. 10, nn. 7, 8, 11 and 21; 11, n. 8; 12, nn. 5-9).

The use wear analysis has shown that, apart from drilling (bead manufacturing) and spearing (hunting?), the tools had been used in a variety of (specialised) activities among which are woodworking (fig. 10, n. 10 and
20; fig. 11, n. 7), cut medium hard material (fig. 10, nn. 22 and 23), and cut vegetables (fig. 10, n. 16). Only one implement has sickle gloss wear patterns (fig. 10, n. 19); 4 had been hafted (fig. 10, nn. 10, 19, 22 and 23).

3.2. LAKHO PIR
The area that surrounds the village of Lakho Pir, on the western limestone terrace that delimits an old bend of the Indus, north-west of Kot Raja Manjera (fig. 14, n. 3), was surveyed on January 25<sup>th</sup>, 2009. Eight spots of archaeological material were recorded from this region (fig. 15).

**LP1** (25°02’02.902N – 68°11’56.984E). Three flint hypermicroflakelets one of which splintered and another very weathered, with a percussion bulb, of a dark greyish brown colour (10YR4/2)

**LP2** (25°01’59.523N – 68°11’55.320E). From this point comes a typical Amri Culture scalene triangle of, light grey flint (10YR7/2), hafted, with cut wood utilisation traces (fig. 22, n. 4).

**LP3** (25°01’59.113N – 68°11’53.847E). One flint microflakelet and 3 natural pieces of flint.


**LP5** (25°02’11.441N – 68°11’55.898E). One flint microflake with a bulb of percussion.

**LP6** (25°02’08.450N – 68°11’57.720E). One patinated blade-like flakelet, the original colour of which was very dark grey (2.5Y3/1).


**LP8** (25°01’59.342N – 68°12’17.162E). One microflakelet, 2 small flakes and 2 flakes slightly patinated and corticated. Their original colour was pale brown (10YR6/3).

3.3. TERRACES NORTH OF JHIRAK
The terraces west of the main road, some 3 km north of Jhirak were surveyed on February 3<sup>rd</sup>. Five distinct points yielded archaeological chipped stone artefacts (fig. 14, n. 2). They are:


JHK3 (25°03’42.753N – 68°13’55.935E). One flakelet, 1 microflakelet and 1 fragmented long end-scraper of very dark grey flint (10YR3/1) with utilisation traces (fig. 22, n. 3)


JHK5 (25°04’00.443N – 68°13’29.701E). One flint bladelet proximal fragment and one fragment of microbladelet.

3.4. AJI ABDUL REIM

Is located along the lake shore, east of the road from Jamshoro at 25°06’42.911N – 68°13’33.466E (fig. 14, n. 1). From the above point come a few natural flint pieces and 1 transversal scraper on a corticated, thick flake (fig. 13, n. 8).

4. THE REGION SOUTH AND SOUTH-WEST OF THATTA

This region is of unique importance for the study of 1) the variations of the northern coastline of the Arabian Sea in both prehistoric and historic times, and 2) the complex processes that led to the formation of the alluvial plain of the Indus delta (Wilhelmy, 1968; Harvey and Schumm, 1999; Giosan et al., 2006; Inam et al., 2007). According to several authors, at the time of the Greek invasion (327 AD) “the sea extended upto Gujo area” (Panhwar, 1964: 100), a boundary generally accepted by both geologists (Bender, 1995: fig. 10.18) and historians (Eggermont, 1975: map 2). The Indus coastal landscape of the 1st century AD is accurately described in the Periplus (Schoff, 1974: 37): “the river has seven mouths, very shallow and marshy, so that they are not navigable, except the one in the middle; at which by the shore, is the market town, Barbaricum. Before it lies a small island, and inland behind it is the metropolis of Scythia, Minnagara”.

The above market town is mentioned also by M.R. Haig (1894: 30-31) who describes the port of Barbarikon (Barbaricum), along the western coast of the Indus delta “on the middle mouth of the river, having a small island in front of it”, which “would be one of the numerous tracts of land in the Delta which are isolated by minor branch channels”.

The complexity of the problem, which is strictly connected with the movements of the prehistoric and historic courses of the Indus, and their flow into the Arabian Sea in relation with the coastline advance, has been taken into consideration also by L. Flam (1984; 1987). W.T. Blandford (1880: 154), in his geological study of Thatta and its surroundings, pointed out that “to the west of Makli Hill there are several small scattered rises in
the alluvium; all, except one, which is Khirtar, composed of Nari beds. Farther west, and again to the south-west, there are some detached rocky rises of peculiar formation, ascribed to the Gáj group”. “A third range of high ground occurs close to Tatta, and is 18 miles long from north to south and 4 from east to west. In all these cases portions are detached and separated by alluvium from the main range, and there are some other small and unimportant patches, none of which are of any size, near the edge of the alluvial area” (BLANDFORD, 1880: 24).

Most of the authors agree with the idea that the above “rocky rises” were in effect islands or islets during Alexander’s times, as they were also before the Hellenistic period. In this respect H.T. LAMBRICK (1986: 118-119) described “the island of Bibakta which I should suppose to be one of the small rocky elevations which occur hereabouts, perhaps that called Tharri Gujo. This, in my view, was the position of “Alexander harbour”. The alluvial plain about here is only slightly elevated above sea level, and we may reasonably suppose it to have been formed within the last twenty-two centuries”. This interpretation has been supported also by M. KEVRAN (1995: 295) and A. IBRAHIM (2000-2001), although with different arguments. Of quite a contrasting opinion is P.H.L. EGGERMONT (1975: 37) who identifies Alexander’s harbour with Barbarikon (Barbaricum), some 130 km east-north-east of Tharro, at the mouth of the only navigable central branch of the river (see also SCHOFF, 1974: 37). The above different interpretations of the original Greek sources (MCCRINDLE, 1979; 2000) are most probably due also to the variable measure attributed to the stadion according to the different authors (GULBENKIAN, 1987).

S. PIGGOTT (1950: 77) and A.R. KHAN (1979: 5), believed that the Tharro Hills were an island rather close to the northern rocky coastline in Chalcolithic times, when Amri Culture peoples established a settlement along their eastern edge (BIAGI, 2005), as it is supported by a radiocarbon date from Ostreidae marine shells collected from the central part of the site (GrN-27053: 5240±40 uncal BP). They were undoubtedly surrounded by Arabian Sea waters during the Neolithic, as it is confirmed by a small scatter of Ostreidae from point THR2 (24°43’27.13N - 67°44’44.78E) radiocarbon-dated to 6910±60 uncal BP (GrN-32119) (BIAGI and FRANCO, 2008: fig. 7) (fig. 16).

The 2009 surveys led to the discovery of archaeological remains on five of the above-mentioned rocky outcrops that rise from the Indus alluvial plain; they are listed below.
4.1. Beri
The site of Beri is located on a small, boat-shaped, flat-topped limestone terrace that raises in a northeast-southwest direction from the Indus alluvial plain some 1.6 km south-east of the Tharro Hills (figs. 16 and 17). Its surface is covered with fragments of marine and mangrove shells, flint artefacts and a few ceramic potsherds. An Islamic cemetery, mentioned also by M. Kevrán (1995: 297), is still clearly visible at its northeast edge. A sample of *Terebralia palustris* mangrove gastropods from point 24°43’00.037N - 67°45’09.485E has been radiocarbon-dated to 5960±50 uncal BP (GrN-32166).

4.1.1. The chipped stone assemblage
The chipped stone assemblage from Beri consists of 35 unretouched artefacts, 19 of which are complete and 11 broken (11 burnt), 1 core (fig. 18, n. 1), 1 platform rejuvenation flakelet (fig. 18, n. 10), and 9 instruments (fig. 18, nn. 2-9 and 11). Four of the complete, unretouched specimens are corticated, obtained from at least 2 small nodules of a strong brown colour flint (7.5YR4/6), 9 are bladelet fragments. The assemblage includes a great variety of flint types, mainly of a dark brown colour, with lighter striations (7.5YR3/2), and dark reddish grey (10R3/1). Some unique specimens include 1 silicified limestone blade, 20 mm wide, of a light grey colour (1 for Gley 7), 1 grey (10YR5/1), and 1 black flake (10YR2/1) with brown spots (10YR5/3). A unique type of flint is represented by a thin blade of reddish grey colour (2.5YR5/1) (43x17x3 mm) in a very “fresh” state of preservation. Many of the unretouched artefacts show a light grey or white patina, most probably caused by the exposure, and slightly rounded, bright surfaces due to eolization.

The retouched tools (9) are represented by 2 straight borers (fig. 18, nn. 2 and 3), 2 truncations with complementary retouches along the edges (fig. 18, nn. 4 and 6), 1 fragmented scalene triangle (fig. 18, n. 5), 2 fragmented backed tools, probably 1 backed blade (fig. 18, n. 8) and 1 point (fig. 18, n. 7), 1 fragment of a retouched parallel-sided blade, which had been hafted and used for cutting soft wood (fig. 18, n. 9), and 1 lateral side scraper (fig. 18, n. 11). Their main characteristics are shown in table 4. It is important to point out that, although the number of tools is very small, most of them are obtained with a (semi)abrupt retouch on blade or bladelet blanks with straight sides. The recovery of 1 scalene triangle on a bladelet is of major importance.

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2 Beri means boat in Sindhi.
4.2. Jabal Shah Husein

This hillock, ca. 850 m long and 350 wide, elongates in a northeast-southwest direction some 12 km south of the Tharro Hills, and 1 km west of the limestone terrace of the Makli Hills, south of Thatta (fig. 19), which is “18 miles long from north to south and 4 from east to west” (BLANDFORD, 1880: 24).

A shrine, from which the hill takes its name, is built on its top, and a monumental graveyard has been erected in the central part of the western slope, crossed by a footpath that takes to the shrine. Mangrove and marine shells, mainly Ostreidae, were recovered from several points during the brief survey conducted on January 24th, 2009, which revealed at least seven spots of potential archaeological interest, mainly in the north-eastern part of the hill (fig. 20). They are:

**JSH1** (24°42′26.007N - 67°48′38.327E). From its surface (fig. 21) comes a trapezoidal transversal arrowhead, with abraded cutting edge, obtained from a blade of light grey flint (10YR7/2) (fig. 22, n. 1), and a medium fragment of a parallel-sided bladelet of pinkish grey colour (5YR6/2) (fig. 22, n. 2; see also table 5). The area yielded also marine shells and fragments of *Terebralia palustris* gastropods. A single specimen of Ostreidae shell was radiocarbon-dated to 5325±40 uncal BP (GrA-45180);

**JSH2** (24°42′26.392N - 67°48′39.029E), close to JHS 1, the surface here is rich in marine shells and mangrove gastropods, among which are specimens of *Telescopium telescopium*, one of which yielded the radiocarbon result of 4245±40 uncal BP (GrA-45181);

**JSH3** (24°42′25.073N - 67°48′37.593E), It yielded a patinated microflakelet of light grey colour (10YR7/2);

**JSH4** (24°42′21.658N - 67°48′35.519E) from which comes a patinated and corticated small blade-like flakelet, the original colour of which was light brownish grey (10YR6/2);

**JSH5** (24°42′24.420N - 67°48′36.318E). From this point come a few fragments of marine shells and 2 small flint flakelets with a light grey patina;

**JSH6** (24°42′22.549N - 67°48′34.910E). It yielded one triangular, rough-surfaced flakelet of yellowish brown flint (10YR5/4);

**JSH7** (24°42′13.063N - 67°48′27.491E). Two small, corticated flint nodules with a brown patina. Also this area is covered with oyster marine shells.
4.3. **Unnamed rock north-east of Jabal Shah Husein**

It is located at 24°42’45.440N – 67°48’54.508E, north-east of Jabal Shah Husein (fig. 19, n. 4). Linear, quadrangular and chessboard patterns of rock engravings were discovered at its southern edge (fig. 23).

4.4. **Other unnamed rock along the national road west of Thatta**

From the surface of an unnamed rocky outcrop, located south of the road from Gujo to Thatta (24°44’26.264N – 67°48’41.635E) (fig. 19, n. 3), comes a fragment of a heavily patinated flint microflakelet of greyish brown colour (10YR5/2) with écaille detachments (?).

4.5. **The Makli Hills**

Only the northernmost part of the Makli Hills, south of Thatta, was systematically surveyed on January 29th, 2009. Chipped stone artefacts were recorded 1) close to Aqel Pir, where a white-patinated flint microflakelet with percussion bulb was collected from the surface, close to a water spring, at 24°41’16.672N - 67°49’29.259E (fig. 19, n. 6), and 2) in the proximity of the Military Public School (MPS: 24°41’04.048N - 67°51’19.673E), which yielded 2 flint flakelets, 1 broken and 1 with bulb of percussion (fig. 19, n. 7). A visit was paid also to the XVI century AD city of Kalan Kot, on the surface of which fragments of both *Terebralia palustris* and marine shells were collected, and the promontory north of the city, on the top of which lie the ruins of several historical structures (fig. 19, n. 8).

5. **DISCUSSION**

The surveys carried out in Lower Sindh in January-February 2009 have undoubtedly improved our knowledge on some aspects of the prehistory of the region mainly as concerns a few topics of major interest. They are:

1) The absolute chronology of the prehistoric settlement of the Indus delta. The radiocarbon dating of marine (Ostreidae) and mangrove shell samples (*Terebralia palustris* and *Telescopium telescopium*) from the Tharro Hills (fig. 16), Beri (fig. 17) and Jabal Shah Husein (fig. 20) shows that the first human activity in the area took place at least from the beginning of the seventh millennium uncal BP (THR2: GrN-32119). The THR2 radiocarbon result confirms that some of the above islands had already been (sporadically or seasonally?) settled in that period. This assay fits well within the general framework of the earliest anthropisation of both the coasts of the Arabian Sea and the Gulf, which is supposed to have occurred from the middle of the eighth millennium uncal BP onwards (Vita-
FINZI and COPELAND, 1980; CLEUZIOU, 2004; BIAGI, 2008); it also poses the question of the (models of) coastal navigation in this part of the Arabian Sea during the Middle Holocene, when the first shell middens began to be settled in well-defined environmental landscapes (BIAGI, 2004; BERGER et al., 2005; SANLAVILLE and DALONGEVILLE, 2005; UERPMAANN et al., 2009).

2) The characteristics of the flint assemblages from the ancient islets, at present rocky outcrops, in the above region. Apart from the chipped stone assemblage from the Tharro Hills, which has been attributed to the Amri Culture (BIAGI, 2005), a fragmented Amri triangle comes from Beri (fig. 18, n. 5). Nevertheless the cultural attribution of the chipped stone assemblage from this site is problematic for the following reasons: 1) it has been manufactured from flint from several different sources, many of which are at present unknown, 2) it is rather poor and fragmented, 3) a single Terebralia palustris mangrove shell from its surface yielded the radiocarbon result of 5960±50 uncal BP (GrN-32166). It is unclear whether the above assemblage is homogeneous or it represents a few different occupations, all chronologically attributable to periods preceding the beginning of the Bronze Age. A transversal arrowhead of a well-defined type, already known from the Mesolithic sites of Mulri Hills, south of Karachi University Campus, Kadegji Gorge and Buda Ran Pethani (BIAGI, 2003-2004: figs. 10 and 17) comes from the surface of Jabal Shah Husein (JSH1: fig. 21). One single oyster specimen from the surface of this site was radiocarbon-dated to 5325±40 uncal BP (GrA-45180), even though the radiocarbon date and the tools are not necessarily contemporaneous and might indicate subsequent occupations.

3) The characteristics of the flint assemblages from Kot Raja Manjera and the region that surrounds this site. Kot Raja Manjera is so far a unique Amri Culture Chalcolithic settlement, although heavily disturbed by subsequent historical occupations and weathering. From a typological point of view, the chipped stone assemblage from the site shows many Amri characteristics, although some of these characteristics are known also from lithic assemblages of the same millennium in Balochistan (LECHEVALLIER, 2003). Among these is the abundance of abrupt-retouched tools with an opposed complementary retouch, a few of which are most probably
fragments of scalene Amri triangles (Lechevallier, 1979; Biagi, 2005). The recovery of one isolated specimen of these typical implements from the surface of the limestone terraces of Lakho Pir (LP2), in front of Kot Raja Manjera, is particularly relevant, given also the definition of its function thanks to the presence of traces of wear along its sides (fig. 22, n. 4);

4) The recovery of a few characteristic tools and small scatters of flints from several investigated areas between Ranikot Fort, in the north, and Jhirak, in the south. These finds show that good quality flint was undoubtedly available from several outcrops of Lower Sindh, from deposits belonging to the Ranikot Formation (Blandford, 1880) and others further to the south (Fairersvis, 1982: 111; Cleland, 1987: 103). The recurrence of isolated, surface finds, among which are flint cores and retouched implements attributable to several cultural aspects and ages, shows that people moved across the study region in different prehistoric periods according to models that are at present unknown. Of great interest is also the recovery of a Middle Palaeolithic Levallois flakelet from the surface of a hillock at Arzi Goth (fig. 22, n. 6), which indicates that finds of this period can be recorded also from so far unsuspected landscapes.

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The author is very grateful to Mir Atta Mohammad Talpur, Mir Ghulam Rasool Talpur, Mir Ahmed Farooq Talpur, for their patronage and all their efforts to make the 2009 survey possible, and to Prof. R. Nisbet and Dott. F. Fuolega (Ca’ Foscari University, Venice, I) who took part in the fieldwork season. Many thanks are also due to the former Vice-chancellor of Sindh University, Prof. Mazharul Haq Siddiqui and the former Director of the Institute of Sindhology, Mr. Shoukat Shoro who provided accommodation and every sort of facilities at Sindh University Campus, Jamshoro. Special thanks also to Dott. A. and S. Gnutti of Gnutti EURAL (Rovato, Brescia) and the Italian Ministry of Foreign Affairs (MAE) that sponsored and financed the 2009 archaeological activities in Lower Sindh. Very special thanks to Dr. B. A. Voytek (Berkeley University, USA) for the traceological analysis of the chipped stone assemblages, and to Prof. F. Pontani (Ca’ Foscari University, Venice, I) for his help in the study of the classical sources.
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Fig. 1 - Lower Sindh: distribution map of the three areas surveyed in January-February 2009: Ranikot (1), Arzi (2), region around Jhirak (3), and south of Thatta (4).
Fig. 2 - Ranikot area: 19 km from Ranikot (1), 12 km from Ranikot (2), Ranikot (3), Arzi (4).

Fig. 3 - Ranikot Fort: Sann (Eastern) Gate (arrow) from which comes the radiocarbon dated charcoal sample GrA-44671.
Fig. 4 - Arzi Goth: location of the two cairns on a hillock close to the Baloch village *(photograph by the author)*.
Fig. 5 - Kot Raja Manjera: the Buddhist structures on the top of the terrace (from COUSENS, 1998: Fig. 17).
Fig. 6 - Kot Raja Manjera: the limestone terrace on which the site is located from Lakho Pir (photograph by the author).

Fig. 7 - Kot Raja Manjera: chipped stone assemblage collected in 2004 (drawings by P. Biagi, inking by G. Almerigogna).
Fig. 8 - Kot Raja Manjera: distribution map of the 14 main scatters of chipped stone artefacts recorded in 2009.

Fig. 9 - Kot Raja Manjera: number and width of the fragmented blades and bladelets from the 14 scatters.
Fig. 10 - Kot Raja Manjera: chipped stone tools from KRM1 (nn. 1-8), KRM 2 (nn. 9-13), KRM4 (n. 14), KRM6 (nn. 15 and 16), KRM7 (nn. 17-20), and KRM8 (nn. 21-24). Symbols: arrow: impact fracture; small circle: bulb of percussion; D: drill; H: haft; S: sickle; CW: cut wood; CSW: cut soft wood; CV: cut vegetables; CM: cut medium; SH: scrape hard; A: abrasion; AR: armature? (*drawings by P. Biagi, inking by G. Almerigogna*).
Fig. 11 - Kot Raja Manjera: chipped stone tools from KRM9 (nn. 1-6), KRM10 (n. 7), KRM11 (nn. 8-10), and KRM12 (nn. 11-13) (drawings by P. Biagi, inking by G. Almerigogna).
Fig. 12 - Kot Raja Manjera: chipped stone tools from KRM13 (nn. 1-17) (drawings by P. Biagi, inking by G. Almerigogna).
Fig. 13 - Kot Raja Manjera: chipped stone tools from KRM14 (nn. 1-7), and Aji Abdul Reim (n. 8) (*drawings by P. Biagi, inking by G. Almerigogna*).
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Fig. 17 - Beri: the limestone terrace on which the prehistoric site is located, from the south (photograph by the author).
Fig. 18 - Beri: chipped stone artefacts (*drawings by P. Biagi, inking by G. Almerigogna*).
Fig. 19 - Location of the sites of Tharro Hills (1), Beri (2), unnamed rock west of Thatta (3), Jabal Shah Husein (5), other unnamed rock (4), Akel Pir (6), MPS (7), historical site north of Kalan Kot (8).
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<table>
<thead>
<tr>
<th>Spot nr.</th>
<th>Coordinates</th>
<th>Artefacts</th>
<th>Tools</th>
<th>Cores</th>
<th>Complete measured</th>
<th>Fragments</th>
<th>Corticated</th>
<th>Burnt</th>
<th>Blades width</th>
<th>Crested blades</th>
<th>Others</th>
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<tbody>
<tr>
<td>KRM 1</td>
<td>25°01'20.485N – 68°12'34.391E</td>
<td>64</td>
<td>8</td>
<td>0</td>
<td>10</td>
<td>46</td>
<td>7</td>
<td>14</td>
<td>16</td>
<td>0</td>
<td>3 Cornelians, Dentalium</td>
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<tr>
<td>KRM 2</td>
<td>25°01'20.622N – 68°12'34.558E</td>
<td>72</td>
<td>5</td>
<td>0</td>
<td>24</td>
<td>43</td>
<td>16</td>
<td>34</td>
<td>7</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>KRM 3</td>
<td>25°01'20.322N – 68°12'35.223E</td>
<td>23</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>19</td>
<td>6</td>
<td>22</td>
<td>4</td>
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<td>KRM 4</td>
<td>25°01'20.593N – 68°12'35.155E</td>
<td>19</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>2</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td></td>
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<tr>
<td>KRM 5</td>
<td>25°01'20.181N – 68°12'36.039E</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>14</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
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<td>KRM 6</td>
<td>25°01'20.857N – 68°12'34.018E</td>
<td>18</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>14</td>
<td>10</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td></td>
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<tr>
<td>KRM 7</td>
<td>25°01'20.292N – 68°12'34.190E</td>
<td>12</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>9</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1?</td>
<td></td>
</tr>
<tr>
<td>KRM 8</td>
<td>25°01'18.079N – 68°12'31.769E</td>
<td>18</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>11</td>
<td>3</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>KRM 9</td>
<td>25°01'16.745N – 68°12'36.397E</td>
<td>35</td>
<td>2</td>
<td>0</td>
<td>10</td>
<td>23</td>
<td>9</td>
<td>8</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>KRM 10</td>
<td>25°01'17.909N – 68°12'37.837E</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Large pot (historical?)</td>
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<tr>
<td>KRM 11</td>
<td>25°01'19.709N – 68°12'36.568E</td>
<td>44</td>
<td>1</td>
<td>0</td>
<td>10</td>
<td>32</td>
<td>4</td>
<td>27</td>
<td>12</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>KRM 12</td>
<td>25°01'20.789N – 68°12'32.956E</td>
<td>21</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>15</td>
<td>3</td>
<td>9</td>
<td>5</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>KRM 13</td>
<td>25°01'20.582N – 68°12'36.695E</td>
<td>228</td>
<td>15</td>
<td>1</td>
<td>70</td>
<td>141</td>
<td>36</td>
<td>15</td>
<td>68</td>
<td>1</td>
<td>1 Cornelian</td>
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<tr>
<td>KRM 14</td>
<td>25°01'20.338N – 68°12'36.434E</td>
<td>162</td>
<td>6</td>
<td>1</td>
<td>57</td>
<td>95</td>
<td>41</td>
<td>41</td>
<td>35</td>
<td>1</td>
<td>1 Cornelian</td>
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<tr>
<td>Totals</td>
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<td>732</td>
<td>48</td>
<td>4</td>
<td>194</td>
<td>480</td>
<td>144</td>
<td>179</td>
<td>161</td>
<td>5</td>
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Table 1 - Kot Raja Manjera: location and main characteristics of the chipped stone assemblages from the different spots.
### Table 2 - Kot Raja Manjera: elongation and dimension indexes of the unretouched chipped stone artefacts.

<table>
<thead>
<tr>
<th>Category</th>
<th>Limits (cm)</th>
<th>Number</th>
<th>%</th>
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<tr>
<td>Elongation Indexes</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Very narrow blades</td>
<td>&lt;6</td>
<td>0</td>
<td>0.00</td>
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<tr>
<td>Narrow blades</td>
<td>6-3</td>
<td>1</td>
<td>0.51</td>
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<tr>
<td>Blades</td>
<td>3-2</td>
<td>11</td>
<td>5.67</td>
</tr>
<tr>
<td>Blade-like flakes</td>
<td>2-3/2</td>
<td>29</td>
<td>14.95</td>
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<tr>
<td>Flakes</td>
<td>3/2-1</td>
<td>69</td>
<td>35.57</td>
</tr>
<tr>
<td>Wide flakes</td>
<td>1-3/4</td>
<td>54</td>
<td>27.83</td>
</tr>
<tr>
<td>Very wide flakes</td>
<td>3/4-1/2</td>
<td>30</td>
<td>15.46</td>
</tr>
<tr>
<td>Extremely wide flakes</td>
<td>&gt;1/2</td>
<td>0</td>
<td>0.00</td>
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<td>Dimension indexes</td>
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<td></td>
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<tr>
<td>Hypermicroliths</td>
<td>&lt;2</td>
<td>26</td>
<td>13.40</td>
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<tr>
<td>Microliths</td>
<td>2-4</td>
<td>158</td>
<td>81.45</td>
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<tr>
<td>Normoliths</td>
<td>4-6</td>
<td>9</td>
<td>4.64</td>
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<tr>
<td>Macroliths</td>
<td>&gt;6-8</td>
<td>1</td>
<td>0.51</td>
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</tbody>
</table>

**Notes:**
- **KRM 1**
  - End scraper
  - G2 dist
  - (17)x(20)x(5)
  - 10YR3/4, dark yellowish brown
  - Distal fr.
  - 25%
  - No
  - No
  - No
  - 10, n. 1
- **KRM 2**
  - Perforator (drill)
  - Bc2 dist [Apd+Apd]
  - (17)x(22)x(5)
  - 10YR4/3, brown
  - Complete
  - No
  - No
  - No
  - Impact fracture
  - 10, n. 2
- **KRM 3**
  - Perforator (drill)
  - Bc2 dist [Apd+Apd]
  - (15)x(6)x(5)
  - 7.5YR6/1, grey
  - Proximal fr.
  - No
  - No
  - No
  - 10, n. 3
- **KRM 4**
  - Perforator (drill)
  - Bc2 dist [Apd+Apd+Apd]
  - (9)x(5)x(2)
  - 7.5YR6/1, grey
  - Complete
  - No
  - No
  - No
  - 10, n. 4
- **KRM 5**
  - Perforator (drill)
  - Bc2 dist [Apd+Apd+Apd]
  - (12)x(6)x(2)
  - 2.5YR4/3, olive brown
  - Proximal fr.
  - No
  - No
  - No
  - 10, n. 5
- **KRM 6**
  - Backed blade
  - L2 [Apd dext]
  - (18)x(8)x(4)
  - 10YR6/4, light yellowish brown
  - Mesial fr.
  - No
  - No
  - No
  - 10, n. 7
- **KRM 7**
  - Backed blade
  - L0 [Apd sen]
  - (8.5)x(4.5)x(2)
  - Unknown
  - Mesial fr.
  - No
  - Yes
  - No
  - 10, n. 8
- **KRM 8**
  - Perforator (drill)
  - Bc2 prox [Apd+Apd+Apd]
  - (9.5)x(6)x(2)
  - 10YR6/1, grey
  - Distal fr.
  - No
  - No
  - No
  - Drill
  - 10, n. 9
- **KRM 9**
  - Truncation
  - T2 norm conv [Spd sen]
  - (28.5)x(12.25)
  - 7.5YR5/3, brown
  - Distal fr.
  - No
  - No
  - No
  - Cut wood - Haft
  - 10, n. 10
- **KRM 10**
  - Backed blade
  - L02 [Apd dext+Api sen]
  - (14)x(8)x(3)
  - 10YR6/4, light yellowish brown
  - Mesial fr.
  - Yes
  - No
  - No
  - 10, n. 11
- **KRM 11**
  - Retouched blade
  - L1 [Smd bil]
  - (22.5)x(12)x(3)
  - 5YR4/1, dark grey
  - Mesial fr.
  - No
  - No
  - No
  - 10, n. 12
- **KRM 12**
  - Retouched blade
  - L2 [Spd sen]
  - (16)x(13)x(2.5)
  - 5YR4/1, dark grey
  - Mesial fr.
  - No
  - No
  - No
  - 10, n. 13
- **KRM 13**
  - Perforator (drill)
  - Bc2 dist [Apd+Apd]
  - (10)x(7)x(2)
  - 7.5YR6/1, grey
  - Distal fr.
  - No
  - No
  - No
  - Drill
  - 10, n. 14
- **KRM 14**
  - Retouched blade
  - L1 [Smi alt]
  - (27.5)x(17)x(4)
  - 10YR6/3, light grey
  - Proximal fr.
  - No
  - No
  - No
  - Silicized limestone
  - 10, n. 15
- **KRM 15**
  - Truncation (?)
  - T2 norm conv
  - (30)x(15.5)x(4)
  - 10YR6/5, pale brown
  - Distal fr.
  - No
  - No
  - No
  - Cutting vegetation
  - 10, n. 16
- **KRM 16**
  - Core
  - Bladelet core
  - (29.5)x(22)x(10)
  - Unknown
  - Fragment
  - No
  - Yes
  - No
- **KRM 17**
  - Crested blade
  - Bladelet
  - (22)x(6)x(5)
  - 10YR6/2, light brownish grey
  - Complete
  - No
  - No
  - No
  - Burin spall
  - 10, n. 17
- **KRM 18**
  - Retouched blade
  - L1 [Smd dext]
  - (12.5)x(10.5)x(3)
  - Unknown
  - Mesial fr.
  - Yes
  - No
  - No
  - 10, n. 18
- **KRM 19**
  - Unretouched blade
  - L0
  - (17)x(15)x(3.5)
  - 10YR4/3, brown
  - Mesial fr.
  - No
  - 50%
  - No
  - Sickle - Haft
  - 10, n. 19
- **KRM 20**
  - Retouched blade
  - L1 [Smd dext]
  - (17)x(22)x(5)
  - 10YR6/3, brown
  - Mesial fr.
  - No
  - 50%
  - No
  - Scrape wood
  - 10, n. 20
<table>
<thead>
<tr>
<th>KRM 8</th>
<th>Backed blade</th>
<th>LD2 [Apd dext.] Amn sen</th>
<th>(10)x7x4</th>
<th>Unknown</th>
<th>Mesial fr.</th>
<th>No</th>
<th>Yes</th>
<th>No</th>
<th>No</th>
<th>10, n. 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>KRM 8</td>
<td>Backed blade</td>
<td>LD2 [Api sen]</td>
<td>(20)x11x3</td>
<td>10YR4/2, dark greyish brown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Cut medium hide/skin - klatt</td>
</tr>
<tr>
<td>KRM 8</td>
<td>Backed blade</td>
<td>LD2 [Api dext.]</td>
<td>(32)x18x4.5</td>
<td>10YR4/4, yellowish brown</td>
<td>Mesial fr.</td>
<td>25%</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Cut medium hide/skin - klatt</td>
</tr>
<tr>
<td>KRM 8</td>
<td>Crested blade</td>
<td>Blade</td>
<td>(41)x17x6</td>
<td>10YR3/3, pale brown</td>
<td>Distal fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>10, n. 24</td>
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<tr>
<td>KRM 9</td>
<td>Burin ?</td>
<td>B6 [T2 conv.]</td>
<td>(27)x15x4</td>
<td>10YR4/3, pale brown</td>
<td>Distal fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>11, n. 1</td>
</tr>
<tr>
<td>KRM 9</td>
<td>Retouched blade</td>
<td>BC2 [Apd+Api]</td>
<td>(41)x10x5</td>
<td>10YR4/2, dark greyish brown</td>
<td>Distal fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Brown? Drill/Bore</td>
<td>11, n. 2</td>
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<tr>
<td>KRM 9</td>
<td>Backed blade</td>
<td>LD2 [Apd dext.]</td>
<td>(18)x17x3.5</td>
<td>10YR3/3, brown</td>
<td>Mesial fr.</td>
<td>25%</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>11, n. 3</td>
</tr>
<tr>
<td>KRM 9</td>
<td>Unretouched blade</td>
<td>LD/L1</td>
<td>(40)x14x4</td>
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<td>Mesial fr.</td>
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<td>No</td>
<td>No</td>
<td>No</td>
<td>Wear phases right side?</td>
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<tr>
<td>KRM 9</td>
<td>Retouched blade</td>
<td>L1 [Smd dext.]</td>
<td>(23.5)x14x3</td>
<td>10YR6/3, pale brown</td>
<td>Distal fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>11, n. 5</td>
</tr>
<tr>
<td>KRM 9</td>
<td>Backed blade</td>
<td>LD1 [Api bil]</td>
<td>(22)x13x3.5</td>
<td>10YR4/3, pale brown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td>KRM 10</td>
<td>Retouched blade</td>
<td>L1 [Smd dext.]</td>
<td>(16)x18x6.5</td>
<td>10YR3/3, brown</td>
<td>Mesial fr.</td>
<td>50%</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Cut soft wood</td>
</tr>
<tr>
<td>KRM 11</td>
<td>Retouched blade</td>
<td>L1 [Smd sen]</td>
<td>(26)x12x4</td>
<td>10YR1/2, light grey</td>
<td>Mesial fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Light?</td>
<td>11, n. 8</td>
</tr>
<tr>
<td>KRM 11</td>
<td>Crested blade</td>
<td>L0</td>
<td>(22)x9.5x4</td>
<td>Unknown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>11, n. 9</td>
</tr>
<tr>
<td>KRM 11</td>
<td>Retouched blade</td>
<td>L1 [Smd bil]</td>
<td>(12)x10.5x2.5</td>
<td>Unknown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>11, n. 10</td>
</tr>
<tr>
<td>KRM 12</td>
<td>Truncation</td>
<td>T2 prox norm rect [Apd]</td>
<td>(19)x14x4</td>
<td>Unknown</td>
<td>Proximal fr.</td>
<td>No</td>
<td>No</td>
<td>White</td>
<td>No</td>
<td>11, n. 11</td>
</tr>
<tr>
<td>KRM 12</td>
<td>Backed blade</td>
<td>LD2 [Api bil]</td>
<td>(14)x15x4.5</td>
<td>10YR4/3, pale brown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>11, n. 12</td>
</tr>
<tr>
<td>KRM 12</td>
<td>Retouched blade</td>
<td>L1 [Smd bil]</td>
<td>(14)x15x4</td>
<td>10YR4/3, pale brown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>11, n. 13</td>
</tr>
<tr>
<td>KRM 13</td>
<td>Truncation ?</td>
<td>T2 rect [Apd]</td>
<td>(20)x13.5x3.5</td>
<td>Unknown</td>
<td>Distal fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>12, n. 1</td>
</tr>
<tr>
<td>KRM 13</td>
<td>Perforator (drill)</td>
<td>BC2 prox [Apd+Apd]</td>
<td>(12.5)x6x2.5</td>
<td>10YR4/2, greyish brown</td>
<td>Proximal fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Drill</td>
<td>12, n. 2</td>
</tr>
<tr>
<td>KRM 13</td>
<td>Perforator (drill)</td>
<td>BC2 dist ([Apd+Apd]</td>
<td>(12)x7x2</td>
<td>10YR4/3, brown</td>
<td>Complete</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Armature?</td>
<td>12, n. 3</td>
</tr>
<tr>
<td>KRM 13</td>
<td>Retouched blade</td>
<td>L1 [Smd dext.]</td>
<td>(20)x11x4</td>
<td>Unknown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>12, n. 4</td>
</tr>
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<td>KRM 13</td>
<td>Backed blade</td>
<td>LD1 [Amd dext.]</td>
<td>(16.5)x11x3.5</td>
<td>10YR4/3, brown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>12, n. 5</td>
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<tr>
<td>KRM 13</td>
<td>Backed blade</td>
<td>LD1 [Amd dext.]</td>
<td>(15)x11x3.5</td>
<td>2.5YR5/3, light olive brown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>12, n. 6</td>
</tr>
<tr>
<td>KRM 13</td>
<td>Backed blade</td>
<td>LD2 [Apd dext.]</td>
<td>(18)x12x3</td>
<td>7.5YR4/3, brown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>12, n. 7</td>
</tr>
<tr>
<td>KRM 13</td>
<td>Retouched blade</td>
<td>L1 [Smd dext.]</td>
<td>(10)x11.5x3</td>
<td>Unknown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>12, n. 8</td>
</tr>
<tr>
<td>KRM 13</td>
<td>Backed blade</td>
<td>LD1 [Amd bil]</td>
<td>(8.5)x7x2</td>
<td>Unknown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>12, n. 9</td>
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<tr>
<td>KRM 13</td>
<td>Backed blade</td>
<td>LD1 [Api dext.]</td>
<td>(13.5)x9x2.5</td>
<td>10YR4/4, yellowish brown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>12, n. 10</td>
</tr>
<tr>
<td>KRM 13</td>
<td>Backed blade</td>
<td>LD1 [Amd dext.]</td>
<td>(16)x7x2</td>
<td>7.5YR4/1, dark grey</td>
<td>Mesial fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>12, n. 11</td>
</tr>
<tr>
<td>KRM 13</td>
<td>Retouched blade</td>
<td>L1 [Smd bil]</td>
<td>(21.5)x14x4</td>
<td>7.5YR4/2, brown</td>
<td>Proximal fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>12, n. 12</td>
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<tr>
<td>KRM 13</td>
<td>Retouched blade</td>
<td>L1 [Smd sen]</td>
<td>(32)x10.5x4</td>
<td>10YR4/3, brown</td>
<td>Complete</td>
<td>25%</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>12, n. 13</td>
</tr>
<tr>
<td>KRM 13</td>
<td>Side scraper</td>
<td>R1 [Smd lat]</td>
<td>(22.5)x24x5.5</td>
<td>Unknown</td>
<td>Complete</td>
<td>No</td>
<td>No</td>
<td>White</td>
<td>No</td>
<td>12, n. 14</td>
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<tr>
<td>KRM 13</td>
<td>Core</td>
<td>Bladelet core</td>
<td>(15)x(13)x7</td>
<td>10YR4/2, dark greyish brown</td>
<td>Fragment</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>12, n. 15</td>
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<tr>
<td>KRM 13</td>
<td>Crested blade</td>
<td>L0</td>
<td>(30)x12x4</td>
<td>10YR4/3, brown</td>
<td>Proximal fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>12, n. 16</td>
</tr>
<tr>
<td>KRM 13</td>
<td>Crested blade</td>
<td>L0</td>
<td>(16.5)x13x5.5</td>
<td>7.5YR4/2, brown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>12, n. 17</td>
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<tr>
<td>KRM 14</td>
<td>Perforator (drill)</td>
<td>BC2 dist [Apd+Apd]</td>
<td>(13)x6x1.5</td>
<td>7.5YR4/1, dark grey</td>
<td>Distal fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Drill</td>
<td>13, n. 1</td>
</tr>
<tr>
<td>KRM 14</td>
<td>Perforator (drill)</td>
<td>BC2 prox [Apd+Apd], Ami,Ami</td>
<td>11.5x6x2</td>
<td>7.5YR4/1, dark grey</td>
<td>Complete</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Drill</td>
<td>13, n. 2</td>
</tr>
<tr>
<td>KRM 14</td>
<td>Perforator (drill)</td>
<td>BC2 prox [Apd+Apd]</td>
<td>(9)x6.5x2</td>
<td>7.5YR4/1, dark grey</td>
<td>Proximal fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>13, n. 3</td>
</tr>
<tr>
<td>KRM 14</td>
<td>Perforator (drill)</td>
<td>BC2 dist [Apd+Apd]</td>
<td>(12)x6x3.5</td>
<td>7.5YR4/1, dark grey</td>
<td>Distal fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Drill</td>
<td>13, n. 4</td>
</tr>
<tr>
<td>KRM 14</td>
<td>Side scraper</td>
<td>R1 [Smi tra]</td>
<td>(20)x19x9</td>
<td>7.5YR4/2, brown</td>
<td>Complete</td>
<td>50%</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>13, n. 5</td>
</tr>
<tr>
<td>KRM 14</td>
<td>Retouched blade</td>
<td>L1 [Smd dext]</td>
<td>(13)x12x4</td>
<td>10YR5/2, greyish brown</td>
<td>Proximal fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>13, n. 6</td>
</tr>
<tr>
<td>KRM 14</td>
<td>Core</td>
<td>Bladelet core</td>
<td>(23)x(11)x7</td>
<td>10YR5/2, greyish brown</td>
<td>Fragment</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>13, n. 7</td>
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Table 3 - Kot Raja Manjera: main characteristics of the retouched tools and cores from the different spots.
Table 4 - Beri: main characteristics of the retouched tools and cores.

<table>
<thead>
<tr>
<th>Site name</th>
<th>Tool type</th>
<th>Typology (Laplace, 1964)</th>
<th>Measures (mm)</th>
<th>Munsell Colour</th>
<th>Condition</th>
<th>Cortex</th>
<th>Burnt</th>
<th>Patina</th>
<th>Wear traces</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beri</td>
<td>Discoidal core</td>
<td>Centripetal flakelets</td>
<td>36x33x20</td>
<td>10YR4/3, brown</td>
<td>Complete</td>
<td>25%</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>18, n. 1</td>
</tr>
<tr>
<td>Beri</td>
<td>Perforator (bore)</td>
<td>Bc2 prox (Apd+Apd)</td>
<td>(35)x8.5x6</td>
<td>10YR3/3, brown</td>
<td>Proximal fr.</td>
<td>25%</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>18, n. 2</td>
</tr>
<tr>
<td>Beri</td>
<td>Perforator (bore)</td>
<td>Bc2 prox (Apd+Apd)</td>
<td>(19.5)x15x3</td>
<td>10YR5/2, greyish brown</td>
<td>Proximal fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>18, n. 3</td>
</tr>
<tr>
<td>Beri</td>
<td>Truncation</td>
<td>T2 dist (Apd) Smi dist</td>
<td>(12.5)x11x2</td>
<td>Unknown</td>
<td>Distal fr.</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>18, n. 4</td>
</tr>
<tr>
<td>Beri</td>
<td>Truncation</td>
<td>T2 obl prox (Apd)-Api bili</td>
<td>(45)x11x5</td>
<td>10YR3/6, dark yellowish brown</td>
<td>Proximal fr.</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>18, n. 6</td>
</tr>
<tr>
<td>Beri</td>
<td>Scalene triangle</td>
<td>Gm3</td>
<td>(15)x10x3</td>
<td>10YR4/2, dark greyish brown</td>
<td>Proximal fr.</td>
<td>25%</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>18, n. 5</td>
</tr>
<tr>
<td>Beri</td>
<td>Baked point</td>
<td>PD2</td>
<td>(21)x9x3</td>
<td>Unknown</td>
<td>Distal fr.</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>18, n. 7</td>
</tr>
<tr>
<td>Beri</td>
<td>Baked blade</td>
<td>LD2 bil [Api]</td>
<td>(25)x12x6</td>
<td>Unknown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>18, n. 8</td>
</tr>
<tr>
<td>Beri</td>
<td>Retouched blade</td>
<td>L1 [Sm]</td>
<td>(27)x13.3x3.5</td>
<td>10YR4/2, dark greyish brown</td>
<td>Mesial fr.</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Cut soft wood - Haft</td>
<td>18, n. 9</td>
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<tr>
<td>Beri</td>
<td>Core rejuvenation</td>
<td>Round tablet</td>
<td>15x15x6</td>
<td>10YR4/2, dark greyish brown</td>
<td>Complete</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>18, n. 10</td>
</tr>
<tr>
<td>Beri</td>
<td>Side scraper</td>
<td>R1 lat sen [Smd]</td>
<td>39x26x6.5</td>
<td>Unknown</td>
<td>Complete</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>18, n. 11</td>
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Table 5 - Other surveyed sites: main characteristics of the retouched tools and cores.

<table>
<thead>
<tr>
<th>Site name</th>
<th>Tool type</th>
<th>Typology (Laplace, 1964)</th>
<th>Measures (mm)</th>
<th>Munsell Colour</th>
<th>Condition</th>
<th>Cortex</th>
<th>Burnt</th>
<th>Patina</th>
<th>Wear traces</th>
<th>Figure</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>JSH 1</td>
<td>Trapeze</td>
<td>Gm6 [Apd+Apd]</td>
<td>17x20x2.5</td>
<td>10YR7/2, light grey</td>
<td>Complete</td>
<td>No</td>
<td>No</td>
<td>White Abrasion</td>
<td>22, n. 1</td>
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<td></td>
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<tr>
<td>JHK 3</td>
<td>End-scaper</td>
<td>G1</td>
<td>22x18x5</td>
<td>10YR3/1, very dark grey</td>
<td>Complete</td>
<td>No</td>
<td>Yes</td>
<td>Scrape hard</td>
<td>22, n. 3</td>
<td></td>
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<tr>
<td>LP 2</td>
<td>Triangle</td>
<td>Gm3 (T2 obl rect+Apb). Api</td>
<td>(24)x12x4</td>
<td>5YR5/1, grey</td>
<td>Fragment</td>
<td>5%</td>
<td>No</td>
<td>Yes</td>
<td>Cut wood - Hat</td>
<td>22, n. 4</td>
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<tr>
<td>Arzi 1</td>
<td>Core</td>
<td>Subconical, microbladelet</td>
<td>16x17.5x19</td>
<td>7.5YR2/1, black</td>
<td>Complete</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>22, n. 5</td>
<td></td>
<td></td>
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<tr>
<td>Arzi 2</td>
<td>Flake</td>
<td>Levallois</td>
<td>24x36.5x10</td>
<td>10YR5/4, yellowish brown</td>
<td>Complete</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>22, n. 6</td>
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<tr>
<td>Ali Abdul</td>
<td>Side scraper</td>
<td>R1 tra [Smd]</td>
<td>34x59x19</td>
<td>7.5YR5/2, brown</td>
<td>Complete</td>
<td>50%</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>13, n. 7</td>
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</table>