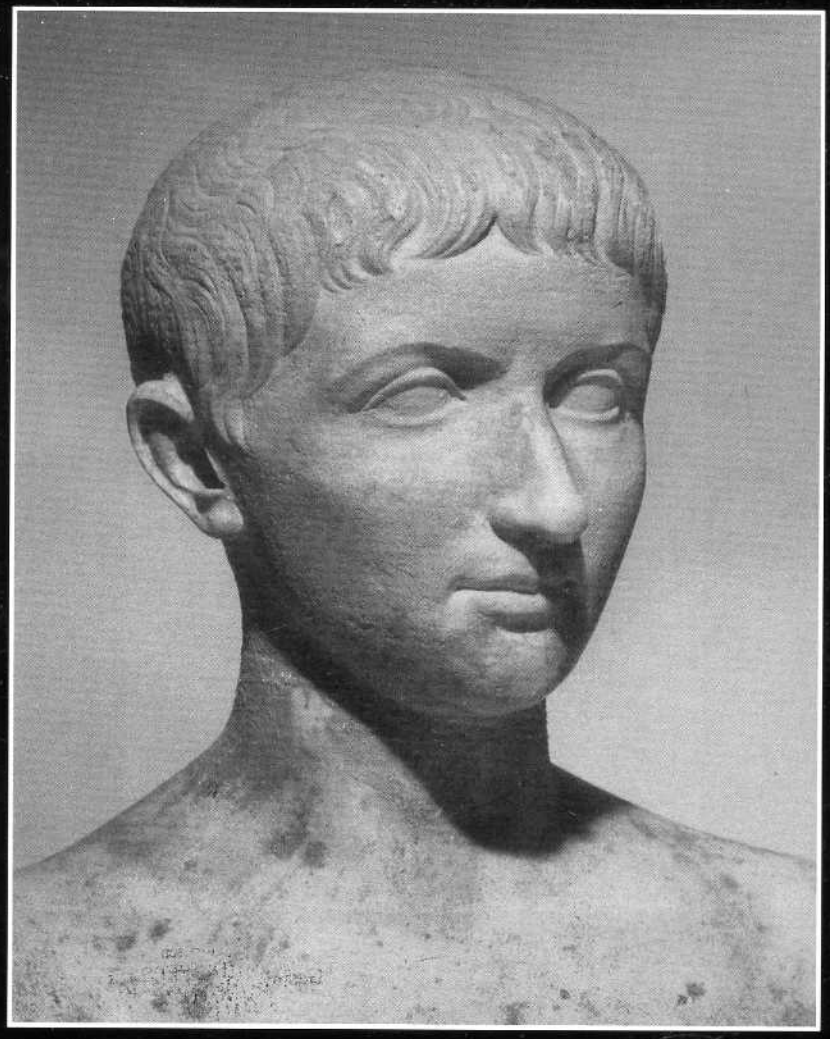
UNIVERSITÀ CA' FOSCARI - VENEZIA
Dipartimento di Scienze dell'Antichità e del Vicino Oriente



STUDI DI ARCHEOLOGIA in onore di GUSTAVO TRAVERSARI

a cura di

Manuela Fano Santi

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THE EARLY HOLOCENE LITHIC ASSEMBLAGES OF SINDH (PAKISTAN)

PAOLO BIAGI

PREFACE

Preliminary surveys carried out in the surroundings of the town of Thari, in the Thar Desert by members of the Joint Rohri Hills Project, have revealed the presence of Mesolithic, early Holocene, stations on the top of the sand dunes that border the salt lakes that characterise the region (Fig. 1). The first discovery of a Mesolithic site in the area was made in March 1995, when a rich lithic assemblage, including trapezoidal arrowheads, was collected from the surface of a fixed dune facing the lake of Sāin Sim (BIAGI and KAZI, 1995).

Nevertheless Mesolithic stations were already known in lower Sindh since the discoveries made in the thirties by Commander K.R.U. Todd inside the County Golf Club, along the course of the Lyari River, some 13 km. north-north-east of Karachi (TODD and PATERSON, 1947) and those of Prof. Abdur Rauf Khan around the Karachi University Campus (KHAN, 1979a); while the assemblage summarily described by B. ALLCHIN (1979: 198; 1985: 132) from the Tharro Hills near Gujo (MAJUMDAR, 1934: 21), from which come some geometric tools, is most probably to be ascribed to the Amrian and to the Harappan Cultures (FAIRSERVIS, 1971: 175; KHAN, 1979b: 71; MUGHAL, 1998: 205).

THE MESOLITHIC STATIONS OF THE THAR DESERT

As mentioned above, the first site to be discovered was that of Lunwāro Sim 1 (LS1), from which an assemblage of 462 artefacts obtained from Rohri Hills flint was collected from the southern slope, close to the top, of a sand dune facing the lake of Sāin Sim. The flint industry was scattered over a surface of some 2000 square metres. It included, among the other instruments, one bladelet core (Fig. 2, n. 1), one short end scraper (Fig. 2, n. 2), one marginal double truncation of hypermicrolithic dimension (Fig. 2, n. 3) and five isosceles trapezes chipped from bladelets (Fig. 2, nn. 4-8) (BIAGI and KAZI, 1985).

The surveys carried out in January 1999 along the shores of lake Lunwāro Sim (Fig. 3), led to the discovery of another Mesolithic site located on the top of the south-western dune that delimits the basin to the south (LS2). Its coordinates are 27°01'30" Lat N. and 68°39'12" Long E.

The assemblage collected from the surface includes a few geometric microliths, among

which are a backed blade and truncation (Fig. 2, n. 9) a probable lunate (Fig. 2, n. 10) a truncated bladelet (Fig. 2, n. 11) and two microburins, one proximal (Fig. 2, n. 12) and one distal (Fig. 2, n. 13). The location of the site is exemplified in the profile of Fig. 4. The flint assemblage comes from the top of a stabilized dune some 13 m. high, while the present surface of the lake basin lies some 10 metres below the sea level. Along the eastern shore of the lake, a sand terrace was observed 1 metre above the present shoreline in the exact location of 27°02'02" Lat N. and 68°40'00" Long E. Several freshwater molluscs belonging to the species *Parreysia triembolus* (Benson) (K. THOMAS, pers. comm. 1999) were collected from the top of this terrace indicating the presence of an ancient shoreline. A sample of these bivalves was submitted for radiocarbon dating to the University of Groningen. They produced a result of 2460±50 BP (GrN-24967). Even though this date needs to be corrected for the reservoir effect and the reservoir effect for the area is absolutely unknown, it is interesting to observe that the lake table has most probably fluctuated through the time and that other samples are to be collected and dated in order to understand the variations in the extension of the lake basin in historic and prehistoric times.

The above-mentioned locations are very similar to that recorded at Pir Nago. Here, along the southern sand dune cordon that delimits the eastern side of the lake, a flint assemblage was collected in January 2000. This assemblage is composed of 128 artefacts chipped from Rohri Hills flint. Among these are one microbladelet with abrupt retouch along the left side (Fig. 2, n. 19) and one backed point with abrupt retouch on the right side (Fig. 2, n. 18). From the surface of this dune comes also one peculiar elongated arrowhead of rhombic shape, obtained from a bladelet with semi-abrupt, marginal retouch on the dorsal face and simple, inverse, bilateral retouch at the proximal edge (Fig. 2, n. 17). This tool, whose age is undoubtedly not Mesolithic, is very peculiar. It does not find any parallel in the flint assemblages so far recorded from Sindh, even though it is rather similar, but not identical, to a bladelet arrowhead from Kot Diji (CLELAND, 1987: 100, f).

Two more scatters of flint have been discovered along the same dune some 300 metres north of PN1. They both yielded very poor flint industries, even though one of them, called PN2 might be ascribed to the Mesolithic because of the presence of a discoid microflakelet core. Nevertheless more intensive surveys are necessary to define the cultural attribution of these latter assemblages.

Along the north eastern edge of the lake, on a terrace lying between 3 and 4 metres above the present shoreline a concentration of freshwater molluscs was collected to be identified and then radiocarbon dated in order to define the age of this shoreline. The identification of the sample is still in progress by Dr. K. Thomas of the Institute of Archaeology, UCL.

The last lake summarily surveyed in February 2000 was that of Jamāl Shāh Sim, some 8.5 km. northeast of Thari. A very quick visit to the eastern shores of this lake has demonstrated that the last Mesolithic hunter-gatherers had settled this basin. A rich station was discovered along the eastern shore of the lake along the slope of a fossil dune covered with *kankar*, a cemented crust of sand grains. This pedological situation is identical to that recorded for some Mesolithic sites of the Thar Desert of Rajastan (GOUDIE, 1973: 31; HEDGE, 1977). It is a further proof that the sand dunes were already stabilized by the beginning of the Holocene, when the last hunter-gatherers settled in the region.

As already suggested by SINGH (1971) on the basis of his observations near the Shanbhar Lake in eastern Rajastan, the sand dunes that surround it were undoubtedly stabilized after 9250 BP. Given the short time at our disposal most of the finds were left *in situ* for future research. This site, labelled JS1 is rich in microlithic tools such as the backed points of Fig. 2, nn. 15 and 16.

The complete, unretouched artefacts of the assemblages collected from LS1, LS2 and PN1, have been measured in order to develop the typometrical diagrams of Fig. 5, following BAGOLINI's (1968) method. This mathematical analysis has produced very similar results for all the three assemblages taken into consideration (see table 1, below).

TABLE 1

		Sites					
		LS1 (199)		LS2 (125)		PN1 (70)	
Category	Limits	n.	%	n.	%	n.	%
	Elongation indexes						
Very narrow blades	>6	0	0.0	0	0.0	0	0.0
Narrow blades	6-3	7	3.5	3	2.4	0	0.0
Blades	3-2	19	9.5	19	15.2	7	10.0
Blade-like flakes	2-1.5	36	18.1	24	19.2	20	28.6
Flakes	1.5-1.0	72	36.2	37	29.6	18	25.7
Wide flakes	1.0-0.75	37	18.6	33	26.4	17	24.3
Very wide flakes	0.75-0.50	26	13.1	8	6.4	8	11.4
Extremely wide flakes	<0.50	2	1.0	1	0.8	0	0.0
	Dimensional indexes						
Hypermacroliths	>8	1	0.5	0	0.0	0	0.0
Macroliths	8-6	12	6.0	10	8.0	1	1.4
Normoliths	6-4	57	28.7	37	29.6	14	20.0
Microliths	4-2	119	58.3	72	57.6	49	70.0
Hypermicroliths	<2	13	6.5	6	4.8	6	8.6
	Carination indexes						
Hyperflat	>8	1	0.5	2	1.6	2	2.9
Very flat	8-4	83	41.7	53	42.4	35	50.0
Flat	4-2.5	88	44.2	52	41.6	25	37.1
Thick	2.5-2	19	9.6	10	8.0	5	7.1
Carinated	2-1.5	5	2.5	8	6.4	1	1.4
Very carinated	1.5-1	3	1.5	0	0.0	2	2.9
Hypercarinated	<1	0	0.0	0	0.0	0	0.0

All the three assemblages have produced dimensional indexes characterised by a very high percentage of microliths, followed by normoliths and by hypermicrolithis or, in the case of LS2, by macroliths. The carination indexes are always indicative of a technology with a very strong tendency towards the production of flat and very flat artefacts that, together, always represent more then 80% of the total manufacture. This pattern seems to characterise the Mesolithic assemblages of Sindh. The measurement of numerous Early and Late (Upper) Palaeolithic (BIAGI *et al.*, 1996; 1998) and Harappan assemblages (BIAGI and PESSINA, 1994; NEGRINO *et al.*, 1996) from the Rohri Hills obtained following the

same method, have revealed quite different patterns. It seems now clear that these typometrical (length/width and length-width/thickness) diagrams of the unretouched flint artefacts are extremely useful for the understanding of the chipping technique employed in the artefacts manufacture. In fact the results so far obtained from the development of these diagrams clearly demonstrate that the production technique varied period by period according to the chipping method and the necessity of obtaining unretouched artefacts of different dimension, length and thickness.

The Mesolithic sites in the Karachi area

Commander Todd was the first to recover a Mesolithic flint assemblage in the Karachi area. More precisely he found a lithic industry comprising geometrical tools, in «*the County Club Golf... ... eight miles N.N.E. of Karachi on the northern side of the road to Haidarabad, and it was on this course, close to the Lyari River, that in one small area of about fifty yards by twenty yards, one of us, (K.R.U.T.), found the artefacts... ... ... They lay on the surface of the gravel, exposed where the loess was being eroded, and were in small clusters as if made on the spot.*» (Todd and Paterson, 1947). According to these authors the «*industry is a microlithic one with a narrow blade complex, for, of 343 artifacts recovered, 191 are in blade form or portion thereof. The material is a putty-coloured, cherty flint derived from the limestones of the Habb River Hills, the same cherty flint as that employed at Mohenjo-Daro, Rohri and Sukkur, and in a very late Palaeolithic industry from the Bugti Hills*» (Todd and Paterson, 1947). In their unpublished manuscript, the two authors provide a detailed description of the flint assemblage, including observations on the technique adopted for the manufacture of blades to produce microliths. Their «*list of artefacts with percentage of the total*» included the following types (table 2):

Table 2

Type	Number	Percentage
Flakes	100	29.1
Cores	12	3.5
Blades and fragmentary blades	91	26.5
Blunted side blades	64	18.7
Blunted side blades, end worked	13	3.8
Curved back blades	8	2.3
Blunted blade burins	6	1.7
Trapezes	10	2.9
Lunates	8	2.3
Drills	5	1.5
Scrapers	8	2.3
Geometrics	4	1.2
Large blade fragments	4	1.2
Geometric backed blades	3	0.9
Points	3	0.9
«Dos rabattus»	2	0.6
Doubtful burins and one microburin	2	0.6
	343	100.0

The number and percentage of tools provided by B. ALLCHIN (1985: 132) for the same industry is quite different. In fact she reports the presence of 191 artefacts, among which are 13 blade cores, 1 flake core, 79 blade fragments and 18 geometric microliths. The number of artefacts listed and partly illustrated by the same author in a previous paper is again different since it includes 338 specimens (ALLCHIN, 1979: 198).

The flint assemblage that is now in the collections of the Quaternary Section of the British Museum does not seem to be a very homogeneous one even though it comprises a number of tools that are undoubtedly Mesolithic. Among these are six isosceles trapezes obtained from bladelets (Fig. 2, nn. 21-26), one lunate (scalene triangle?) (Fig. 2, n. 27), one backed point (Fig. 2, n. 28) and one microbladelet core (Fig. 2, n. 20). Many of the other tools are undoubtedly of later period like a few (broken) backed bladelets and truncation obtained with a semi-abrupt retouch along one side, a few straight perforators on bladelet and some larger blade cores. Two other tools, more precisely two-side scrapers on flake strongly resemble Middle Palaeolithic (?) instruments.

TODD and PATERSON (1947) also give great relevance to the occurrence of five «*blunted-side blade burins*» that they propose to call «*Karachi burin, that prior consideration will be given for, as far as we know, this is the first time it has been noted in India, or elsewhere*». Only one of these tools is now in the British Museum collections even though B. ALLCHIN (1985: 32) does not mention it in her list. It is a simple, dihedral lateral burin, on a thick blade, with one single blow from which a microbladelet has been detached. Unfortunately, the drawings that accompanied the original manuscript are no longer available with the exception of a few, original field sketches of nineteen tools, among which are the geometric tools illustrated in this note.

Another extremely important area for the Mesolithic of the Karachi region is that of the University Campus, where Professor A. R. KHAN (1979b: 64), of the Department of Geography, discovered a rich Mesolithic surface station on the Mulri Hills (site n. 12). The flint assemblage from this site, as well as from the minor ones discovered in the same area, is characterized by the abundance of microlithic geometric tools, mainly trapezes and lunates obtained with the microburin technique as well as of notched blades (KHAN, 1979a: 22).

In his excellent and almost unknown, detailed reports, KHAN (1979a; 1979b; 1979c) gives a first account of the abundance of prehistoric sites in the Karachi region, following his field observations in an area of some 40 km. of radius where over 250 prehistoric sites, from the Early Palaeolithic to the Bronze Age, have been discovered. This author (KHAN, 1979a: 18) also reports of other Mesolithic sites along the coast of Karachi, more precisely from the highest gravel terraces, some 15m high, that are capped by wind blown sand.

DISCUSSION

The research currently in progress since 1993 in the Rohri Hills and their surrounding desert region have demonstrated the existence of Mesolithic assemblages of microlithic character in the lake territory around the town of Thari, in the Thar Desert (BIAGI and

KAZI, 1995; SHAR *et al.*, 1996). Furthermore the re-examination of the old collections from the Karachi region have shown that evidence of geometrical microlithic industries, typical of the last hunter-gatherers of the Early Holocene period, are abundantly attested in this area.

It is interesting to note that until a few years ago it was suggested that Mesolithic sites in the lower Indus Valley of Sindh, had completely disappeared, buried by a thick alluvium cover (ALLCHIN *et al.*, 1978: 270; ALLCHIN R. and ALLCHIN B., 1997: 109). This opinion had most probably been expressed because of the lack of evidence of microlithic industries in the Rohri Hills of Upper Sindh (ALLCHIN, 1976: 471), that are rightly supposed to be one of the most important raw material sources of flint exploited by man in different periods of prehistory (ALLCHIN *et al.*, 1978: 273).

Nevertheless it is well known that Mesolithic assemblages, characterised by a variety of geometrical tools, are rather numerous in India as well as in the north-western part of the Subcontinent even though their typological succession and their absolute chronology is far from being clear (AGRAWAL, 1985: 64; MISRA, 1985: 121; CHAKRABARTI, 1999: 99). In effect, Mesolithic stations are well known in Rajastan, in the Indian part of the Thar Desert (GOUDIE, 1973: 31; HEDGE 1977: 173; MISRA and RAJAGURU, 1985: 300) as shown by a series of discoveries following intensive surveys and excavations in the region adjacent to the Pakistani border.

The Rajastani Mesolithic sites closest to the ones presented in this paper are those of Bagor (MISRA, 1973), Pushkar (ALLCHIN and GOUDIE, 1973), Tilwara (MISRA, 1971) and Didwana (MISRA and RAJAGURU, 1985). They all lie at the top of fossil sand dunes that produced evidence of long stratigraphical series, from the Palaeolithic upwards, with the exception of Bagor, from which only Mesolithic and later ceramic periods are reported.

As already observed for India (MISRA, 1985: 114), the Pakistani Mesolithic assemblages show a noticeable typological variability. For instance, the sites of the Karachi region have yielded many isosceles trapezoidal geometrics obtained with the microburin technique (Fig. 2, nn. 21-26), very similar to those collected from LS1 (Fig. 2, nn. 4-8), near Sāin Sim, in the Thar Desert. The microburins are extremely numerous from the sites around the Karachi University Campus (KHAN, 1979a: 12); they are also recorded from the site of LS2 (Fig. 2, nn. 12 and 13). Two other Thar Desert surface assemblages, those of Pir Nago and Jamāl Shāh Sim (Fig. 2, nn. 15, 16, 18 and 19), have produced a very small number of abrupt-retouched hypermicrobladelets and points.

Even though none of the Pakistani Mesolithic sites have so far yielded organic material suitable for radiocarbon dating, it is very probable that these assemblages represent different periods in the development of the Mesolithic of the lower Indus Valley. At present their chronology is difficult to assess given the uncertainty and variability of the available 14C dates from the neighbouring Indian sites.

Nevertheless an evolutionary sequence seems to be observable in the stratigraphy of Patne in Maharastra (SALI, 1989). Here, two main Mesolithic horizons have been recognized by the excavator in the upper layers of a fossil sand dune: the first is characterized by a flint assemblage with abrupt retouch microbladelets and points as well as hypermicrolithic triangles and lunates; the second with a few lunates, no triangles and one typical trapeze.

It is most probable that the Mesolithic assemblages discovered in Sindh, character-

ized by various types of geometrical tools, are not chronologically contemporaneous; on the contrary they might indicate different periods of settlement by the last hunter-gatherers who inhabited the region around the beginning of the Holocene.

The surveys in the Thari district were carried with the help of various members of the «Joint Rohri Hills Project» among whom Professors M. M. Kazi, G. M. Shar, G. M. Veesar and C. Baroni and Drs. F. Negrino, M. Spataro and E. Starnini.

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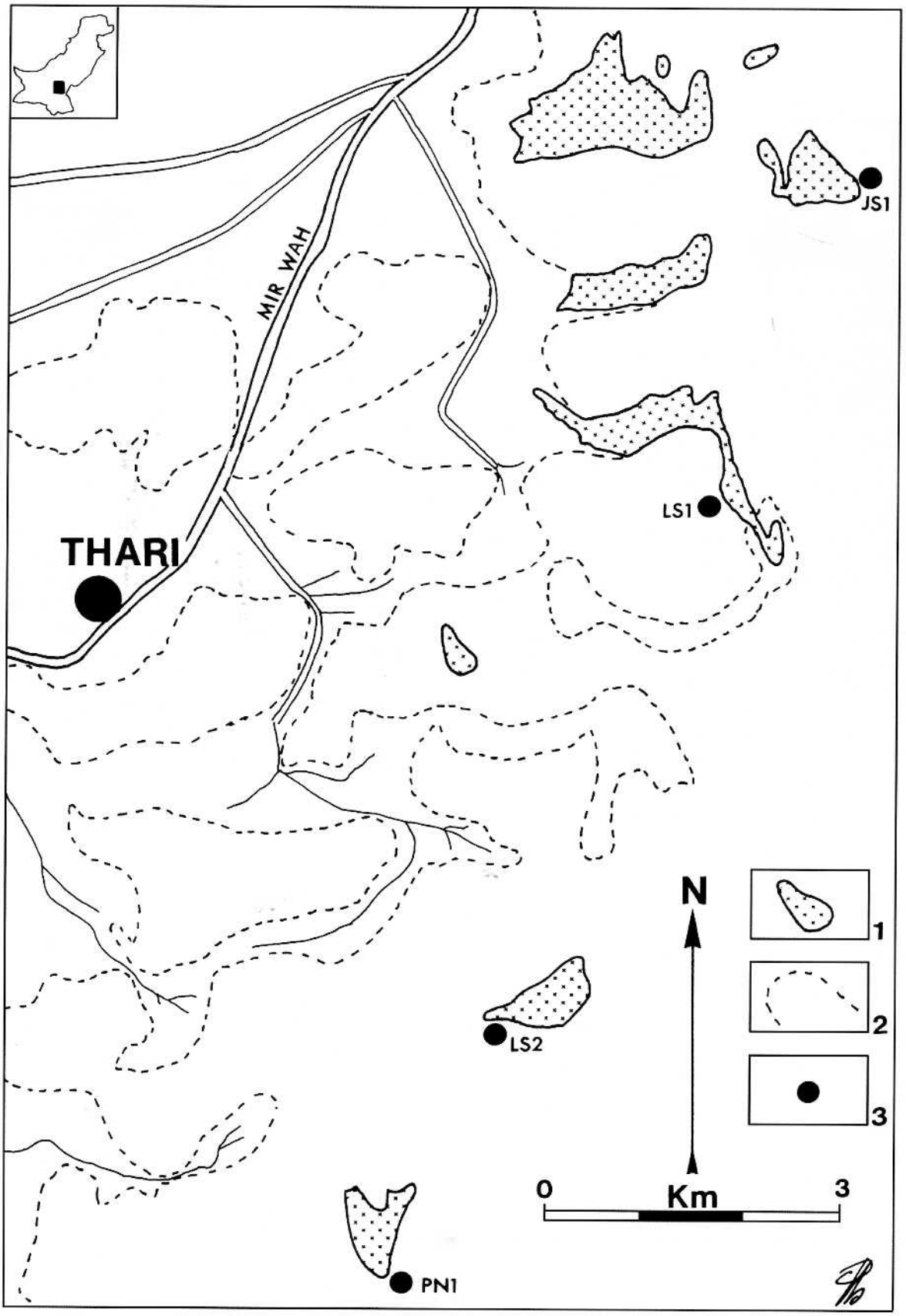


Fig. 1 – Distribution map of the Mesolithic sites so far discovered in the Thari region. 1) salt lake basins, 2) limit of the sand dunes, 3) Mesolithic sites (drawing by P. Biagi).

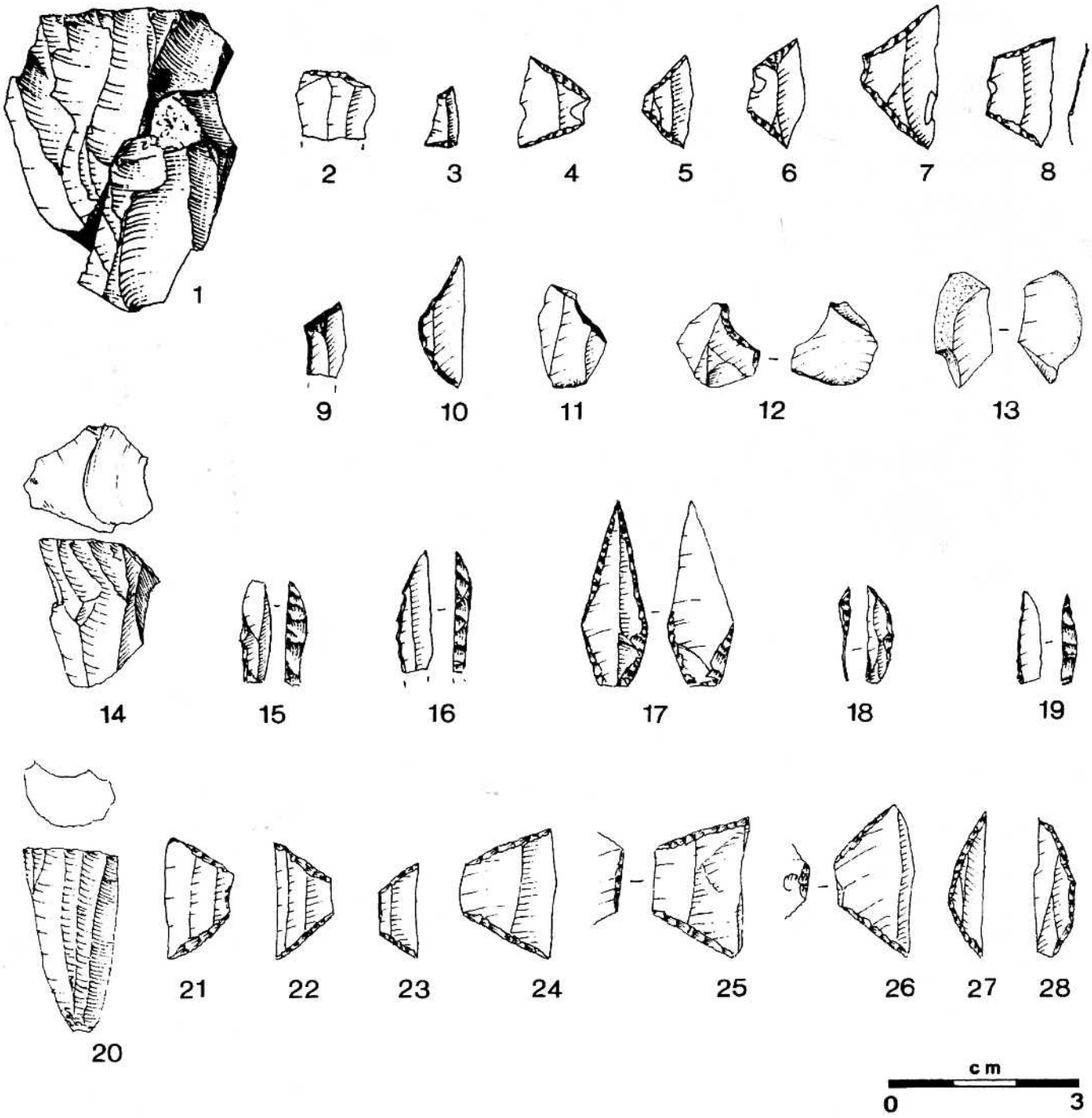
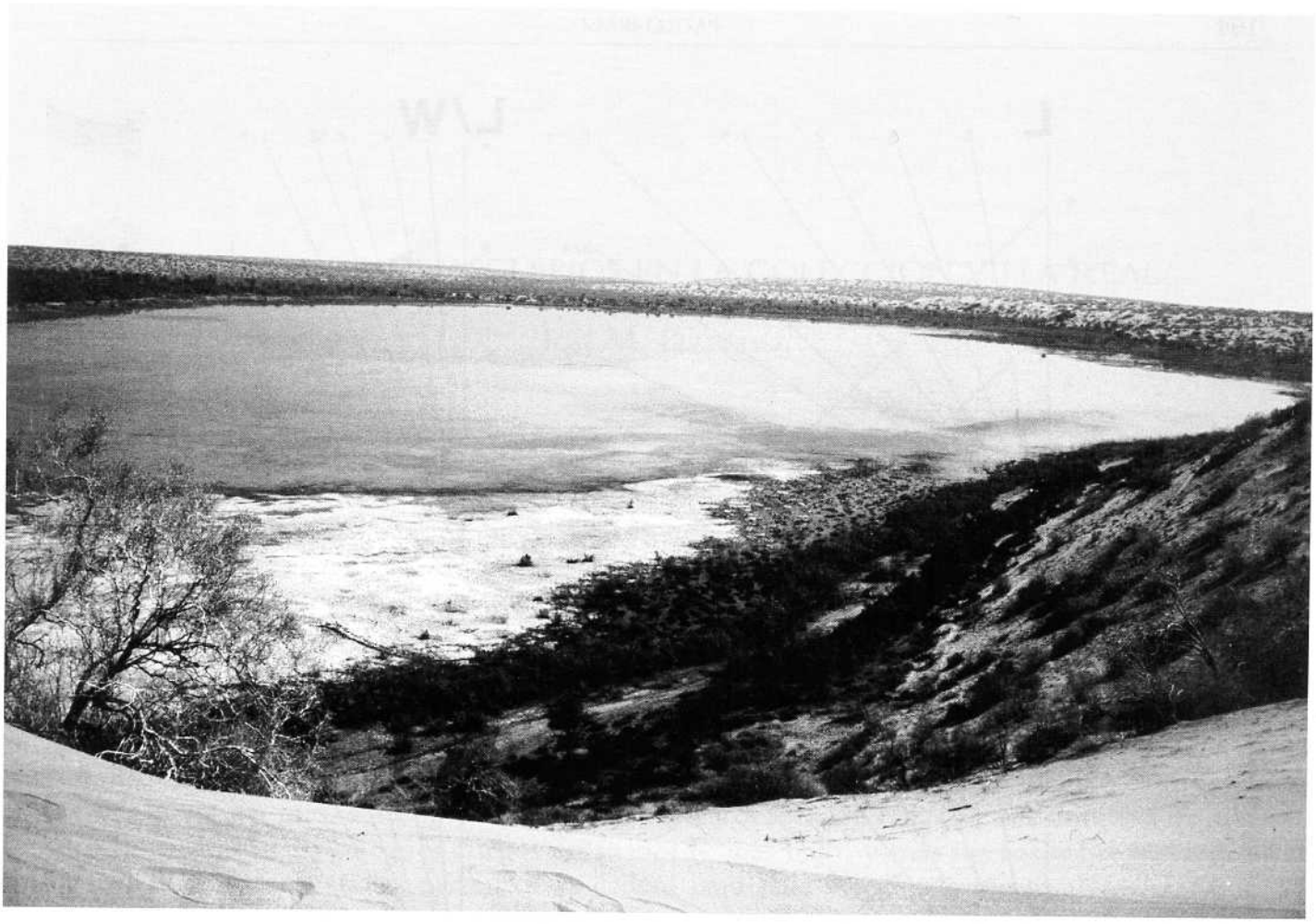


Fig. 2 – Mesolithic flint tools from Lunwāro Sim 1 (LS1) (nn. 1-8), Lunwāro Sim 2 (LS2) (nn. 9-13), Jamāl Shāh Sim (JS1) (nn. 14-16), Pir Nago (PN1) (nn. 18 and 19) and the Karachi County Golf Club (nn. 20-28). N. 17 is a flint arrowhead on bladelet from PN1 (drawings by G. Almerigogna, P. Biagi and E. Starnini).



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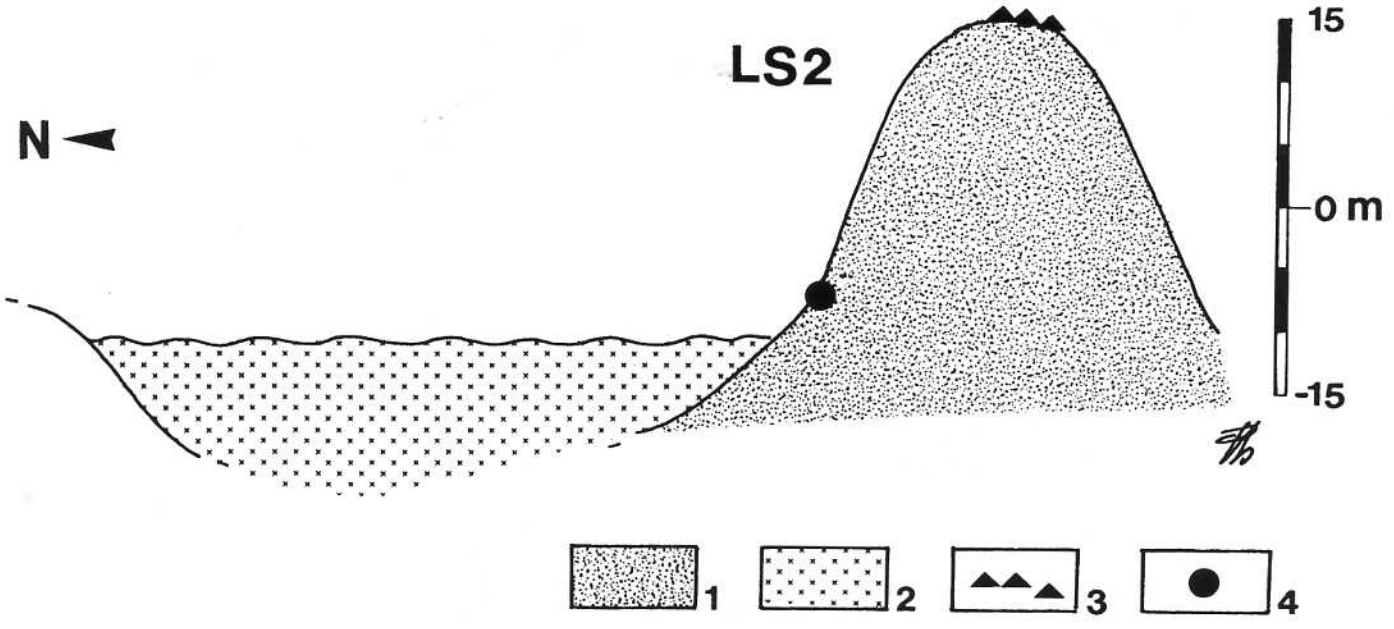

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Fig. 3 – The salt lake basin of Lunwāro Sim from site LS2 (photograph by P. Biagi). Fig. 4 – Simplified profile of Lake Lunwāro Sim. 1) stabilized sand dune, 2) lake basin, 3) Mesolithic site, 4) terrace from which the date GrN-24967 was obtained (drawing by P. Biagi).

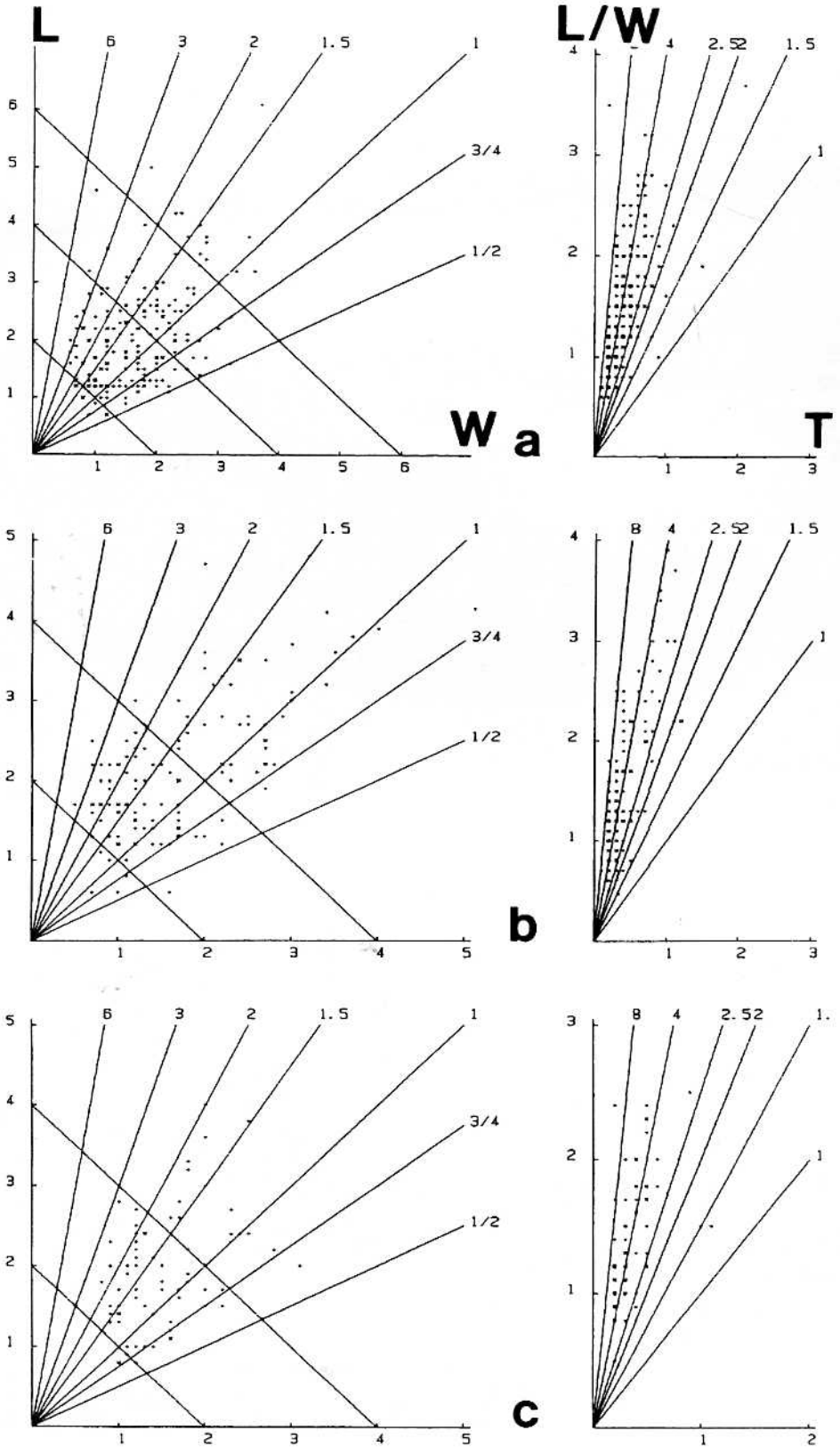

Fig. 5 – Length/width and length-width/thickness diagrams of the complete, unretouched flint artefacts from sites LS1 (a), LS2 (b) and PN1 (c).

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