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THESPROTIA EXPEDITION II
ENVIRONMENT AND SETTLEMENT PATTERNS

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Cover: Megalo Karvounari seen from the northeast. Courtesy of the 32nd Ephorate for Prehistoric and Classical Antiquities

Layout: Esko Tikkala

Contents

Mikro Karvounari in Context: The New Lithic Collection and Its Implications for Middle Palaeolithic Hunting Activities

Christina Papoulia

Introduction

This chapter deals with the new lithic collection recovered by the Thesprotia Expedition from PS 23, a *terra rossa*[1] open-air site which was identified and named by Eric Higgs as Mikro Karvounari (Fig. 1).[2] The site is situated west of the Kokytos river basin and is separated from the Karvounari village by a hill named Mavrovouni. At a walking distance from it, towards the southeast, lies its twin yet much larger *terra rossa* open-air site Megalo Karvounari.[3] Mikro Karvounari "is detached from Megalo Karvounari and separated from it by the Simitiri hills and a saddle plateau of agricultural land/fields and cowsheds".[4] Both sites have yielded a large number of Middle Palaeolithic artefacts that have been described in greater or lesser detail by successive researchers over more or less half a century of Palaeolithic research in the region.

The first lithic assemblage was collected in the course of the Higgs palaeolithic survey in western Greece in the early 1960s.[5] The lithics were later studied in detail by Papaconstantinou and Vassilopoulou[6] and Papagianni.[7] This early collection comprised a total of 144 recorded artefacts. As expected, biases regarding the collection and storage of those artefacts have been pointed out by previous researchers.[8] Due to the number of artefacts, the overall smaller size of the red bed and its proximity to the larger site of Megalo Karvounari, Mikro Karvounari has always been regarded as a small site of small importance in the mobility network of Middle Palaeolithic foragers. In Papagianni's terminology it should probably be regarded as a *stop-over point* rather than a *reference* site.[9]

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[1] *Sensu lato*.

[2] The Finnish Institute at Athens and the 32nd Ephorate for Prehistoric and Classical Antiquities kindly allowed me to study the new collection from Mikro Karvounari. I would like to thank Björn Forsén and Jeannette Forsén for their hospitality, profitable discussions and the ideal working conditions they provided, as well as Ourania Palli, Stefanos Ligkovanlis and A.T. for their either practical or psychological support during the summer of 2008, when most of the work took place. Special thanks are extended to Curtis Runnels for useful suggestions, to William Davies for constructive criticism on a much earlier stage of this study and to N.Gk and K.K. for their patience. I wish to acknowledge John McNabb for my familiarization with the analysis and interpretation of lithic collections, but not for any flaws regarding my work, and Nena Galanidou for encouraging me to study the particular material and for the initial inspiration towards Palaeolithic Archaeology. Figs. 1 and 5 were drawn by Esko Tikkala, whereas Fig. 2 was taken by Tiina Piiroinen. All other illustrations are by the author.

[3] In Greek *mikro* = small, and *megalo* = large.

[4] The Thesprotia Expedition 2005 unpublished fieldnotes.

[5] Dakaris *et al.* 1964, Higgs and Vita Finzi 1966.

[6] Papaconstantinou and Vassilopoulou 1997.

[7] Papagianni 2000.

[8] Papagianni 2000, 37, 44, 48.

[9] Papagianni 2000, 82; see also Isaac 1981 for the land use patterns.

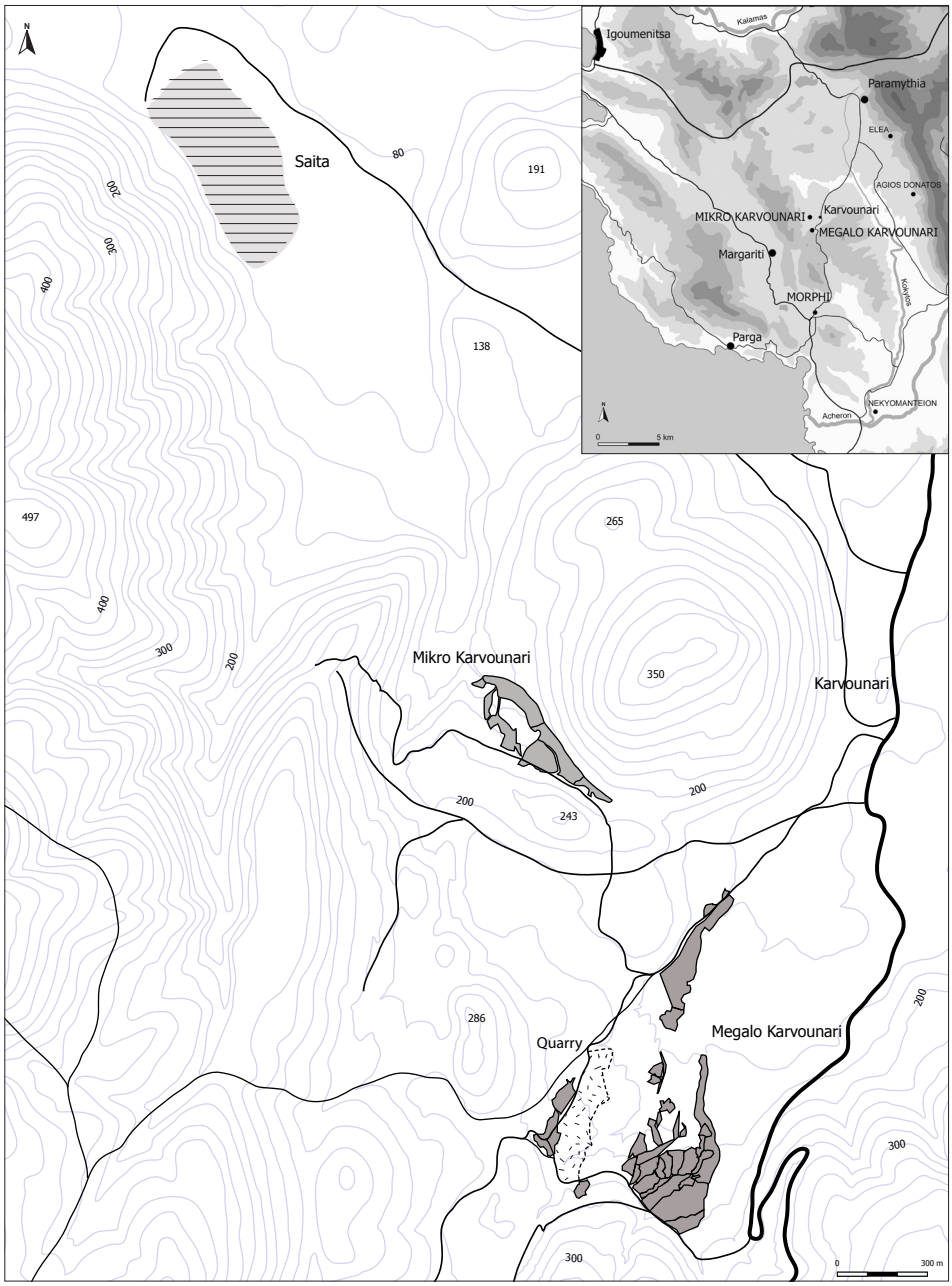

Fig. 1. Location of the Karvounari village and the twin sites of Mikro and Megalo Karvounari.

This paper presents and analyses the lithic artefacts recovered by the Thesprotia Expedition, which total 1175 specimens, and argues that Middle Palaeolithic hominids might have ascribed a more "referential" role to the particular site. It also demonstrates the diachronic exploitation of the site by Late Pleistocene and early Holocene hominids through the analysis of the post-Mousterian artefacts of the lithic collection.

Fig. 2. Panoramic view of Mikro Karvounari.

In particular, the technological, typological and metrical analysis of the new collection clearly points to a Middle Palaeolithic date; nonetheless a later component is also present, a fact not unforeseen for the open-air sites of Epirus. The interpretative attempt focuses on the behaviour and subsistence strategies of the hominid species which passed through, made use of or occupied this particular environmental niche, which today forms a geological badland (Figs. 2-3). A striking element of the assemblage recovered by the Finnish team is the high frequency of Mousterian, Levallois and pseudo-Levallois points (Fig. 4). Such a large amount of points, not often encountered in the Epirotic open-air sites, is being tested as for subsequent implications of hunting activities in the region.

Fig. 3. Inside the redbed of Mikro Karvounari.

Fig. 4. Retouched Levallois point and prepared core [not *in situ*].

Survey Methodology

The Thesprotia Expedition's survey of Mikro Karvounari took place in July 2005 and lasted for five days. A 4.14 ha red soil area was separated in seven units according to landscape and was investigated by "total vacuuming". The aim of the small group of walkers under direction of Jeannette Forsén[10] was to collect all visible knapped pieces,[11] a fact which is attested by the presence of small-size artefacts as well as some conjoining pieces. Overall, visibility was excellent

[10] Participants: Jeannette Forsén, Björn Forsén, Rauno Vaara, Nina Heiska and Tiina Piiroinen.

[11] Jeannette Forsén, pers. comm. 2008.

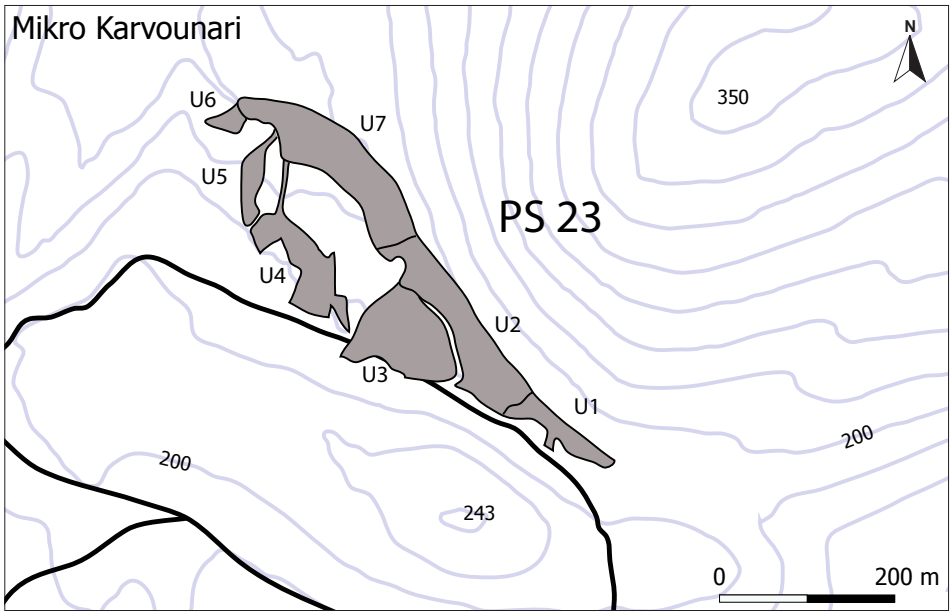

Fig. 5. Map showing the seven units of PS 23 or Mikro Karvounari.

(80%-100%) apart from restricted areas where visibility was reduced up to 5-10% due to heavy fern vegetation (*Pteridium aquilinum*), some hawthorns and oak trees. Additionally, in some parts of units 3 and 4 (Fig. 5.) very steep slopes produced by erosional processes were practically impossible to inspect.

Limitations and problems

As we are dealing with a surface collection from an open-air site, a number of problems could arise depending on the questions we address. To begin with, no stratigraphic data or absolute dates are available. What is more, the geological background of the *terra rossa* sites has been a matter of great debate regarding their history and archaeological interpretation.[12] Such a lack of chronostratigraphic data might be a great obstacle in any intention of understanding patterns of synchronicity between assemblages and sites. However, recent interdisciplinary studies conducted by the *Nikopolis Project* in the Preveza region have provided significant information about the nature and geological formation of a large number of open-air archaeological sites.[13] On the other hand, no faunal remains or palaeoanthropological material have ever been collected from *terra rossa* sites of Epirus.[14] As expected, limited research potential had been ascribed to them[15] while, as Papagianni notices, there has always been an *over-reliance* on the Asprochaliko

[12] Bailey *et al.* 1992; King and Bailey 1985; Pope *et al.* 1984; Higgs and Vita Finzi 1966.

[13] Runnels and van Andel 2003.

[14] It should be noted, however, that the site of Megalo Karvounari was revisited in 2009 when osteologist Vivi Deckwirth pointed out a fossilized animal bone. Even though this is a single specimen, the possibility of encountering organic material in such locales in the future might be considered in a more optimistic way.

[15] Bailey *et al.* 1992

rockshelter, a fact which might have been misleading in many cases. What she has argued, though, is that the study of the open-air sites has a lot to contribute as it can provide "a broader picture of industrial variability and regional adaptations than does the study of isolated rockshelters";[16] especially in Epirus, where surface collections are practically the only available Middle Palaeolithic data sets, apart from the Asprochaliko finds.[17]

The lithic collection

Methodology

"Given a particular classificatory system, it is truly hard to see beyond it."

H. Dibble and S. McPherron 2007

The new lithic collection recovered from Mikro Karvounari is a demonstration of the palimpsest nature of the site. Mousterian artefacts were found together with artefacts of a later date and will be discussed separately. A few Mesolithic cores and tools were easy to distinguish due to their morphology, technology and minor degrees of patina. However, the separation between some Middle and Upper Palaeolithic artefacts proved to be a much more demanding task. Although the different degrees of patination have been employed as a thumb-rule,[18] they have neither been the first nor the only factor of classification. A few relatively recent broken artefacts reveal the thickness of the patina which can be up to 2-3 mm (Fig.6). The complex patination process depends on various elements such as raw material and depositional context but the exact causes have not yet been fully understood.[19] Therefore, tool typology and technology were the prime factors, whereas the different degrees of patination were an auxiliary aspect to classification. A few burnt artefacts of smaller size and possibly of early Holocene date are also included, though in most of the cases it is impossible to extract significant technological and hence chronological information from them.

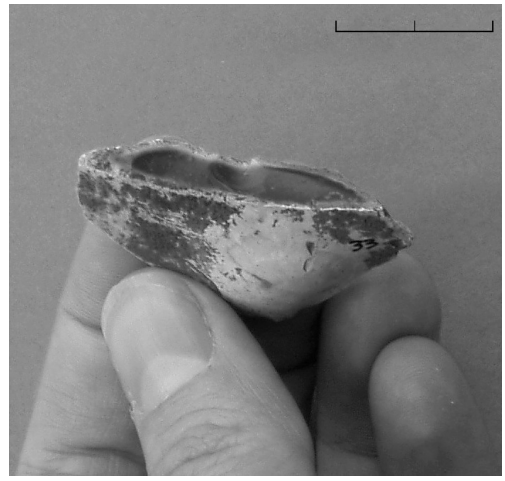

Fig. 6. Thickness of patina.

The production of blade-like elements has been identified both among blanks and cores' negative scars. During the last decade or more, it has widely been accepted that

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[16] Papagianni 1999, 131.

[17] Papaconstantinou 1988; Gowlet and Carter 1997.

[18] Patination scale: 0=no or very light patina, 1=light patina (minor colour alterations), 2=medium patina (colour still observable), 3=heavy patina (initial colour not easily defined), 4=very heavy patina (artefacts almost white due to patination), 5=extreme patina (surface almost turned into chalk).

[19] Papagianni 2000, 42; Runnels and van Andel 2003.

the presence of "blade technology" does not *a priori* suggest an Upper Palaeolithic date to the industry.[20] Indeed, McBrearty and Brooks have pointed out that for the African data, "Elongated Levallois cores […] can yield blades which are indistinguishable from those produced on the cylindrical or pyramidal cores more typical of the European Upper Palaeolithic".[21]

Thus, blade-like elements are not excluded from the Middle Palaeolithic assemblage unless they demonstrate clear Upper Palaeolithic character. For this purpose, the term *laminar* instead of *blade* has been preferred in order to make a distinction from the fine Upper Palaeolithic blades which in typological and technological terms differ from the ones encountered at Mikro Karvounari. In fact, elongation seems to play an important role in the coastal sites of Epirus as previous researches have indicated.[22] A possible cause for such a preference is the abundance of high-quality raw materials suitable for knapping along the Ionian coast.[23]

Classification of retouched artefacts inevitably follows Bordes' typology with the occasional modification by recent researchers.[24] The standardization offered by typology manuals is never sufficient to account for the variation observed in lithic collections. Consequently, although certain specimens were quite challenging in respect of their classification, the separation in too many "atypical" categories would only introduce "noise" to our discussion and make the interpretation process more problematic; thus it has been avoided. On a technological basis, Boëda's[25] principles of classification were consulted as adjusted to the Greek data.[26] The non-characteristic knapping debris has been recorded as either "flake fragment" or "core fragment". Broken unmodified flakes of less than 20x20 mm have been counted (n=62) but not further studied. There is only one whole flake (18x14x3 mm) with centripetal scars, a dihedral butt and very high degree of patination which can be securely attributed to the Middle Palaeolithic industry (Fig. 14n) and has thus been included in the analysis. The majority of the rest exhibit lower degrees of patination and might be part of the knapping debris of the later component of the site.

Raw material

Almost all artefacts are made of fine-grained flint with few inclusions. Regardless of the degree of patination, dorsal patterns and negative scars are in most cases easily defined. Although detailed analysis of the raw material is not viable due to the heavy patination present, some observations can still be made. Both core and flake analyses indicate that small flint pebbles must have been the most common raw material type, though not the only one. Such pebbles of a light blue/grey colour are still encountered in the Kokytos river basin today. At the same time, larger flint nodules and tablets have been spotted out in the vicinity, mainly of reddish/pink colour. During the 2005 field work, flint cobbles of dark grey, red and green colour were also collected by the Finnish team and a few grey tablets of less good quality flint were spotted around Megalo and Mikro Karvounari.

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[20] Bar-Yosef and Kuhn 1999; Mellars 1996.
[21] McBrearty and Brooks 2000, 492-493.
[22] Papagianni 2000.
[23] Papagianni 2000; Papaconstantinou and Vassilopoulou 1997.
[24] Bordes 1961; Debénath and Dibble 1994.
[25] Boëda 1994.
[26] Papaconstantinou 1988; Papagianni 2000.

What is interesting, though, and at the same time needs further investigation is the source of high-quality fine-grained white flint. Amongst the collected artefacts there are quite a few examples (usually of end products) of this sort; but during a fleeting examination in the area around the site, no raw material of such colour could be located. There is a possibility that by the present day no more flint of this type is deposited in the region. However, small white flint pebbles have been collected by Adam from the vicinity of Asprochaliko in the Louros Valley.[27] Thus, a possible secondary source of such kind of flint could be located in the river banks of Louros, but a primary source is yet to be identified. A suggestion that this kind of flint was brought from the Louros valley is not far-fetched, since Middle Palaeolithic foragers would travel much longer distances during a life span and so would their tools. Recent studies both of lithics[28] and palaeoanthropological material[29] suggest that such hypotheses are confirmed by the Greek data as well.

The Mousterian industry

The new lithic collection consists mainly of Middle Palaeolithic artefacts (n=978, 83.23%, Fig. 7) with high degrees of patination (grades 3, 4 and 5). Specimens of the most characteristic Mousterian types usually exhibit very high degrees of patination (grade 4 or 5) and oxidized stains due to long-term contact with the red sediments (Fig. 4). Butt types on unmodified flakes and laminar flakes are predominantly plain (31.69%), followed by facetted (23.24%), dihedral (12.67%) and marginal/linear butts (12.67%). There are also punctiform (7.05%) and cortical ones (5.6%). Only one specimen exhibits the characteristic lip of a soft hammer percussion (0.75%). A number of butts on whole flakes are absent, broken or unidentifiable (6.33%).

MP	Cores	Flakes	Lam. flakes	Tools[30]	Other[31]	Total
n	43	634	82	128	91	978
%	4.4	64.83	8.38	13.09	9.3	100

Fig. 7. The Middle Palaeolithic inventory from PS 23.

During the lithic analysis the artefacts were separated into the following technological categories according to reduction patterns.

i.Radial / centripetal group
The largest category of cores is the radial/centripetal group with a total of 16 specimens (37.2%). The majority of radial cores are lineal or recurrent centripetal Levallois

[27] Adam 1997, 483.
[28] Panagopoulou 2000, 140.
[29] Richards *et al.* 2008.
[30] Retouched artefacts, unretouched points and naturally backed knives.
[31] Unidentifiable debris and core fragments.

Fig. 8. Centripetal cores (upper row: lineal Levallois, middle row: recurrent Levallois, lineal Levallois, discoid) and Mousterian discs (lower row).

and discoids (Fig. 8). Levallois technology, mainly manifested on flakes (n=83), has been employed as in most coastal sites. Most of the radial / centripetal ones are heavily worn out into very small Levallois (Fig. 10b,e,g) or disc cores (Fig. 10c) with mean dimensions: 48.3x44.3x21.3 mm. The presence of a single lineal Levallois core with larger dimensions alters the mean measurements (Figs. 9, 11c). At roughly the same size, a large Levallois flake with facetted butt probably demonstrates a failure in the production of the preconceived form of Levallois flakes since its distal end is heavily plunged (Fig. 11d). Pseudo-Levallois points (Fig. 24j, 25d) and pointy flakes (Fig. 14f-k) have probably been produced from discoid cores. In particular, one discoid core with larger dimensions (71x62x48 mm) and a more than 50% fixed perimeter with alternate knapping sequences bears negative scars of such thin and pointy flakes (Fig.10a).

In Mellars' study[32] of the Kokkinopilos material there is a suggestion of the presence of inter-mediate cores between classic Levallois and discoids, as has been proposed by Boëda[33] as well. It has been suggested, though, that the difference between discoid and Levallois reduction methods is a difference in degree of preparation and not in concept.[34] In this study, textbook examples are rare, and in the debitage most commonly encountered are sub-centripetal scar patterns which can be produced from either recurrent centripetal Levallois or discoid cores. What is more, reconstruction of the *chaîne opératoire* by extensive refitting is practically impossible for surface collections such as the one coming from Mikro Karvounari. Hence, for comparative reasons − since studies of the Greek industries have focused on the centripetal *vs.* parallel reduction

Dimensions	Length	Width	Thickness
min.	42	35	11
mean	57	53	29.5
max.	72	71	48

Fig. 9. Metric data for the radial/centripetal cores (measurements in mm).

[32] Dakaris *et al.* 1964.
[33] Boëda 1986.
[34] Lenoir and Turq 1995. Mellars 1996, 73; see also Chazan 1997.

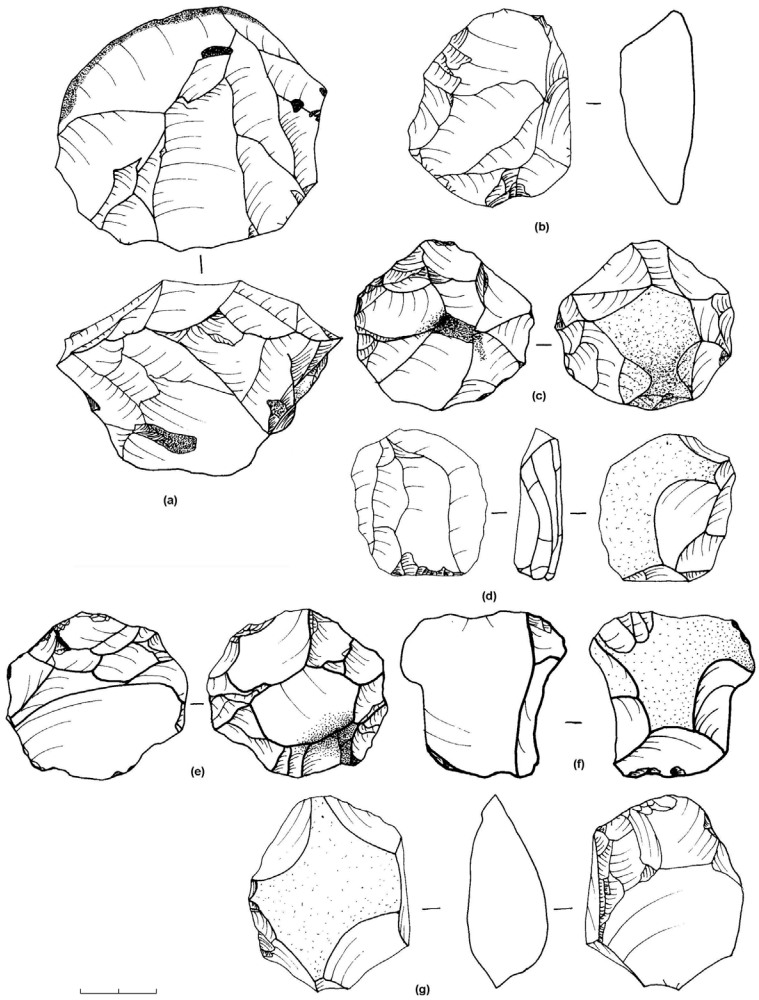

Fig. 10. Prepared cores: discoid (a, c), recurrent Levallois (b), parallel (d), lineal Levallois (e-g). Scale 1:2.

sequence[35] – it was decided to take into account the knapper's intention more than the strict morphological rules of classification. In any case, what was perhaps most important for the knapper was the production of thin yet wide flakes which could allow repeated and intense resharpening. According to Kuhn's study of the Pontinian Mousterian from Italy, such a preference is indicative of highly mobile groups of foragers, in contrast to the elongated flakes produced by the parallel reduction method.[36] Interestingly, 83 out of 633 flakes have been recorded as Levallois flakes due to their centripetal or subcentripetal dorsal scars and thickness (Fig. 15). At the same time, though, laminar flakes with parallel scars amount to a total of 82 specimens.

[35] Papagianni 2000, 40; Papaconstantinou 1988; Papaconstantinou and Vassilopoulou 1997; Gowlett and Carter 1997; Panagopoulou 2000.
[36] Kuhn 1995.

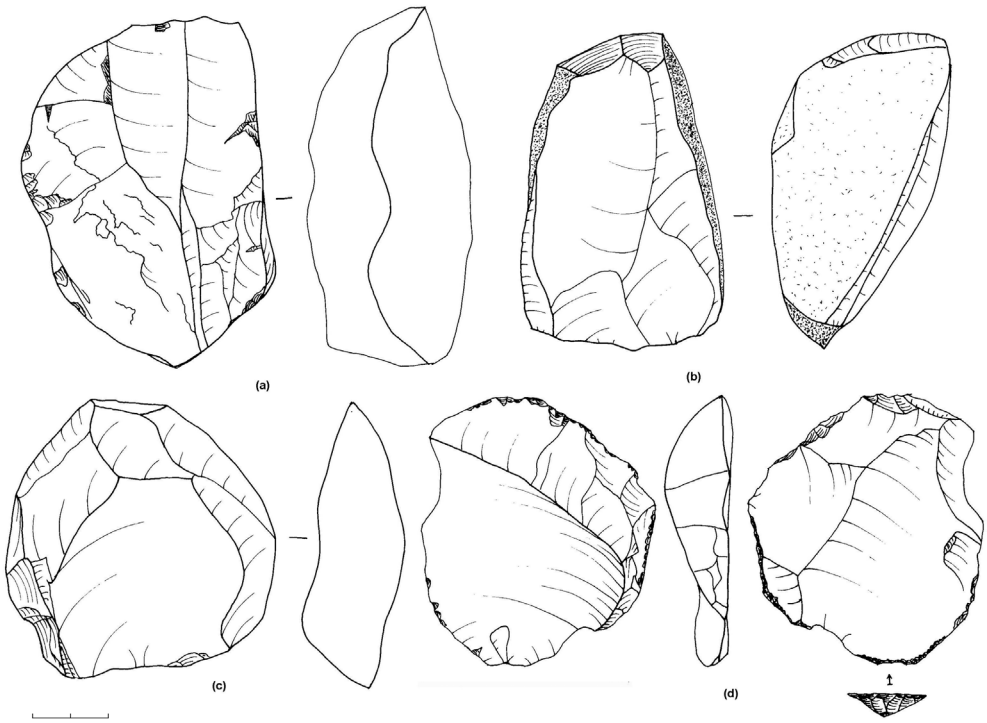

Fig. 11. Bipolar parallel cores (a,b), lineal Levallois core (c), plunging Levallois flake with facetted butt (d). Scale 1:2.

ii. Parallel / convergent group

A number of cores displaying parallel negative scars (n=9, 21%) have either one striking platform, suggesting unipolar reduction sequence, or two striking platforms, suggesting bipolar reduction sequence. Their size range is wider than the radial/centripetal cores (Fig. 12). Elongated flakes are usually the by-products of the parallel recurrent Levallois method (Fig. 16). A couple of parallel cores (Fig. 11a,b) from Mikro Karvounari resemble the technique described by Bordes and Boëda;[37] however, these seem cruder than the classic or specialized Levallois cores from Western France. Cores characterized by a prismatic cross-section are also present (Fig. 13). The kind of platform preparation and the irregular width of negative scars point to a less standardized production than the one expected from an Upper Palaeolithic context.

Laminar flakes with parallel scars on their dorsal faces often exhibit cortical or plunging distal ends (Fig. 14b,m); plunging negative scars are also observable on parallel cores (Fig. 13). A few hinge fractures are also present. These kinds of terminations are frequently interpreted as knapping accidents. However, evidence from other Middle Palaeolithic sites in Epirus supports a different approach. *Outrepassé* (=plunging) terminations are thought to be "technical pieces" created on purpose as a solution to inefficient cores.[38]

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[37] Bordes 1961; Boëda 1988.

[38] Papagianni 2000, 45: "most if not all of them would have been produced intentionally, as a way to remove

Levallois points are usually thought to be the by-products of Levallois convergent cores. However, convergent cores were encountered neither in the old nor in the new lithic collection from Mikro Karvounari. It could be assumed that such cores have perhaps been further reduced, or that points were brought to Mikro Karvounari but manufactured at a different site. Taking into account the number of Levallois points present in Epirus, and the fact that only a few convergent cores have generally been found in open-air sites,[39] the first assumption seems more plausible.

Dimensions	Length	Width	Thickness
min.	39	35	11
mean	67.5	50	28.5
max.	96	65	46

Fig. 12. Metric data for parallel cores (measurements in mm).

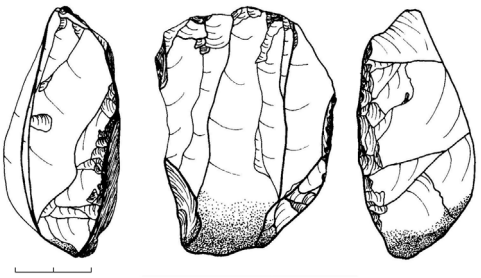

Fig. 13. Prismatic core. Scale 1:2.

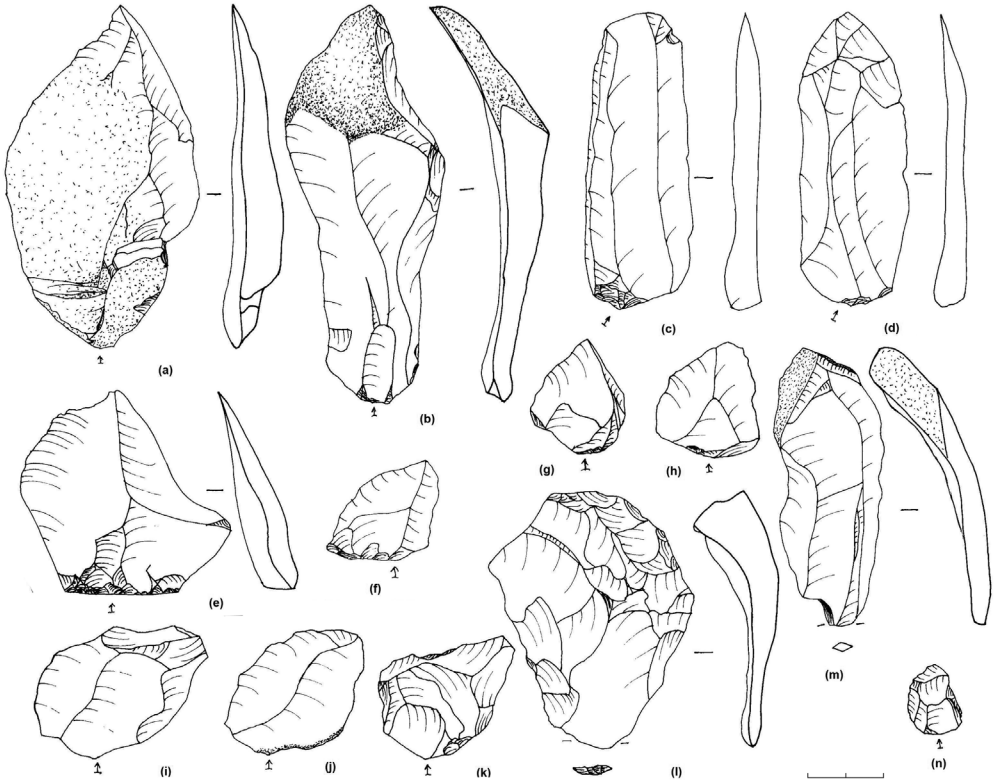

Fig. 14. Flakes (a,e,f,g,h,i,j,k), laminar flakes (c,d), plunging terminations on laminar (b,m) and centripetal (l) flakes, centripetal flake of less than 20x20 mm (n). Scale 1:2.

cortex or hinges from the distal end of the core, maintain the distal convexity of the core or even renew the striking platform".

[39] Papagianni 2000.

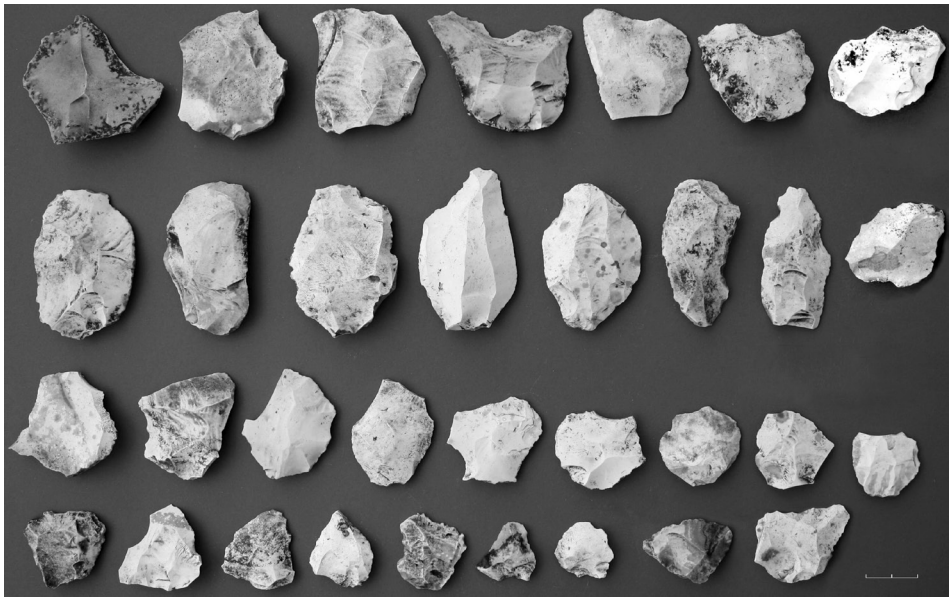

Fig. 15. Centripetal Levallois, discoid and laminar flakes.

Fig. 16. Laminar flakes.

iii. Random / opportunistic group

There is also a group of cores (n=15, 34.9%) which are characterized by a random reduction sequence. These cores can vary in size and shape (Fig. 17). The smaller ones are approximately the same size as the exhausted centripetal cores (Fig. 22f). They are

usually globular, polyhedral or shapeless and lack any kind of platform preparation. Most of them retain cortex in less than 50% of their entire periphery, while two examples do not retain any cortex at all.

Dimensions	Length	Width	Thickness
min.	33	28	18
mean	59.7	46.6	33.5
max.	99	82	60

Fig. 17. Metric data for random/opportunistic cores (measurements in mm).

Tool repertoire

A total of 128 retouched artefacts, naturally backed knives and unretouched points comprises the Middle Palaeolithic tool kit at Mikro Karvounari (Fig. 18). Scrapers are the dominant group (27.34%) and can be of various types (Fig. 19). The second most frequent group is marginally retouched flakes and laminars (21.09%) followed by denticulates (17.97%). Blanks with plain butt types are the most frequently represented among retouched artefacts (22.6%). Facetted (17.3%) and dihedral butts (15.03%) are also common. Punctiform (2.1%), cortical (1.7%) and marginal/linear (2.1%) butts are not so frequently found as in unmodified flakes. 39.8% of the butts are not present or broken.

Type	n	%
Scrapers	35	27.34
Denticulates	23	17.97
Notches	5	3.91
Retouched pieces	27	21.09
Levallois points	7	5.47
Pseudo-Levallois points	4	3.13
Mousterian points	3	2.34
Mousterian discs	6	4.69
Inverse retouch	3	2.34
Perforators/piercers/becs	3	2.34
Naturally backed knives	8	6.25
Endscrapers	2	1.56
Burins	1	0.78
Crested blades	1	0.78
Total	128	99.99

Fig. 18. Mousterian tool-kit.

Scrapers All scrapers are made on flakes of roughly the same size (mean: 45x22.5x8.5 mm), but two examples portray quite distinctive proportions. A large radial blank (63x55x15 mm) with facetted platform was selected and further modified to a scraper in the first case (fig. 22a). The second example is a laminar flake with a unipolar sub-parallel dorsal scar pattern of 86x41x15 mm size (Fig. 22e). Both examples do not retain any cortex. Such large blanks derive from larger flint nodules rather than the small pebbles discussed above. Lateral scrapers of such length, although not a common feature, have been encountered in two more sites in the greater vicinity of the Kokytos river basin. Approximately 6% of the lateral scrapers from Megalo Karvounari are 100 mm long, whereas at Morphi there is a higher relative frequency of elongated lateral scrapers.[40] One more example belongs to this category and forms a natural back. The proximal end

Scrapers	n	Straight	Convex	Concave	Straight-convex	Convex-concave
Single	18	*	*			
Double	7	*	*		*	*
Déjeté	4		*		*	
Transverse	6	*				

Fig. 19. Middle Palaeolithic scraper types.

[40] Papagianni 2000, 132, fig. 6.28.

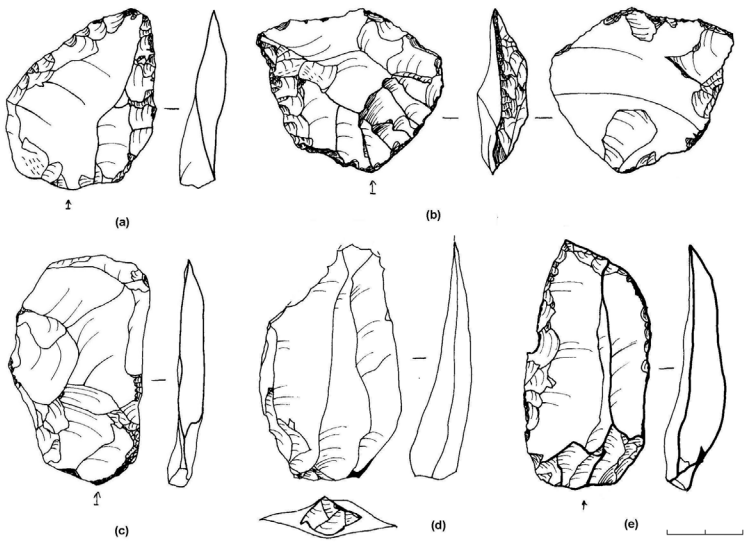

Fig. 20. Retouched tools and flakes: déjeté scrapers (a,e), inversely retouched flake [truncated facetted piece] (b), centripetal (c) and unipolar parallel (d) flakes. Scale 1:2.

is broken, a fact which potentially extends the initial length of the flake (58x52x8 mm, Fig. 22b). A few lateral scrapers are made on parallel, partially cortical blanks that form a natural back (Fig. 21a,b, 24f). This comes as no surprise since natural backs are a common feature among coastal sites, especially the ones near the Kokytos river basin (e.g. Megalo Karvounari, Morphi).[41]

Denticulates and notches Artefacts belonging to this group are frequently produced in a very opportunistic way. Denticulates average 36x30.5x9 mm in size and notches average 39x26.5x7.5 mm. No particular pattern between reduction sequences and selection of blanks for further retouch is observed; both radial/centripetal and parallel/convergent technological categories are represented. In some instances, denticulation might as well be a result of heavy utilization. There is also one flake with Clactonian notch. This category of tools probably served as general, multifunctional tools (Figs. 21e,f, 23a,c, 24e).

Points The lithic collection from Mikro Karvounari includes a large amount of points (n=14). There are a number of Levallois (n=3) and pseudo-Levallois points (n=4) some of which have been further retouched. There is also a refined example of a tanged Mousterian point and two elongated ones. Some broken proximal ends of Levallois points or tips of points have also been recorded (n=4). Besides, there are some "atypical" points or perforators, with proximal modification, whose sharp tips might have facilitated penetrating the animal hide (Fig. 24b).

A number of points exhibit proximal retouch, impact fractures or bulbar thinning (Fig. 25). In all probability these specimens served as hafted tools. European, African and Near Eastern archaeological data suggest the use of spears since at least the early Middle Palaeolithic or Middle Stone Age, if not earlier. Archaeological evidence from northwestern Europe imply that *Homo heidelbergensis* was capable of hunting large

[41] Papagianni 2000, 132.

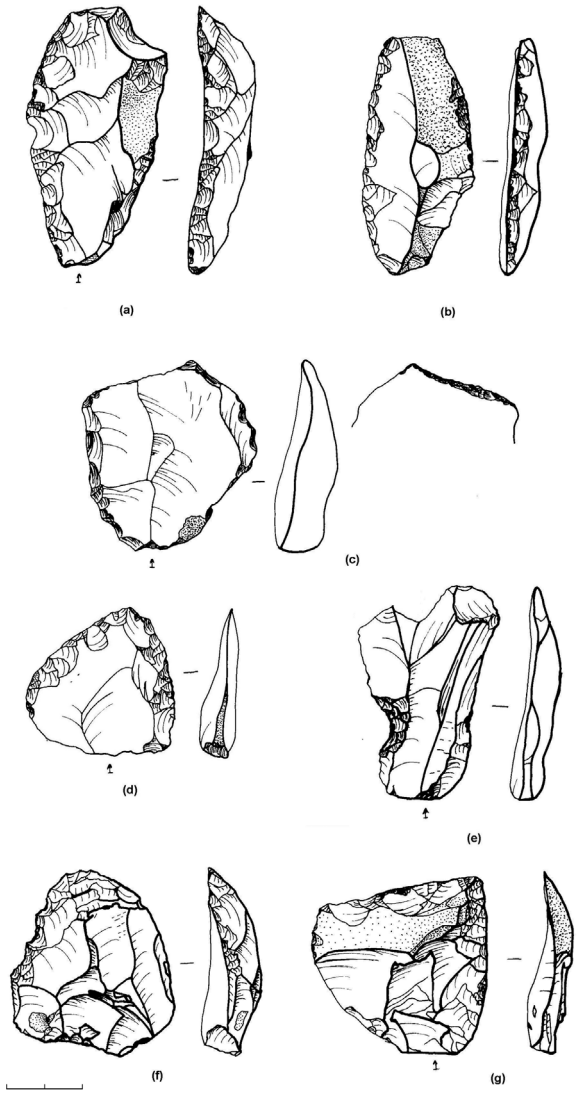

Fig. 21. Retouched tools: single scraper and notch (a), single scraper(b), bec (c), déjeté scrapers (d, g), notch (e), denticulate (f). Scale 1:2.

mammals – such as horses and elephants – from a distance using wooden spears. According to radiocarbon dates several spears date back to 400,000 BP.[42] There is a possibility for some of the points discussed here to have been manufactured by Middle Palaeolithic foragers, most probably *Homo neanderthalensis*, with the intention to arm either thrusting or throwing spears.[43]

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[42] For the wooden spears from Schöningen and Lehringen in Germany, see Thieme and Veil 1985, Veil and Plisson 1990, Thieme 1997, Thieme 2005 and Thieme 2000 as cited in Villa and Lenoir 2009. For the Clacton spear point from the UK, see Oakley *at al.* 1977.

[43] See Sisk and Shea 2009 for experimental study on Levallois points.

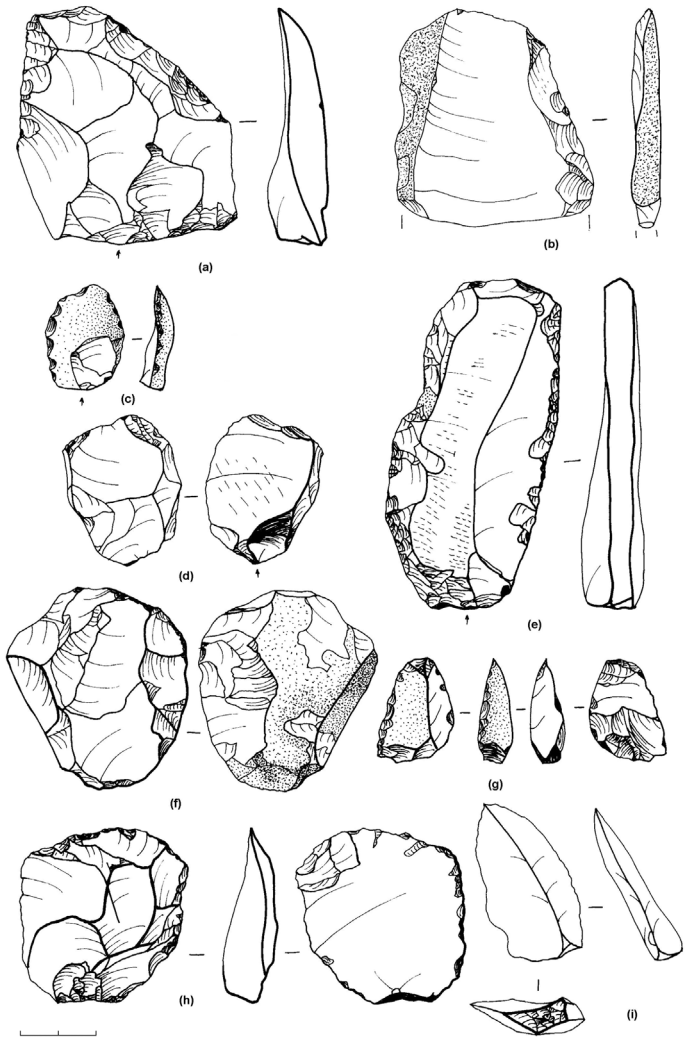

Fig. 22. Lateral scrapers (a,b,e), retouched cortical flake / raclette(c), core on a flake (d), globular core (f), inverse retouch (g,h)[truncated facetted pieces], flake with facetted butt (l). Scale 1:2.

Miscellaneous There are three typical examples of *Mousterian discs* (Fig. 26a-c) with mean dimensions 42x39.7x11 mm. Two more specimens could perhaps be classified as such, though their asymmetrical perimeter and the irregular cortex coverage would probably make them "atypical". These two specimens (Fig. 26e,f) are a bit smaller but thicker in size (mean: 37x34.5x14 mm). There is also a bifacially worked specimen which retains no cortex, and resembles the retouch encountered at leafpoints, but due to its shape and form it should probably be regarded as a bifacially worked Mousterian disc (37x38x12 mm). Such specimens should most likely be interpreted as exhausted centripetal cores which at their final stages had produced extremely small flakes. A few specimens exhibit *inverse retouch* (Fig. 24e, 22g,h, 20b), certain of which could be

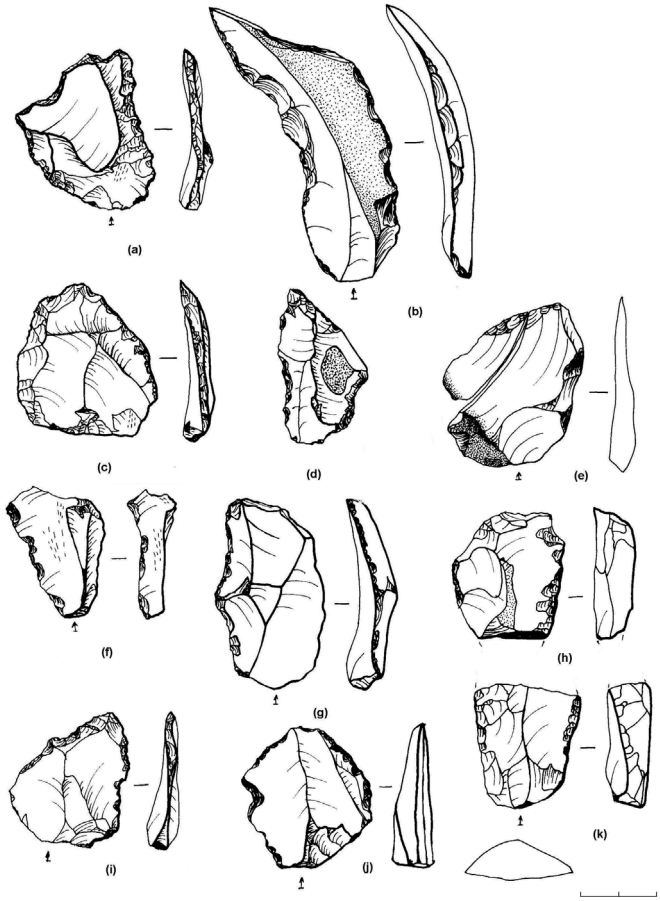

Fig. 23. Retouched tools: denticulates (a,c), piercers and denticulates (b,d), retouched pseudo-Levallois points (e,i), retouched flakes (f,g,j), single scraper (h), double scraper (k). Scale 1:2.

also classified, according to Dibble and McPherron, as *truncated-faceted pieces*.[44] Both Mousterian discs and perhaps truncated-facetted pieces as well, served as cores whose by-products were flakes of small dimensions. Thus it should be accepted that Mousterian industries included small-scale flakes not as unwanted debris but as intentionally knapped pieces.

Upper Palaeolithic types The Upper Palaeolithic tool types[45] are represented by two perforators or *piercers* (Figs. 23b,24b), one *bec* (Fig. 21c) and four more specimens; two *endscrapers*, one double *burin* and a *crested blade* (Fig. 27). The double burin has been produced on a large blank of 81x29x20 mm size. The distal end of a snapped laminar flake has been turned into an endscraper by means of invasive, stepped retouch. The only crested blade present is an indication of a particular type of core preparation rather than

[44] Dibble and McPherron 2007.
[45] Sensu Bordes 1961; Debénath and Dibble 1994.

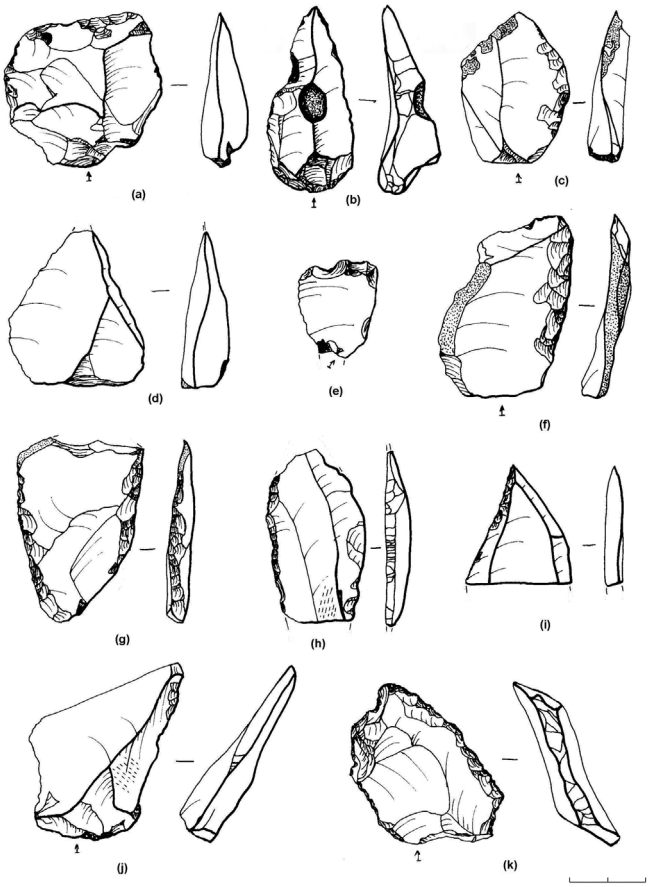

Fig. 24. Retouched tools: retouched flake (a), notched point/piercer (b), single scraper (c, h), broken point (d), inversely notched piece (e), scraper with natural back (f), double scraper (g), retouched tip of a point (i), retouched pseudo-Levallois point (j), transverse scraper and denticulate (k). Scale 1:2.

a tool by itself. Crested blades are characteristic of later periods when prismatic core preparation becomes more standardized with the objective of producing thin, elongated blades. Burins, on the other hand, are tools made by the removal of burin spalls. Burin spalls are the debris whereas the sharp angle created by their removal was probably used for the preparation of organic material such as bone and antler. Such activities have traditionally been associated with the Upper Palaeolithic and the emergence of modern humans; however, a number of recent studies have proved that this is not the case.[46] Finally, the high frequency of *naturally backed knives* (n=8) is a common feature among the coastal sites of Epirus and is probably related to the use of small pebbles as raw material.[47]

[46] See for example McBrearty and Brooks 2000.
[47] Papagianni 2000.

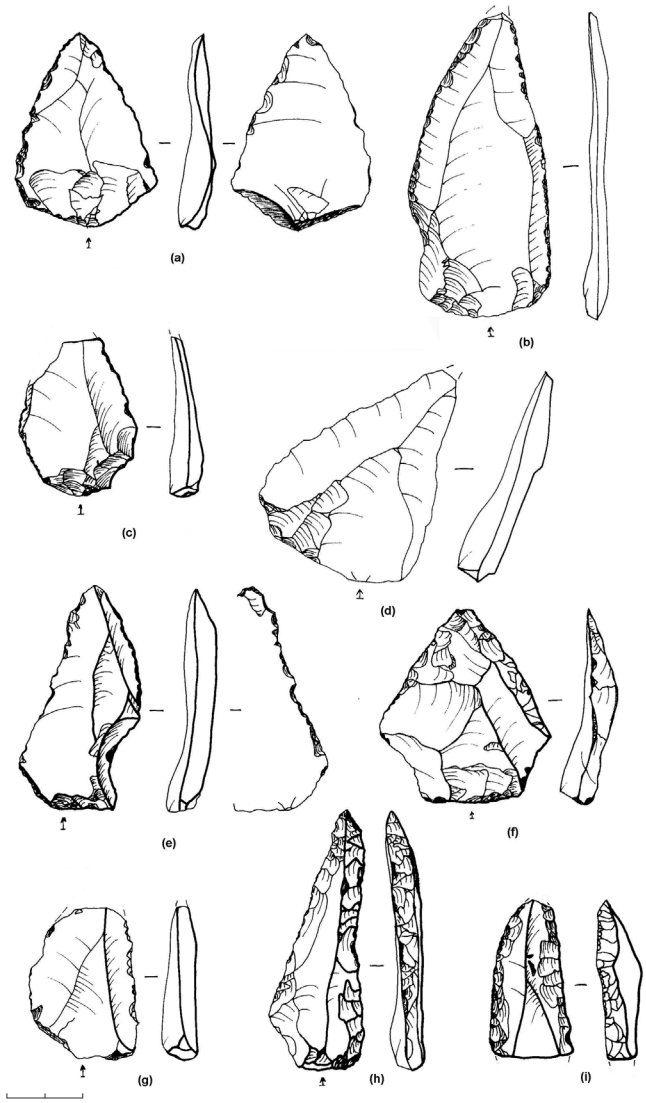

Fig. 25. Points: retouched Levallois points (a,b,e), broken Levallois points (c,g), pseudo-Levallois point (d), tanged Mousterian point (f), elongated Mousterian points (h,i). Scale 1:2.

Chronological patterns

"'Contemporaneity' is an arbitrary concept with no absolute measure"

Bailey 2007

In 1966, Higgs and Vita Finzi proposed a model of chronological division for the surface lithic collections of Epirus in relation to the altitude of the sites.[48] The site of "Karvounari"[49] was included in the *low level industries* as was Morphi and Kokkinopilos. On the other

[48] Higgs and Vita Finzi 1966.

[49] They were probably referring to Megalo Karvounari.

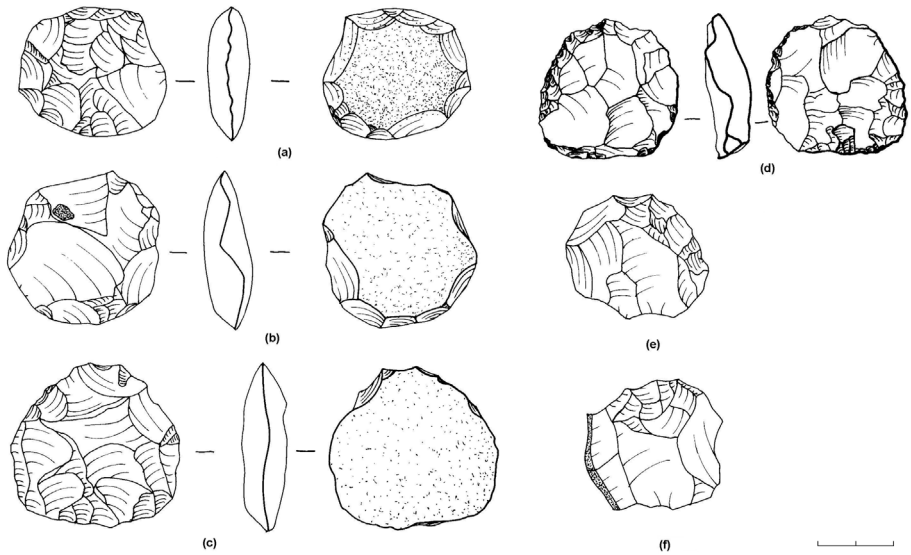

Fig. 26. Mousterian discs (a,b,c), small centripetal cores classified as Mousterian discs (e,f), bifacially retouched Mousterian disc (d). Scale 1:2.

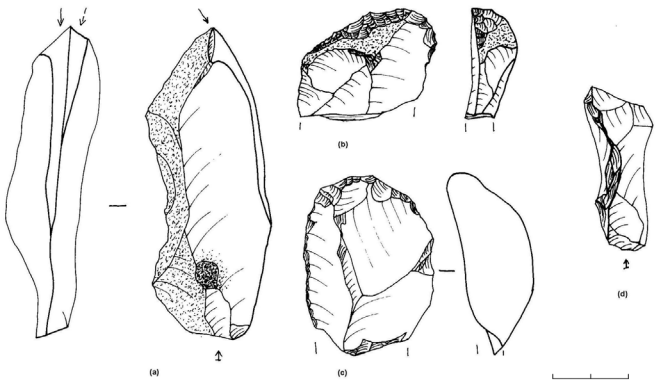

Fig. 27. Upper Palaeolithic types: burin (a), endscrapers (b,c), crested blade (d). Scale 1:2.

hand, *high level* industries were identified "in patches high up on the hillsides".[50] Artefact size and typology were the factors for the division, which was later challenged by a new pattern. Instead of altitude, proximity to the sea was the new aspect for division.[51] Mikro Karvounari was included in the coastal sites, together with Megalo Karvounari, Morphi and a few more sites near the Ionian coast. Coastal sites, in contrast to the Louros Valley sites, are dominated by the regular use of the Levallois technique and the production of thin, elongated flakes and blades. As expected, both patterns were in accordance with

[50] Higgs and Vita Finzi 1966, 5.
[51] Papaconstantinou and Vassilopoulou 1997; see also Bailey *et al.* 1992.

the Asprochaliko division between *basal Mousterian* and *upper Mousterian*.[52] Affinities between the basal Mousterian of Asprochaliko and Mikro Karvounari, as part of the coastal sites, were proposed.[53]

Indeed, in the new collection from Mikro Karvounari, the "big blade element"[54] of the basal Mousterian is present, as is the use of Levallois technology with the aim of producing elongated flakes (Fig. 16). At the same time, an aim of producing small, pointy flakes (Fig. 15) is present and probably related to the discoid cores. At the basal Mousterian levels of Asprochaliko such an aim was also detected.[55] However, pseudo-Levallois points are usually associated with the upper Mousterian and the "Asprochaliko flakes".[56] Nonetheless, 25 pseudo-Levallois points were found at the basal Mousterian levels as well. These might have either been produced by the same method or not, and it is not yet clear if they are intrusive.[57] Although a couple of small cores on flakes (Fig. 22) are present in the lithic collection from Mikro Karvounari, an association with the characteristic "Asprochaliko method" cannot be proposed. Furthermore, a large amount of Mousterian points and lateral scrapers were found in the upper Mousterian levels of the rockshelter.

It is evident that the Asprochaliko stratigraphic context cannot provide a clear-cut pattern for the chronological subdivision of the Mousterian industry from Mikro Karvounari. Both phases are probably represented but impossible to separate. What is totally lacking from Mikro Karvounari is the bifacial element in means of bifaces and bifacial leafpoints. The only open-air site with the whole range of technological and typological variability is Kokkinopilos, a major red bed deposit at the Louros Valley.

In the natural borders between Epirus and Thessalia, at the foot of the Chasia mountains, lies a recently excavated cave with Middle Palaeolithic deposits, Theopetra. Three chronological subdivisions of the Middle Palaeolithic industry have been proposed.[58] Affinities with Mikro Karvounari can be observed in the middle Mousterian layers due to the presence of a number of Levallois points and the extensive use of recurrent Levallois cores. At the same time, the upper Mousterian levels contain bipolar cores, also present at Mikro Karvounari, though at lower frequencies. Mousterian points are present both in the middle and upper Mousterian levels of the cave dated to between 46 to 35 ka BP.[59] The absence of Quina scrapers from Mikro Karvounari does not allow any association with the lower levels of the cave, since, according to Panagopoulou, "Quina" is the characteristic element of these earlier deposits.[60]

On the other hand, Mousterian technology, especially when compared to the Upper Palaeolithic industries, seems to be unaltered through time. Many researchers have focused on the "static" nature of Middle Palaeolithic industries and their significance as far as mental abilities and adaptation skills of Middle Palaeolithic foragers are

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[52] Gowlet and Carter 1997; Papaconstantinou 1988.
[53] Papaconstantinou and Vassilopoulou 1997, 479.
[54] Gowlett and Carter 1997, 448-449.
[55] Gowlett and Carter 1997, 448.
[56] Papaconstantinou and Vassilopoulou 1997, 463, fig. 47.
[57] Gowlett and Carter 1997, 450; Papagianni 2000, 28.
[58] Panagopoulou 2000.
[59] Panagopoulou 2000; Valladas *et al.* 2007.
[60] Panagopoulou 2000.

concerned.[61] In the open-air sites of the Preveza region, chronologically separated sites have typologically and technologically similar tools.[62] Consequently, although it is useful to observe affinities in different assemblages, it would be extremely speculative to propose a detailed chronological scheme for the surface collection from Mikro Karvounari based on the excavated data sets. What will be attempted, though, is the appreciation of the behaviour and subsistence strategies of Middle Palaeolithic foragers to the degree which the lithics at hand permit. Although limited palaeoanthropological information comes from the Greek sites, it has widely been accepted that the species who manufactured and utilized Mousterian assemblages in the Balkans and Greece was *Homo neanderthalensis*.[63]

Neanderthal subsistence patterns in the Kokytos river basin

> "In this world of few rivers and fewer floodplains, poljes and loutses were the principal source of water for aquatic life, birds, and mammals including large herbivores and vegetation that could also supply many human subsistence needs throughout the year or in the long dry seasons of the last pleniglacial"
>
> *van Andel 1998*

Rapid climatic oscillations were the norm for Middle Palaeolithic foragers. Thus, *Homo neanderthalensis* needed to be able to adapt in a constantly altering environment. Mikro Karvounari is today one of the many featureless, infertile areas of Epirus which are regarded as badlands and occasionally used only as grazing territory. However, during the Palaeolithic, these landscapes were very attractive for the groups of foragers.[64] The water resources with their rich vegetation would attract both animals and hominids, especially in periods when climatic and environmental pressures were higher. Although in warmer episodes both faunal and floral resources would be available, in the multiple colder episodes the exploitation of animal resources would be the only means of subsistence.[65] Hunting as well as scavenging have been proposed as the main subsistence strategies employed by Neanderthal groups.[66] Various studies have put emphasis on one of the two strategies; however, what seems more probable is the combination of the two methods depending on environmental stress.[67]

Although no faunal remains are available from the study area, an examination of the European Middle Palaeolithic record and the evidence coming from excavated caves in Greece can give us a picture of the faunal preferences of Middle Palaeolithic hominids. In particular, medium and large herbivores such as cervids, equids and bovids were their prime prey species.[68] European data associate Neanderthals with smaller prey such as reptiles or shellfish, a fact which shows little differentiation from the Upper

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[61] See Dibble and Mellars 1992.
[62] Runnels and van Andel 2003; Papagianni 2000; Papagianni 2008.
[63] Harvati *et al.* 2009; Galanidou 2004; Gowlett 1999.
[64] Runnels 1995, 712; van Andel 1998, Runnels and van Andel 2003.
[65] See Winder 1997.
[66] See Villa and Renoir 2009, 60 for discussion on this issue; Kuhn and Stiner 2006, 956.
[67] Villa and Renoir 2009.
[68] Mellars 1996, 193-244.

	LP	MP and RLP	P-LP
Megalo Karvounari	2	0	4
Mikro Karvounari[75]	(1+3) 4	(0+7) 7	(0+4) 4
Agia	0	0	3
Morphi	4	1	0
Kokkinopilos	7	13	16
Stephani	0	0	1
Gortses[76]	0	2	0
Iliovouni	1	0	0
Alonaki SS92-2	1	0	0
Melission new gorge	1	0	0
Tsepelovon fan	1	0	0
Ormos Odysseos	1	0	0
Sampsous	1	0	0
Skepasto	2	0	0
Argyrades	2	0	5
Strogia	1	0	0

Fig. 28. Frequencies of points in the Epirotic open-air sites. LP = Levallois point, MP = Mousterian point, RLP = Retouched LP, P-LP = pseudo-Levallois point

Palaeolithic preferences.[69] In Epirus, the Mousterian levels of Asprochaliko were associated with extinct megafauna such as rhinoceros, aurochs, bison, buffalo, antelope and wild horse together with chamois, deer and small vertebrates.[70]

How important was Mikro Karvounari in the Neanderthal subsistence map of northwestern Greece? What has already been mentioned about the new lithic collection is the presence of an unusual amount of points. According to Villa and Renoir, "the impression of low frequency of points in the Mousterian assemblages is at least in part due to different ways of counting artefacts".[71] However, excluding the pseudo-Levallois and "atypical" points, still, a large number of Levallois and Mousterian points – which are presented in Fig. 25 – cannot but imply hunting activity. What is more, points are also present at the neighbouring sites of Megalo Karvounari and Morphi. Such a concentration of hunting tools towards the Kokytos river basin supports a hypothesis of intensive or repeated episodes of hunting activities in the region. Both sites of Megalo Karvounari and Morphi are situated on the road connecting the Kokytos valley with *Lake Kalodiki*, a large lake in the Preveza region which is still today rich in faunal and floral resources. It is probable that these sites were attractive to herds of mammals since Palaeolithic times.

Kokkinopilos, situated at the Louros Valley, is the only open-air site with such a high concentration of points. Fig. 28 presents the frequencies of points in open-air sites of Epirus and Kerkyra (Corfu) collected by four different archaeological survey projects.[72] During most of the Middle Palaeolithic period, Kerkyra was connented to mainland Epirus due to sea level changes.[73] Apart from the data included in Fig. 28, it should be noted that Levallois points were found in a few more sites, although the exact number is unknown. These sites are Anavatis quarry, Loutsa SS94-12, Agios Thomas and Chilia Spitia.[74] Mousterian points were also found at Loutsa SS94-12, Eli, at several places on

[69] Stiner 1993 and Zilhao 2006 as cited in Villa and Lenoir 2009.
[70] Higgs and Vita Finzi 1966.
[71] Villa and Lenoir 2009, 71.
[72] Dakaris *et al.* 1964; Bailey *et al.* 1997; Runnels and van Andel 2003; Papagianni 2000; Elefanti *et al.* 2009.
[73] Runnels and van Andel 2003; Papagianni 2000, 22.
[74] Elefanti *et al.* 2009.
[75] Old + new collection total.
[76] The exact location of Gortses site is unknown, but it should be located in the Louros Valley within the area of Asprochaliko. See Papagianni 2000, 64.

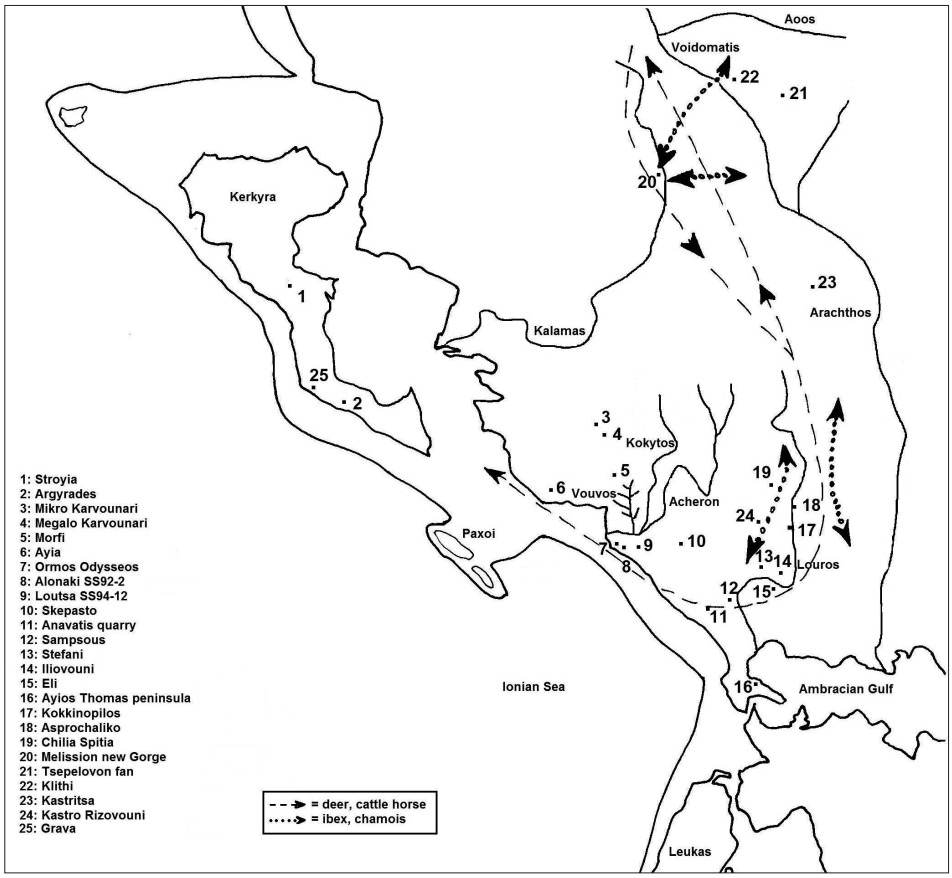

Fig. 29. Locations of open-air sites with Levallois and Mousterian points. Rock shelters and caves of the region as well as migration animal routes are also marked. (After Sturdy *et al.* 1997; Papagianni 1999; Runnels and van Andel 2003.)

the Agios Thomas peninsula (up to five points recorded), on the Ambracian Gulf and at Kastro Rizovouni. These stray finds were interpreted by Runnels and van Andel as "clear evidence of off-site human activity, probably representing hunting losses".[77]

In respect of the mobility patterns of the modern Sarakatsani groups, Higgs' team proposed a palaeoenvironmental model according to which Upper Palaeolithic foragers would follow the herds of the migrating megafauna.[78] This model was further developed by Bailey's team. A logistic residential mobility pattern was proposed in this case.[79] Fig. 29 indicates the sites of northwestern Greece where Middle Palaeolithic points have been found, while the migration routes of large herbivores have been drawn according to this later model.[80] It is not unfeasible to imagine a similar pattern for Middle Palaeolithic

[77] Runnels and van Andel 2003, 113
[78] Higgs and Vita Finzi 1966.
[79] Bailey *et al.* 1993.
[80] Sturdy *et al.* 1997, 610, fig. 30.25.

foragers as well.[81] Since a detailed palaeoenvironmental and faunal record is required but absent, the previous assumption is rather a future working hypothesis than a proper theory. Besides, it has been argued that: "Even though our knowledge about hunting in pre-Upper Palaeolithic contexts is very limited, it is beginning to be apparent that there are more similarities than dissimilarities in the faunal record, reflecting hominid subsistence patterns during the Middle and Upper Palaeolithic".[82]

In short, what can be assumed is that different groups of Middle Palaeolithic foragers were attracted to Mikro Karvounari. Roebroeks has pointed out that the most important tool for Middle Palaeolithic foragers was the "extensive knowledge of a wide range of animal behaviour".[83] The site of Mikro Karvounari is located on the route leading to the polje of Saita which is also today a small seasonal lake (Fig. 1). Thus, it seems possible for animal herds to have moved from the area of the Kokytos river valley, and perhaps its seasonal lake *Nerotopos*, towards Saita through the red bed of Mikro Karvounari. In a logistic pattern, Middle Palaeolithic foragers would move through the landscape 'knowing' their prey's migration routes. Additionally, as far as hunting is concerned, perhaps the site's terrain composed natural traps for the herds of small, medium or even large-size mammals. Interestingly, most of the Levallois and retouched Levallois points (n=4) have been collected from Unit 1, where at the same time is the entrance to the red bed through a relatively narrow path between two hills (Figs. 1, 5).

Did the site of Mikro Karvounari serve only as a hunting stand, then? It seems unlikely, as a large amount of knapping debris, cores and flakes has also been found, together with a large number of scrapers and a variety of other multipurpose tools. Several activities such as stone tool manufacture or resharpening, cutting and scraping of meat and hides, consumption of herbivore meat and marrow, in addition to preparation of wood and antler probably took place at the site. As stated by Runnels and van Andel, Middle Palaeolithic camps of the Preveza region were situated "along the margins of the poljes partly to be on well-drained ground and partly to avoid scaring off the game".[84] In accordance with the lithics, it might be equally possible for Mikro Karvounari to have served as a temporary camp site and a hunting stand too.

Later Component

A later component is also present at Mikro Karvounari. In particular, a concentration towards the northwest end of the red bed (Unit 5) has yielded a number of artefacts which represent groups of individual knapping episodes. Similarities in raw material and proximity of artefacts allow the following assumptions.

Refit group A

The raw material for these artefacts is a medium / good-quality grey flint with few inclusions. Artefacts display medium degree of patination (grade 2) which is present mainly through spots on the whole surface. A number of 15 artefacts are included in this

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[81] See also Sturdy *et al.* 1997, 602.
[82] Gaudzinski 2000, 404; see also Villa and Lenoir 2009.
[83] Roebroeks 2003, 107.
[84] Runnels and van Andel 2003, 107.

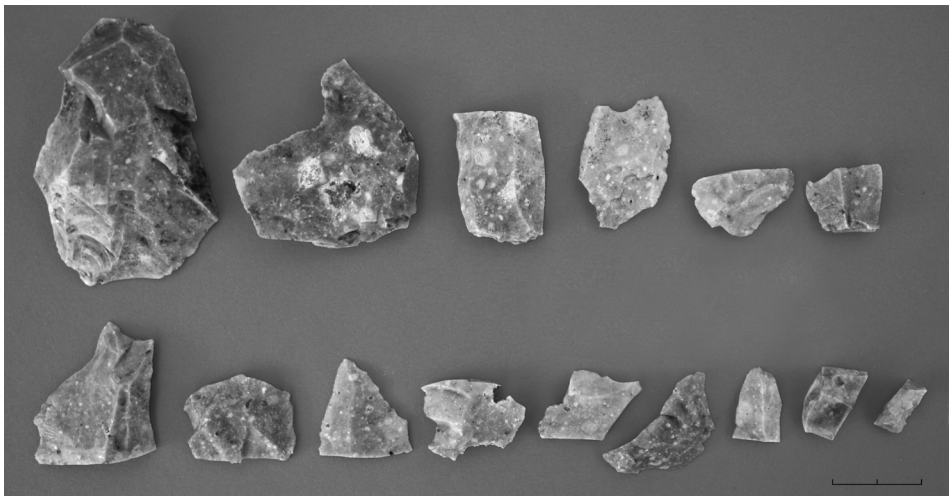

Fig. 30. “Refit Group A” artefacts from Unit 5.

group: three whole flakes, ten broken flakes or laminar flakes and two flakes of less than 20x20 mm (Fig. 30). Two out of four butts are linear; there is also one dihedral and one facetted butt on a laminar fragment. No cores of this category have been collected. At the same time no cortex is retained on flakes and fragments.

What can be suggested is that these specimens were produced in the course of a single knapping episode from which only unwanted or utilized specimens were left on site; whereas end-products, which could possibly be laminar or flake blanks further retouched, were carried away by their knapper. Possibly the only core exploited in this episode followed the knapper’s route as well, since an exhausted core of no further use would have most probably been discarded at site. Though it is difficult to specify a

Fig. 31 “Refit Group B” artefacts from Unit 5.

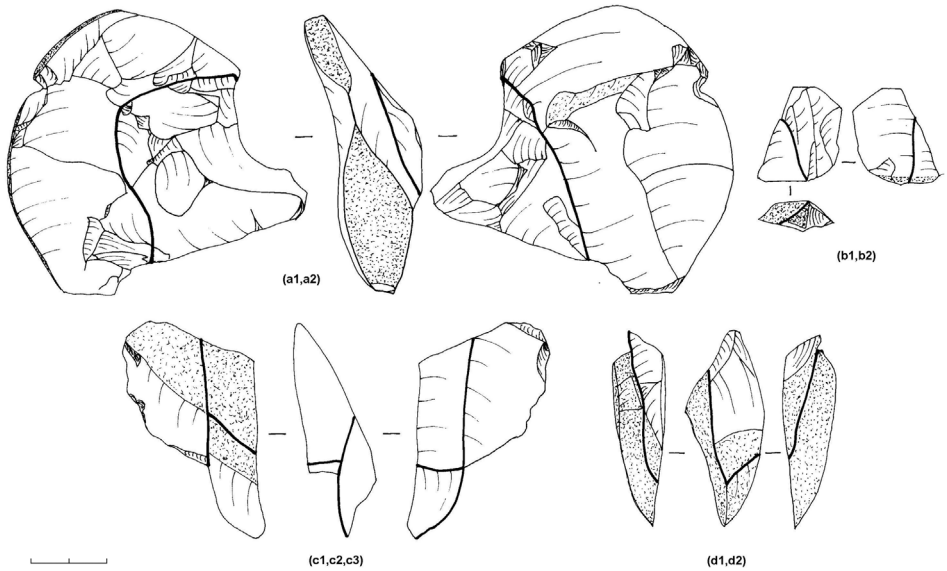

Fig. 32. "Refit Group B": four refits of nine conjoining artefacts. Scale 1:2.

chronological threshold, the absence of diagnostic Mousterian artefacts, in addition to the limited degree of patination, increases the possibility of a post-Mousterian date for the manufacture of this group of artefacts.

Refit group B

A second and most intriguing group of artefacts, coming from Unit 5 as well, consists of 33 specimens: one bipolar core, 14 flakes, nine fragments and four conjoins (Figs. 31-34). This group of artefacts was made out of dark red / brown good-quality flint of the type usually encountered in the area. The same kind of flint was employed during the Middle Palaeolithic as has already been discussed. The patination process has begun, yet it is at an early stage. The majority of butts are either flat (54.5%) or linear (18.2%); there are also two cortical and one winged. No facetted butts are present in this group. The only core present was made on a flint pebble with minor preparation and demonstrates sub-parallel negative scars of opposite directions. The by-products of this core, perhaps laminar blanks, have been removed from the site. There are also quite a few fragments, nine of which are complementary (Fig. 32). A rounded nodule (cobble?) is indicated as raw material in this case as well. Unfortunately, none of these are diagnostic or indicative of the reduction sequence which took place at the time. All conjoins retain cortex and seem to be debris from the initial phases of core reduction.

What can be deciphered from this second group of conjoining artefacts is the assumption that a single episode of knapping took place, perhaps not far from the exact spot of discovery, if not *in situ*. The great debate regarding the geological history of the Epirotic red beds has shown that it is difficult to identify *in situ* archaeological evidence, although not impossible.[85] The mint condition of the specimens and their edges enhances

[85] For the different views see Dakaris *et al.* 1964; Higgs and Vita Finzi 1966; van Andel 1998; Runnels and van Andel 2003; Pope 1984; Bailey *et al.* 1992; see also Tourloukis 2009.

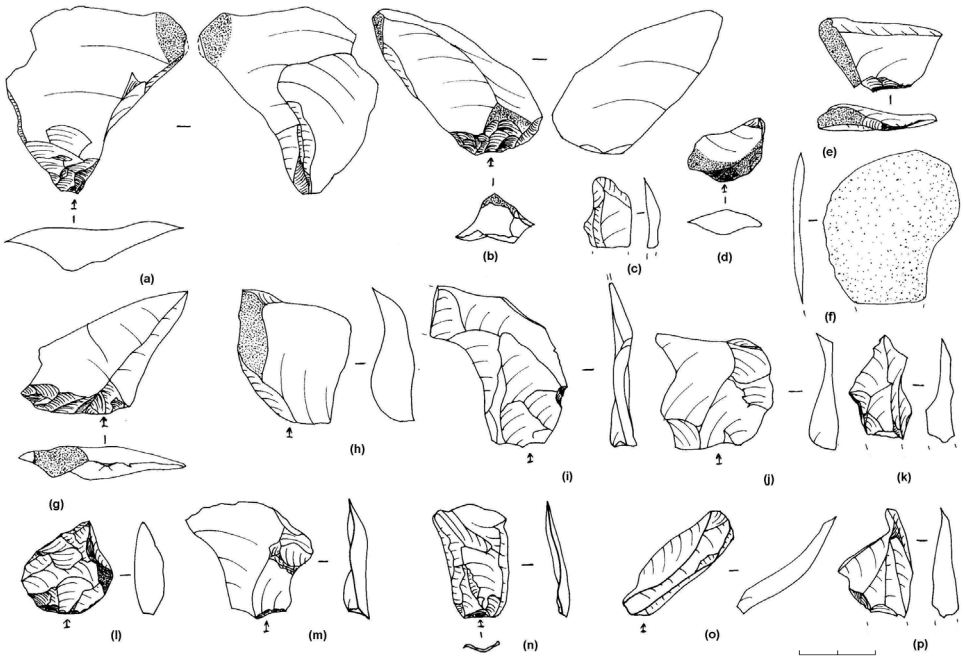

Fig. 33. "Refit Group B": flakes. Scale 1:2.

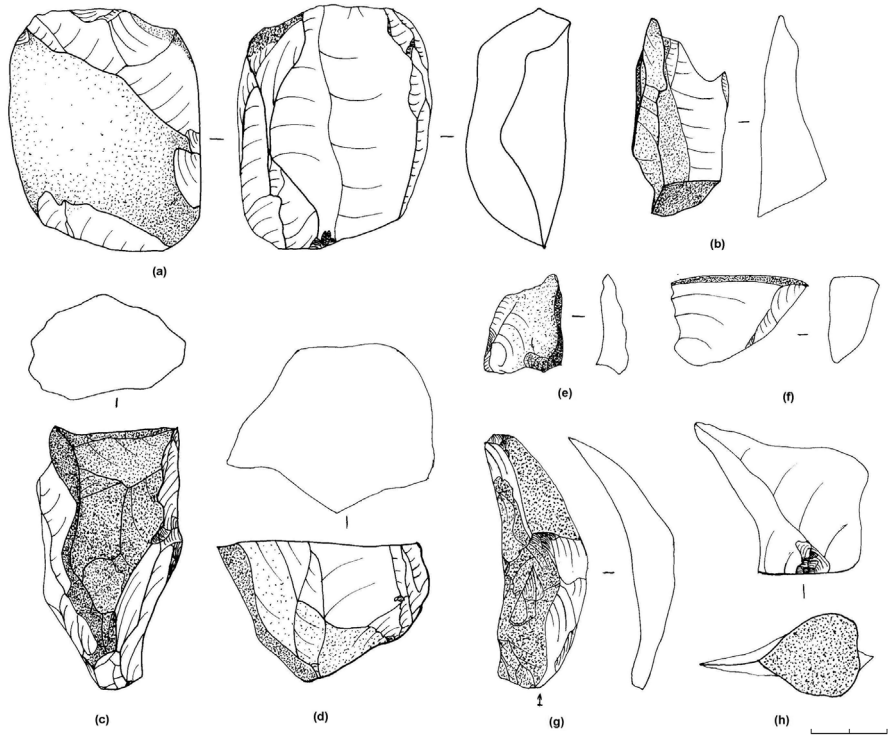

Fig. 34. "Refit Group B": bipolar parallel core (a), flake (g) and knapping debris (b-h). Scale 1:2.

the hypothesis that they must not have travelled far due to geological or environmental conditions. At the same time, the limited degree of patination somewhat reduces our hopes of an early date for this assemblage. A geological analysis of this part of the site might shed light on its geological history and subsequently on archaeological interpretations.

Late Upper Palaeolithic/Mesolithic assemblage

A few diagnostic tools suggest continuity in the use of Mikro Karvounari by Late Upper Palaeolithic or Mesolithic groups of *Homo sapiens*. It has been argued that Mesolithic foragers favoured coastal sites, in contrast to Upper Palaeolithic foragers whose preference was for the hinterland.[86] In view of the fact that Mesolithic sites have been recently discovered by the Thesprotia Expedition, it has become clear that early Holocene foragers had occupied parts of the Kokytos river basin as well.[87] However, the assemblage from Mikro Karvounari lacks the number of diagnostic artefacts (e.g. microliths) which would securely attribute it to the Mesolithic period. The presence of a few characteristic tools, though (e.g. "thumbnail" endscraper etc.), allows us to assume that Mesolithic foragers were aware of the site and had perhaps exploited it for a short period of time.

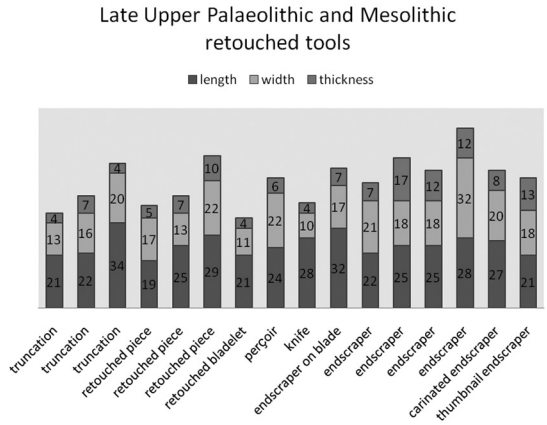

Fig. 35. LUP and ML metric data for retouched tools (measurements in mm).

The raw materials used for the artefacts of this assemblage seem to be local, from the greater vicinity of the Kokytos river basin. Mauve and green coloured flints, although impossible to identify in the Middle Palaeolithic industry, have also been used at the early Holocene sites of PS 3 and PS 43 respectively.[88] 24.1% of these artefacts are plain flakes; flake and bladelet cores are represented by 16%, and 43.8% consist of small blades, bladelets and retouched tools (Fig. 35-38).

Occasional proximal retouch in blades and retouched tools might imply hafting practices. Composite tools are a common feature by this era, thus it is not unlikely for certain of the specimens discussed in this section to have been parts of such tools. A snapped tip of an elongated bladelet with nibbling retouch could have served as a hunting tool (Fig. 38v). Hunting activities have been proposed for Mesolithic sites of the Preveza region as well.[89] There are also a *perçoir* (Fig. 38x) and a number of different endscrapers (Fig. 38z-d',i') which imply several activities such as resharpening or manufacture of

[86] Bailey *et al.* 1997.
[87] Tourloukis and Palli 2009; Galanidou, forthcoming in Thesprotia Expedition III.
[88] Tourloukis and Palli 2009; Galanidou, forthcoming in Thesprotia Expedition III.
[89] Galanidou, forthcoming in Thesprotia Expedition III. Runnels and van Andel 2003.

LUP/ML	Cores	Flakes	Blades	Ret. tools	Other[90]	Total[91]
n	14	21	20	18	14	87
%	16	24.1	23.1	20.7	16	100

Fig. 36. Late Upper Palaeolithic and Mesolithic assemblage structure.

tools, procession of hides or even food consumption. These later specimens are scattered through the whole site with an emphasis at the narrowest part of it (Units 1 and 2) which at the same time is the southeast entrance to the red bed, from the Kokytos valley direction. All the cores come from this part as well. However, the *perçoir* and the endscrapers seem to be concentrated a bit further up the hill (Unit 3).

A few earlier artefacts have been retouched and reused. For example, an exhausted flake core was turned into an endscraper at a later date, as different degrees of patination indicate (grade 3 for the blank, grade 2 for the retouch, Fig. 38i'). Furthermore, a heavily patinated (grade 4) Middle Palaeolithic scraper has got a notch of a later date on the distal end (Fig. 21a). For the groups of foragers who revisited the site during the Late Pleistocene and the early Holocene, the abundance of fine-grained flint nodules and tools, practically speaking, was an extra source of raw material. Several other aspects regarding identity, memory and perception of the past could be raised by the association with material remains of past societies. As Bradley points out, "the results of ancient activity would have been visible to people in prehistory as they can still be identified today".[92] Different approaches would be applied by different groups of hominids. How would Mesolithic foragers interpret the lithic specimens which were deposited at earlier periods? Were they curious about the people who manufactured these tools and exploited the same area before them? Did they recognize technological traits and were they aware of the presence of different groups of hominids? It is hard to say, judging only by the lithics discussed in this paper. What is certain, though, is that the artefacts were not ignored. On the contrary, they served as raw material and were further utilized.

Such landscapes, today recorded as "places of special interest" (PS), comprise a patchwork of prehistoric activities which in temporal terms is rather demanding if not impossible to set apart. These *actively created* palimpsests,[93] although often regarded as problematic for archaeological interpretations, had been the source of rich benefits for many generations of two different forager species, *Homo neanderthalensis* and *Homo sapiens*.

Overview/Concluding remarks

The analysis of the new lithic collection from Mikro Karvounari agrees with the existing patterns according to which coastal sites exhibit a high frequency of the Levallois technique and a tendency towards the production of elongated blanks. As in most of the

[90] Unidentifiable debris/fragments.
[91] It should be noted that some of the unidentifiable debris of less than 20x20 mm which has been excluded from detailed analysis (total of 62 specimens) might be attributed to this assemblage; thus the total could potentially be higher.
[92] Bradley 2002, 156.
[93] Bailey and Galanidou 2009, 218.

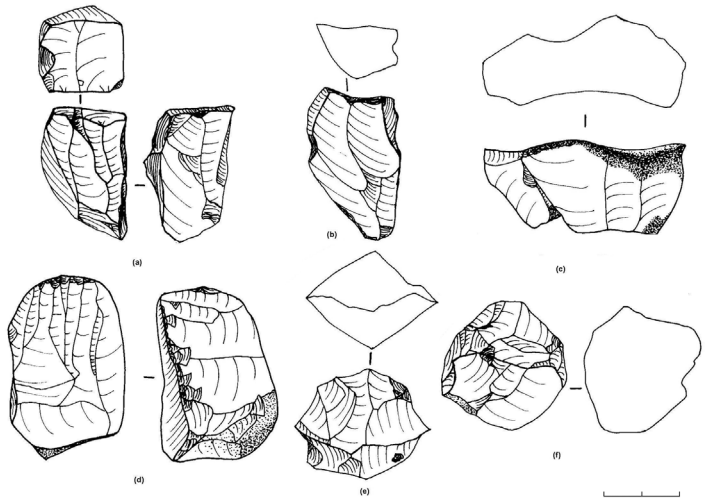

Fig. 37. LUP / ML cores: unipolar parallel cores (a,b), bipolar core (c), unipolar parallel core with two prepared platforms (d), discoid core (e), globular core (f). Scale 1:2.

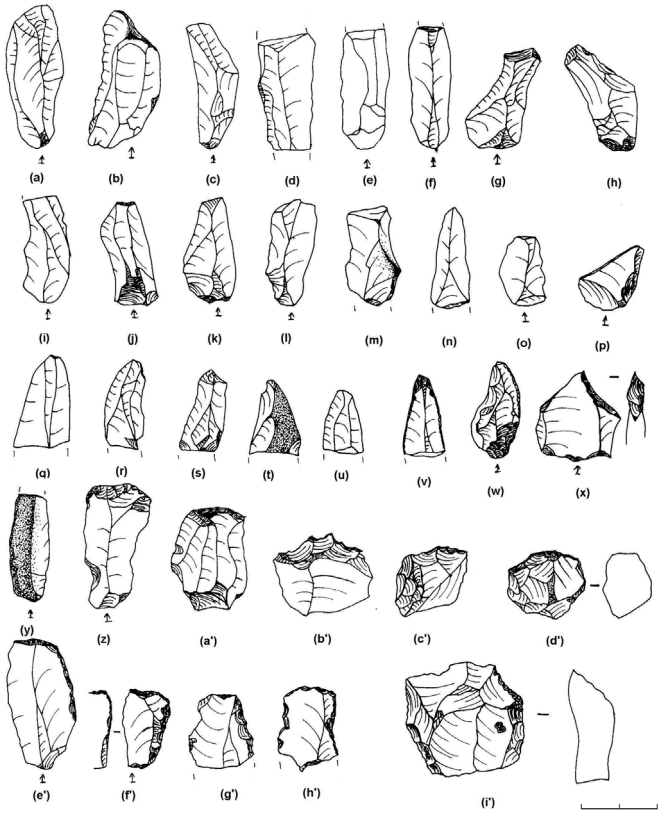

Fig. 38. LUP/ML tools: blades and bladelets (a-n, q-u), flake (o), retouched flake (p), nibbling retouch (v,w), piercer (x), [naturally] backed knife (y), endscrapers (z-c', i'), thumbnail endscraper (d'), truncations (e'-h'). Scale 1:2.

coastal sites, the lateral scraper is the predominant type of retouched tools. However, an additional feature differentiates the site from the other open-air sites of Epirus and opens up new aspects regarding the subsistence strategies of Middle Palaeolithic foragers. In particular, the large amount of Levallois and Mousterian points almost certainly implies hunting activities. Still, the site of Mikro Karvounari should not be interpreted as a hunting stand exclusively. Different activities such as tool manufacture, hides procession, food preparation and consumption together with hunting activities must have taken place at the area. The quantity and quality of artefacts collected from PS 23, and the affinities with Megalo Karvounari and Morphi, prove that the basin along the Kokytos river offered to the groups of early hominids the exact opposite of what Pausanias called *ὕδωρ ἀτερπέστατον* (a most unpleasing stream).[94] The faunal and floral resources provided by the waters of Kokytos had been very attractive for both animals and hominids of the Palaeolithic. Its natural terrain was an important element for the exploitation of animal prey as it probably formed a natural trap for the herds of smaller or larger mammals moving through the water resources of the basin.

Furthermore, a couple of conjoining artefact groups is another interesting feature of the new collection. Due to the lack of characteristic Mousterian artefacts and their limited degree of patination, these specimens have been classified as post-Mousterian. Although a chronological threshold for these groups of artefacts is difficult to assess, questions regarding the *in situ* theory might potentially be raised in accordance to the geo-chronological patterns proposed for sites such as Kokkinopilos.[95] Diagnostic artefacts of the Aurignacian tradition are absent or impossible to detect, though present at a part of the adjacent open-air site of Megalo Karvounari[96] and further south at the early Upper Palaeolithic Spilaion.[97] However, small blades, bladelets and characteristic retouched tools point to a late Upper Palaeolithic or Mesolithic date. Such a mixture of Mousterian and early Holocene assemblages is not unusual for the Kokytos river basin. Specifically, PS 3, a Mesolithic site situated not far from Mikro Karvounari, has yielded a total of 534 artefacts, 39 of which are of earlier date, perhaps Middle Palaeolithic.[98] There is a similar picture at the early Holocene site PS 43, where a small number of artefacts seem to be Middle Palaeolithic as well.[99] Mikro Karvounari is on the other hand predominantly a Middle Palaeolithic site with a post-Mousterian component.

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[94] Paus. 1.17.5, referring to the Kokytos river and explaining why Homer connected Hades with the Acheron and Kokytos rivers.
[95] Runnels and van Andel 2003.
[96] Ligkovanlis, this volume.
[97] Runnels *et al.* 2003.
[98] Tourloukis and Palli 2009.
[99] Galanidou, this volume.

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