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SOME EPI-PALEOLITHIC[1] SITES FROM NW TURKEY. Ağaçlı, Domalı and Gümüşdere

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Our knowledge of the prehistory of Northwestern Turkey[2] is still incipient. It is only during this last decade that some concrete facts began to emerge from the prehistory of this region, which was neglected by the archaeologists for a long time. Extensive surface surveys, and excavations that took place on either side of the Sea of Marmara, have considerably elucidated the problem of stratigraphic sequence and made it possible to define not only some of the cultural assemblages, but also to presume their relation to other regions. However, the overall picture is still not clear. Most of the excavations in this area are still continuing and processing of the excavated material is far from being in a terminal stage. Accordingly, it would be just to say that the research on the prehistory of Northwestern Turkey is in an elementary stage and that there are still divergent views on the cultural affiliations of some assemblages, not to mention controversial issues concerning the cultural sequence.

An intensive archaeological activity has been going on in the Balkans for a considerably long period of time; the regional chronological sequences, and cultural assemblages have been defined. However, no matter how well the prehistory of Balkans has been studied, the basic information of the Marmara region is still indispensable when it comes to apprehend the prehistoric cultures of this region. The geographical location of Northwestern Turkey at the threshold of Europe seen from Asia, makes this region of critical import-

1) The distinction between "Epi-Paleolithic" and "Mesolithic" in the Balkans is rather vague, and, regretfully the terminology used mainly depends on arbitrary preferences. Accordingly, throughout his paper the term "Epi-Paleolithic" will be used for convenience, not at all implying that these assemblages could not have been also called Mesolithic. Actually, we would much preferred to used the term "Postglacial hunters-gatherers" as suggested by Tringham (1973, p. 551) if that term would have had a consensus among the scholars in the Balkans.

2) For an extensive bibliography as well as for an overview of recent work in Northwestern Anatolia see especially J. Roodenberg (ed.), *Anatolia and the Balkans*, special issue of *Anatolica*, XIX, 1993.

ance. Not only for documenting external relations of the prehistoric Balkan cultures, but more significantly for understanding cultural formations. Accordingly any new information from Northwestern Turkey, or any change in our interpretation of this region, is likely to have significant implications. The recent flow of data from Northwestern Turkey has already started bewildering the frameworks of Balkan prehistory; even a preliminary assessment of the evidence from Ilıpınar, Yarımburgaz and Hoca Çeşme has yielded a new perspective for our understanding of the prehistory of Southeastern Europe. The almost revolutionary implications of these excavations should be considered as normal, as the theoretical and conceptual framework of Balkan prehistory were formulated when almost no information was available from the neighboring areas of Turkey.

One of the fundamental concerns of European prehistory is how and when food-producing villages first appeared in the Balkans. Ongoing debates on this problem, which is more fashionably but ostentatiously formulated as the process of "neolithization of Europe", has turned into an uncompromising antagonism of diffusion to local development. Fortunately, most of the recent excavations in the Marmara region have been uncovering layers relevant to this problem; new data emerging from these sites have not yet provided an eventual solution to this much debated problem, but at least there are now some concrete facts available which allow to reconsider it.

Even an over-simplistic assessment of the evidence from Northwestern Turkey, clearly indicates that the process of "neolithization" in the Balkans was a much more complex issue than any of the traditional antagonisms had ever encountered. The present state of our research suggests that neither the diffusionist, nor the anti-diffusionist models are by themselves capable of providing a satisfactory solution to the problem. The multilateral aspects of the problem has just become apparent, and it seems likely that all of the seemingly contradictory hypotheses on the beginning of neolithic economies in the Balkans were true to a degree[3]. Recent work at sites such as Yarımburgaz, Ilıpınar, Pendik and Hoca Çeşme have revealed early assemblages that are roughly contemporary to each other[4], however, the assemblage of each site has a distinct character, and indicate[5] a different trait of "neolithization". The evidence from Pendik, like its sister site of Fikirtepe, indicates a continuity of the local autochthonous tradition (or of population) from Epi-Paleolithic to Neolithic by adopting "neolithic" elements from Inner Anatolia[5]. On the other hand, Hoca Çeşme clearly reflects a direct colonization from Anatolia[6]. However still, sporadic presence of early Pendik-like sherds at some Bulgarian sites, as well as typologically earlier

3) A similar trend had been observed by Perlès (Perlès, 1989).

4) It is interesting to note that in all of these sites, the basal layers have dates of about 6100 BC, in calibrated terms.

5) See especially Özdoğan 1983, p. 205.

6) For a brief report on Hoca Çeşme, see Özdoğan 1993. The basal layers of Hoca Çeşme, yielding typical pottery of Central Anatolian type, were encircled by a massive defence wall.

looking monochrome pottery from Koprivets[7] (and Polyanitsa ?) are suggestive of a contact between Anatolia and the Balkans, earlier in time than the beginning of Hoca Çeşme. The problem is further complicated by possible intrusions originating from the littoral areas of the Mediterranean, as evidenced by the presence of "impresso" wares[8] not only in Thessaly, but also at Ilıpınar.

The problem

Our knowledge of the cultural stage that preceded the beginning of the fully developed Neolithic communities is still far from being clear. Almost no data concerning this period has been published from Western or from Northern Turkey. In the Balkans some recent work has contributed to our knowledge[9], but still the evidence is rather scanty and dispersed. The earliest cultural horizon in all of the excavated Neolithic sites of Northwestern Turkey is a developed phase of the Neolithic period, with fully domesticated sheep, goat and technologically advanced pottery. None of the stratified sites in Northwestern Turkey have yet revealed, neither the traces of transition from hunting-gathering to farming economy, nor of a pre-pottery stage in the Near Eastern use of the term. Moreover, the chipped stone assemblage of these early sites is rather poor, and lack clear cut tools, indicating a break with the earlier stage[10]. The only exception to this is the Fikirtepe-Pendik group, which has a rather well defined chipped stone assemblage, with micro to small bladelets, backed blades, round and keeled scrapers, bullet cores, as well as with some geometrics[11]. Seemingly this industry is a continuation from the preceding period.

This paper is a presentation of some lithic assemblages, presumably of Epi-Paleolithic horizon, that were collected during our surface surveys in the Marmara region. We hope that this material will contribute to our knowledge of how neolithic cultures initially developed in Southeastern Europe.

7) See footnote 12 in Özdoğan 1993.

8) Besides the Thessalian sites, impresso pottery is significantly present at Ilıpınar (Roodenberg et al. 1990, especially p. 99), Yarımburgaz (Özdoğan 1991) and at Fikirtepe (unpublished).

9) See, Kozlowski, and Kozlowski 1988, Gatsov 1984, Gatsov 1993, Lewthwaile 1986, Mikiç 1993, Perlès 1989; see Perlès 1987 especially for an overview of the evidence p. 223-229, and Kozlowski 1989.

10) By the lithic assemblage of the earlier phase, we imply the assemblage of "pre-neolithic" stage as defined by Kozlowski (1988, p.10).

11) For a brief description of the chipped stone assemblage, see Özdoğan 1983; a more detailed description of the assemblage will be undertaken by Dr. Gatsov. It is worth noting that this assemblage is seemingly a direct descendent of the local Epi-Paleolithic industries that will be described below.

The evidence of the surface surveys: A general appraisal

Our surveys in Northwestern Turkey have revealed a considerable number of early sites yielding Epi-Paleolithic and/or pre-pottery assemblages. Even a preliminary assessment of the material indicates the presence of two distinct traditions of lithic assemblages in the region. This distinction is also evident in the preference for site locations. The first group of sites revealed typical elements of the Epi-Paleolithic period common to most of the Eastern European sites, while others had a totally different assemblage with a predominance of large blades and blade segments.

Sites of the first group, characterized by Ağaçlı, to be presented in some detail below, are more numerous than the ones of other group. Besides sporadic finds, nine main cluster of sites have been recorded; the most prolific ones being located on coastal dunes by the Black Sea. Another site was recovered on a small dune by the Dardanelles, one by the Manyas Lake, and others on a high terrace overlooking an inlet by the Sea of Marmara. Smaller sites and random scatters of typologically similar material have also been recorded from the coastal areas of Black Sea, the Marmara and Dardanelles. Through all of our surveys in the inner parts of Thrace, the presence of this type of material is restricted to a few dubious implements. Accordingly, the presence of aquatic resources seems to have determinated site locations.

The sites that were recovered along the coastal terraces of the Black Sea, have almost identical settings; they are located on fossilized reddish sand dunes covering the elevated slopes near the sea. As the old dunes are covered by recent mobile sand dunes, artifacts have been collected wherever there was an exposed surface. In most instances the exposed surface of the old dunes measured about 20x20 m. Almost every exposure yielded some flint; however, a collection unit was designated only when there was a substantial concentration of chipped material. Most regretfully it had not been possible to map each collection unit with precision, as the topography of these areas always changed according to the movement of the recent dunes. When sites were revisited, it was never possible to verify the relation between our collection units. This problem was more evident at Ağaçlı, where the dune covered an area of over a square kilometre, where 82 collection units have been recorded. At Domalı, quarrying for sand and recent construction activity have also hampered our topographical reconnaissance. Accordingly, it was not possible to estimate the size of these sites; nevertheless, the frequent concentrations of artifacts indicate that the terraces near the Black Sea were densely populated. Of the other sites, both Tepecik on the Dardanelles and Haramidere near the Marmara Sea, are small sites with an artifact concentration

12) We are consicous of the fact that many sites and or cultural horizons can easily be overlooked in a survey; here at least it would be just to state that, compared to the other group, the sites of Ağaçlı type lay more in the "priority zones" of our survey.

not exceeding 30 x 30 m. In both of these sites the surface yield was much less than of the Black Sea dune sites. Musluçeşme[13] is the only site of this group which is near the Manyas lake. There the lithic scatter, in varying degree of density, is extensive, covering almost all of the terrace; there is a relatively high concentration of material in an area of 100 x 150 m. around the spring.

In all these sites the chipped stone assemblage is rather uniform, and it is characterized by the use of small to micro-blades, the use of small flint pebbles for cores and the presence of backed blades. It is worth noting that obsidian, though occurring in very limited numbers and always consisting of small pieces, was recovered in most of the sites. The Fission Track Dating of the obsidian has indicated the use of local sources (Ercan et al. 1990, p. 26).

The second group of sites is known only from the Asian side of the region. The main site, Çalca Mevkii[14], is located on a high plateau near the district center of Çan, at an elevation exceeding 500 m. Other smaller sites of this group are also located on high terraces, far away from the sea.

History of research

The first reconnaissance of early lithic sites in the Marmara region is prior to our surveys. In 1973 the presence of lithic material on some beaches by the Black Sea was reported to our department by Dr. M. Korfmann, then a referent in the German Archaeological Institute in Istanbul, who had been informed of these sites through Miss. E. Fondakowsky. A small collection was already available at that time from Ağaçlı and Domuzdere. The first systematic surface survey took place at Ağaçlı on 20.12.1973, with the participation of Prof. H. Çambel, Dr. B. Howe, Dr. M. Korfmann, M. Özdoğan, S. Harmankaya, S. Gülçur and students from the Prehistory Department. A preliminary sorting of the material was undertaken by Dr. B. Howe in early 1974. The same year the Ağaçlı dunes were revisited and a preliminary survey was conducted at the Domuzdere and Gümüşdere dunes by M. Özdoğan and S. Harmankaya. All three sites were revisited and intensively collected by M. Özdoğan on a number of occasions between 1975 and 1980. The Akçalı and Doğançalı dune sites were recorded by M. Özdoğan and G. Arsebük in 1980; all other sites mentioned in this paper were recovered during our survey project between 1979 to 1989. Brief reports were presented on some sites in 1979[15]. Very few of these sites exist nowadays: Ağaçlı has been

13) Özdoğan 1991, p. 347.

14) For a brief description of the sites see Özdoğan 1990:447-8.

15) Papers were presented by G. Arsebük, S. Harmankaya and M. Özdoğan at the IV th International Congress on Southeast European Studies; regretfully proceedings of the congress were never published.

completely destroyed in 1980 by a lignite quarry, Domalı by a sand quarry and summer resorts, Gümüşdere and Tepecik by hotels and Haramidere by a motorway; of the other sites we have no recent information.

Description of the assemblages

As it has been briefly mentioned above, from the sites an extensive collection of lithic material has been recovered, which is all stored in the Prehistory Department of the University of Istanbul. A long term research program, as a part of our project, has been initiated by Dr. I. Gatsov for a study of the lithic assemblages of Marmara region. The present paper is a preliminary presentation of the lithic assemblages only of the Black Sea dune sites. Here the main elements of the assemblage will be described; more extensive description of the localities, their geomorphological settings, statistical data on the assemblages, as well as the material from other sites will be subject of further study.

AĞAÇLI

The Ağaçlı dunes are located 35 km North-northwest of Istanbul, between the villages of Kömürcüpınar and Çiftalan, just near the Black Sea. Along the coast, between two perennial streams, Hayakadın (Çamaşırdere) and Ağaçlı, there is a natural hill rising gently to a height of 80 m., which is covered on all of its sides by recent coastal dunes. Only near the summit and on its southeastern side, some outcrops of rocks are visible. The extend of the dune area is about 1.5 km along the coast and 1 km inland. As a result of wind action, reddish colored fossil dune surfaces are exposed. Through 1973 to 1980, the year when all the dunes were destroyed for coal mining, 82 localities, yielding concentrations of flint artifacts, were recorded and collected. The material collected from these localities consisted mainly of Epi-Paleolithic implements; however, occasionally they were mixed with Middle and Upper. Paleolithic tools, which were easily distinguishable, not only on typological grounds, but also by their distinct patination. Near the summit of the hill, there was a small mound, yielding early looking prehistoric pottery. To the west of the hill, overlooking the stream, there was also a Classical settlement.

The collection under study from Ağaçlı comprises 37 cores and 113 tools. The character of the raw material, technology, typology, dimensions and state of preservation give grounds for distinguishing them from Paleolithic artifacts. We consider the above mentioned features as a proof for the relative technical-typological and chronological homogeneity of these selected artifacts, which will be described below.

Typical cores - 32 examples (fig. 1:2)

Cores with distinctly formed striking surfaces and platforms are grouped as typical cores. They will be classified[16] according to the number of existing platforms, flaking surfaces, and to the kind of blank acquired during core processing. The type of blank core, presence of cortex, phase of exploitation, shape of flaking surface (or entire core), core angle will also be considered as additional criteria for classification.

Single platform cores - 28 examples.

This group includes specimens with rounded and semi-rounded striking surfaces (19 examples) which are all in final phase of exploitation. The cores are for blades, bladelets and flakes. The platforms are formed by a single blow and the core angle is 90° or almost 90°. The vast majority of them are from pebbles (fig. 2). Some specimens have traces of cortex left either on the end, or on the back, or on the back and on a part of the sides. Three examples bear traces of preparation. The shape of the striking surface is convex (fig. 2:3), semi-conical (fig. 2:8; fig. 1:5,6) or square (fig. 2: 7; fig. 2:4). The length of the cores varies from 1.9 cm to 4.7 cm.

Conical cores - 9 examples.

Specimens for blades and bladelets with one platform and rounded flaking surface. The platforms on all specimens have been formed by a single blow (fig. 1:1, 3, 4 - fig. 2:1, 6). For all artifacts the angle between the platform and the striking surface is 90° or almost 90°. Four specimens are core fragments (fig. 2:2). The dimensions of complete specimens are between 2.1 cm and 2.9 cm. The conical shape, typical feature of these cores, is due to the stage of exploitation.

In publications on the flint assemblages of the coastal zones of the North-West Black Sea, that are dated between the end of Pleistocene and the beginning of Holocene, both terms, conical and pencil cores have been used, however without considering any distinction between them. Some view the latter term not as a distinct type, but as an indication of the level or phase of exploitation of the conical cores. Similarly, cores similar to those that are presented here with this group, are referred to as pencil or conical cores. At this stage of our study, we intentionally prefer using the term conical cores, hoping that in the future, when numerically more extensive series of such cores will be available, a more precise distinction would be possible.

The following core preparation processing techniques are apparent for the single platform cores:

- Most of the cores are made from pebbles;
- the cores are in final stage of exploitation;

16) These criteria for typological distinction have been described in M. Brézillon 1968; B. Grinter, J. K. Kozlowski 1975.

- the platforms are usually formed by a single blow and only in a very few cases by multiple blows;

- The flaking surface of the cores are either conical or semi-conical in shape;

- There is a tendency to trim core edges;

- The presence of core preparation; the axis of the flakes that are struck off, whether from the side, back or from the end, is usually perpendicular to the axis of the core.

Double-platform cores - 7 examples.

Double-platform cores are classified according to the location of the flaking surfaces on the cores and to the relation of these surfaces to each other; accordingly the first group are cores with lateral contiguous flaking surfaces (5 examples; fig. 2:7) and specimens with separate flaking surfaces (1 example; fig. 2:5). It is clear that all of the Ağaçlı double-platform cores were remodified from previous single-platform blade cores with semi-rounded flaking surfaces; these were utilized equally for blades and bladelets. The second platform was formed on the distal part of the core after its full exploitation as a single-platform core. On the back part of some cores there are traces of preparation. It is interesting to note that one of the double-platform cores was remodified from a totally exploited conical core. It is also clear that one of the cores was made on a flint pebble. The length of double-platform cores varies from 2.3 to 4.6 cm.

Hence, we incite the following generalizations. There are two types of core processing: a) the blanks are removed from one striking surface and one platform. These cores are used like single-platform cores. After the exploitation, a second platform is shaped at the end of the specimen. Most often this platform is formed at a sharp angle and the exploitation is carried on; b) there is a successive use of the two platforms. The direction of the negatives show an alternate detachment of the blades and bladelets from both of the platforms.

Cores with changed orientation - 2 examples.

There are two cores of this type, both with two flaking surfaces. The change in orientation is apparent as an alteration from the previous axis of blades and bladelets to a new direction perpendicular to the earlier flaking surface.

Retouched tools - 113 examples.

This group includes end-scrapers, backed blades, retouched truncations, perforators, retouched blades, microliths and fragments of various retouched tools.

End-scrapers - 65 examples.

End-scrapers have been classified according to the type of blank, shape of front and to their size. Accordingly, the following types including fragments of tools are present:

- End-scrapers on blades with a rounded front - 2 examples. They are shaped on blade fragments. One of the artifacts has a rounded oblique front (fig. 3:11). Their front parts are

shaped by a semi-steep retouch.

- End-scrapers on flake with a rounded front - 26 examples. Six artifacts are micro-end-scrapers (fig. 4:1-3,5,6; fig. 5:1), with a length of 1.6-2.0 cm, and a width of 1.5-2.5 cm. One of the specimens has cortex on the dorsal surface (fig. 4:6). The working edge at the front part is shaped by steep and semi-steep retouch. Twelve examples have a length up to 2.5 cm and a width of 1.4-2.3 cm (fig. 4:4; fig. 6:4,6). The retouch on the fronts is steep or semi-steep, mainly uniserial. Several artifacts have an undulating retouched edge; 3 specimens are with oblique fronts and are set at a sharp angle in relation to the axis of the blank (fig. 6:7). Five examples are fragments of end-scrapers on flake with a round front (fig. 6:2).

- Semi-circular end-scrapers - 21 examples. The frontal edge is shaped by semi-steep and steep retouch. The retouched edge covers more than 1/2 of the circumference of the blank. Five specimens are of microlithic dimensions, up to 2 cm (fig. 3:1,4,5,10,13). The other 13 examples have a length up to 3 cm (fig. 3:16, fig. 4:9,13; fig. 5:5,6; fig. 6:1,8). Three specimens are fragments of semi-circular end-scrapers (fig. 3:15).

- Circular end-scrapers - 7 examples (fig. 3:6,12,21; fig. 6:3,10). Two of the tools are micro-endscrapers; lengths vary from 1.4 to 1.6 cm (fig. 3:6,12). The length of other specimens are from 2.2 to 3.1 cm. One of them bears traces of cortex on the dorsal face (fig. 6:3).

- Fan-shaped end-scrapers - 3 examples (fig. 4:7;4:7,9)

- High end-scrapers - 2 examples (fig. 3:14,17)

- Shouldered end-scraper - 1 example.

- Atypical end-scrapers - 3 examples. Two specimens have a front on the ventral face and one has a retouched edge on the side of the blank.

Scrapers - 1 example (fig. 4:10).

General remarks concerning end-scrapers:

- Most of the end-scrapers are shaped on flakes.

- There are almost equal numbers of round fronted end-scrapers and semi-circular end-scrapers.

- Small sized artifacts are predominant, some of them are in microlithic dimensions, up to 2 cm, and the rest is 3 cm. Scraper edges are shaped on the more massive end of the flake and are set at an angle between 70-90°.

- The height of the scraper edge is 0.3-0.9 cm on micro-scrapers, and 0.5-1.4 cm on others.

- Among the end-scrapers on flakes there are neither oblique, nor straight working edges.

- There is also a lack of side retouch.

Backed blades - 26 examples.

- Backed blades with straight back - 18 examples. They are characterized by a straight back.

The bulb is missing at 13 samples (fig. 5: 4,11,12, 15,17; fig. 6:11;7:8,10,13). The angle of the retouch is between 75° and 90°. The breaking of the blades is secondary in relation to the retouches. The dorsal patterns on the blades show that all of them are struck from either single-platform or from double-platform cores with alternating platforms. On four tools the proximal part of the blank was preserved (fig. 7:8). The retouch on the back is close to 90°. Two of them have a flat retouch on the ventral face (fig. 5:8.10). One of the tools is on a whole blade of 3.3 cm length; the semi-steep and steep retouch covers the entire length of the blade (fig. 5:14).

Backed blades with arched back - 8 examples. Five specimens are from whole blades (fig. 4:12; 5:2,6,13; fig. 7:6, 9). Their length varies between 2.6 and 4.6 cm. The back part is shaped by uniserial retouch. The direction of the scars on the dorsal pattern coincides with that of the blade axis. On three tools the bulb has been removed (fig. 7:12, 14; fig. 4, 11).

Partially backed blade with arched back - 1 example (fig. 4:14).

Retouched truncations - 5 examples.

- Retouched truncations, oblique-straight - 2 examples (fig. 7:4). Truncations are shaped by a semi-steep retouch.

- Retouched truncation, oblique concave - 1 example.

- Retouched truncations, oblique-straight and straight back - 1 example (fig. 7:1).

- Double truncation, alternated - 1 example (fig. 6:12).

Backed pieces with arched backs - 2 examples (fig. 4:8; fig. 5:3).

Simple perforators on blade - 2 examples. One of them has a well defined working end. Length - 4.7 cm (fig. 6:14; Fig. 7:11).

Blades with notched retouch - 3 examples. Fragments of blades with notches shaped by marginal retouch (fig. 7:3).

Blades with marginal retouch - 2 examples on blade fragments with partial marginal retouch (fig. 7:15).

Symmetrical trapeze - 1 example. A specimen with two symmetrical semi-steep retouched truncations which are oblique in relation to the axis of the blade. Length - 2.3 cm; height - 1.3 cm (fig. 8:2).

Triangle - 1 example, fragment of an obtuse-angled scalene triangle (fig. 8:10).

Fragments of retouched tools - 4 examples.

GÜMÜŞDERE

Gümüşdere is located 27 km. north of Istanbul, between Ağaçlı and Kilyos, on the Black Sea coast, ca. 3 km northeast of Gümüşdere village. Both sides of the narrow valley of the Gümüşdere stream is covered by recent dunes, up to the point where it meets with another intermittent stream, Domuzdere. A relatively small, second dune area exists along

the terraces of Domuzdere. The general environmental setting of the area is quite similar to that of Ağaçlı, except that the dune area is much smaller. Scatters of artifacts have been noted on slopes of Gümüşdere valley, and along Domuzdere. A main concentration was recovered on the exposed surface of a fossil dune, west of Gümüşdere, near the coast, and another near Domuzdere. On elevated areas along the coast, as well as on the terraces along the streams, the presence of typologically earlier artifacts becomes more apparent.

From this site 8 cores and 5 retouched tools, including a fragment, are presented here.

Typical cores - 8 examples.

Single-platform cores - 5 examples. All are conical blade or bladelets cores, in final stage of exploitation with round striking surfaces. One typical conical core is 1.9 cm long (fig. 8:3). The other 4 examples are semi-conical or square in shape with a single platform and a semi-rounded striking surface (fig. 8:9). The platforms are formed either by a single blow or they are prepared; the angle between the platform and the striking surface of the former type is right, and of the latter acute (fig. 8:9). Traces of preparation as trimming are preserved on the sides of two specimens. The length of cores vary from 2.9 to 4.4 cm.

Double-platform core - 1 example. Shaped on a pebble with a common striking surface for blades and flakes. The first platform formed at a right angle, the second, located at the end of the core, set at a sharp angle. Length - 2.9 cm. The shape of the specimen is close to square.

Cores with changed orientation - 3 examples. Two specimens are with 90° platform angles (fig. 8:5) and the other is tranformed from a double platform core.

Retouched tools - 7 examples.

End-scrapers - 4 examples. One of them is a fan-shaped end-scraper with a semi-steep retouched edge, length 2.7 cm, width 2.3 cm and height at working edge 0.7 cm (fig. 6:9). The second is a steep end-scraper with a height at working edge of 2.0 cm (fig. 3:19). The third is an end-scraper on flake with a rounded front. The scraping edge is formed by semi-steep and steep retouch, length 2.9 cm; width 2.1 cm; height at it's front 0.7 cm. The last one is a fragment of an end-scraper with a rounded front.

Backed blade - 1 example. A proximal blade fragment from a single-platform core. A semi-steep retouch covers one of the sides. The flat superficial retouch is on the ventral face along the bulb.

Geometrical microlith - 1 example.

Segment - 1 example (fig. 8:7). Length - 2.6 cm, width - 0.7 cm.

Fragment of a retouched tool - 1 example.

DOMALI

Domalı is located on the Asian side of the region, ca. 45 km Northeast of Istanbul, around the village of Domalı on the Black Sea shore. Three main dune areas with lithic material were apparent. The first area is on a small hill just to the south of the Domalı village; here material was collected from erosional gullies exposing fossil dunes. The second site, Mürsellibaba is 2 km North-northwest of the village, 200 m from the Black Sea; material was recovered at a small exposure of old dunes at the foot of a conical hill. The third site, Tekmezar, is again on a hill, in between the two sites. On eroded slopes overlooking the west side of the hill, there were small areas of flint concentrations.

Twenty artifacts were studied

Cores - 5 examples.

Single-platform cores - 3 examples. Blades and bladelet cores with semi-rounded striking surfaces in final stage of exploitation (fig. 8:8). Two of them (fig. 7:1,6) are made from pebbles. There is a sharp angle between the platforms and the striking surfaces. The cores bear traces of preparation; length - 2.7 - 3.3 cm.

Double-platform core - 1 example. This incomplete core, conical in shape is in final stage of exploitation. Evidently, in its initial stage it resembled a dihedral burin; later a second platform was formed; length - 2.6 cm.

Core with changed orientation - 1 example. The core is made from a pebble. After the exploitation as a single-platform core, the platform was secondarily utilized for removing flakes perpendicular to the earlier ones (fig. 8:4). Cortex is present on a part of the back and on the sides; length - 2.9 cm.

Retouched tools - 15 examples.

End-scrapers - 9 examples.

End-scrapers on flake with rounded front - 4 examples. Two of the tools are fragments; the complete one measures 2.1x2.2 cm and the height of its working edge is 0.6 cm. There is steep and semi-steep retouch on the fronts (fig. 3:20).

Semi-circular end-scrapers - 3 microlithic examples. The working edges have semi-steep retouch; length between 1.3-2.0 cm, height 1.3-1.7 cm. (fig. 3: 2,9,18).

Double end-scraper - 1 example, shaped on a flake, one working edge oblique, the other rounded; length - 2.4 cm, width - 1.7 cm, height of working edges 0.3 and 0.6 cm (fig. 6:5).

A typical end-scraper - A tool from a flake with traces of cortex. The front is small, length - 2.1 cm; width 1.7 cm.

Backed blades - 3 examples. A blade fragment with a straight back (fig. 3:7) and two

arched blades (fig. 7:2, 5). The edges are shaped by steep and semi-steep retouch.

A simple perforator on blade - Only the point of the tool is preserved. It is shaped by a marginal partial retouch (fig. 7:8).

A blade with notched retouch; a little notch shaped by marginal retouch (fig. 7:7).

A retouched flake; partial marginal retouch on the dorsal side covering a part of the bulb.

Some general remarks on the assemblages

Most of the cores are shaped on pebbles, varying in length from 6 to 8 cm; they are in the final stage of exploitation. Most common core types are single-platform cores. Double-platform cores are rare, whereas cores with changed orientation are represented by a few specimens. Among the single-platform cores semi-rounded flaking surfaces and conical blade and bladelet cores are common.

The most common tool type are end-scrapers made on short flakes, either in microlithic dimensions, up to 2 cm, or up to 3 cm. The working edges of scrapers are shaped at the most solid part of the blank and almost all of them are semi-round or convex. Backed artifacts, either arched or straight are significantly present in the assemblage. Typological diversity of the assemblage is displayed by the presence of simple perforators on blades, blades with partial marginal retouch, blades with notched retouch, flakes with retouch and a few microliths.

Our study on the material is still in a preliminary stage, and only selected items have been presented here. However, technological and typological aspects of the assemblage allow us to look for similar lithic assemblages. The most apparent feature of the assemblage is the core processing technique, which provides comparisons with assemblages from Northwestern parts of the Black Sea, running from the Crimean peninsula to the Prut river, areas where most investigation has been conducted[17]. Here, recent research[18] has clearly indicated that the appearance of conical cores goes together with blade industries, and that they occur together at the very end of the Pleistocene and at the beginning of the Holocene. Both elements are characteristic for the Ağaçlı, Gümüşdere and Domalı assemblages.

Further to the south, in the Bulgarian littoral areas of the Black Sea coast, the lithic tradition is, on a technological basis, related to the Epi-tardi-gravetian of the Iron Gate region of the Danube basin (J. K. Kozlowski, S. Kozlowski, 1982; I. Gatsov, 1993). Cores recovered from these areas, as well as from Dikilitaş in Bulgaria (Gatsov, 1984) are characterized by the alteration of the single-platform cores into cores with changed orien-

17) See especially A. Chernysh, 1973: 5; V. Stanko, 1982:5. Koen, 1992.
18) V. Koen, 1991.

tation. The final result of this exploitation is the presence of cores shaped as improper polyhedrons. A characteristic feature is also the presence of splintered pieces and the absence of conical cores.

Conclusively, the material presented here of Ağaçlı, Gümüşdere and Domalı, can be regarded as an evidence for the presence of local cultures on the southern shores of the Black Sea at the end of the Pleistocene and the beginning of the Holocene. It is evident that the local Late Paleolithic technologies or traditions had played a decisive role in the formation of these culture. This is the main reason why we have preferred to name these industries as Epi-paleolithic and not Mesolithic.

Yet another, but significant conclusion is that the Ağaçlı type of assemblages of the Southern Black Sea zone, are notably different from the lithic industries of the succeeding period. Our work on the Early Neolithic lithic assemblages from sites such as Karanovo and Azmak[19] have indicated that during this cultural horizon the prevailing technological tradition is completely different. It is characterized by the presence of macro-blades, and tools with regular semi-steep and steep retouch. Accordingly, we can be definitive in remarking that, at least in one part of Thrace, lithic technologies of fully Neolithic cultures are not descendants of the earlier stage. The implication of this conclusion to the general problem of neolithization is beyond the scope of this paper.

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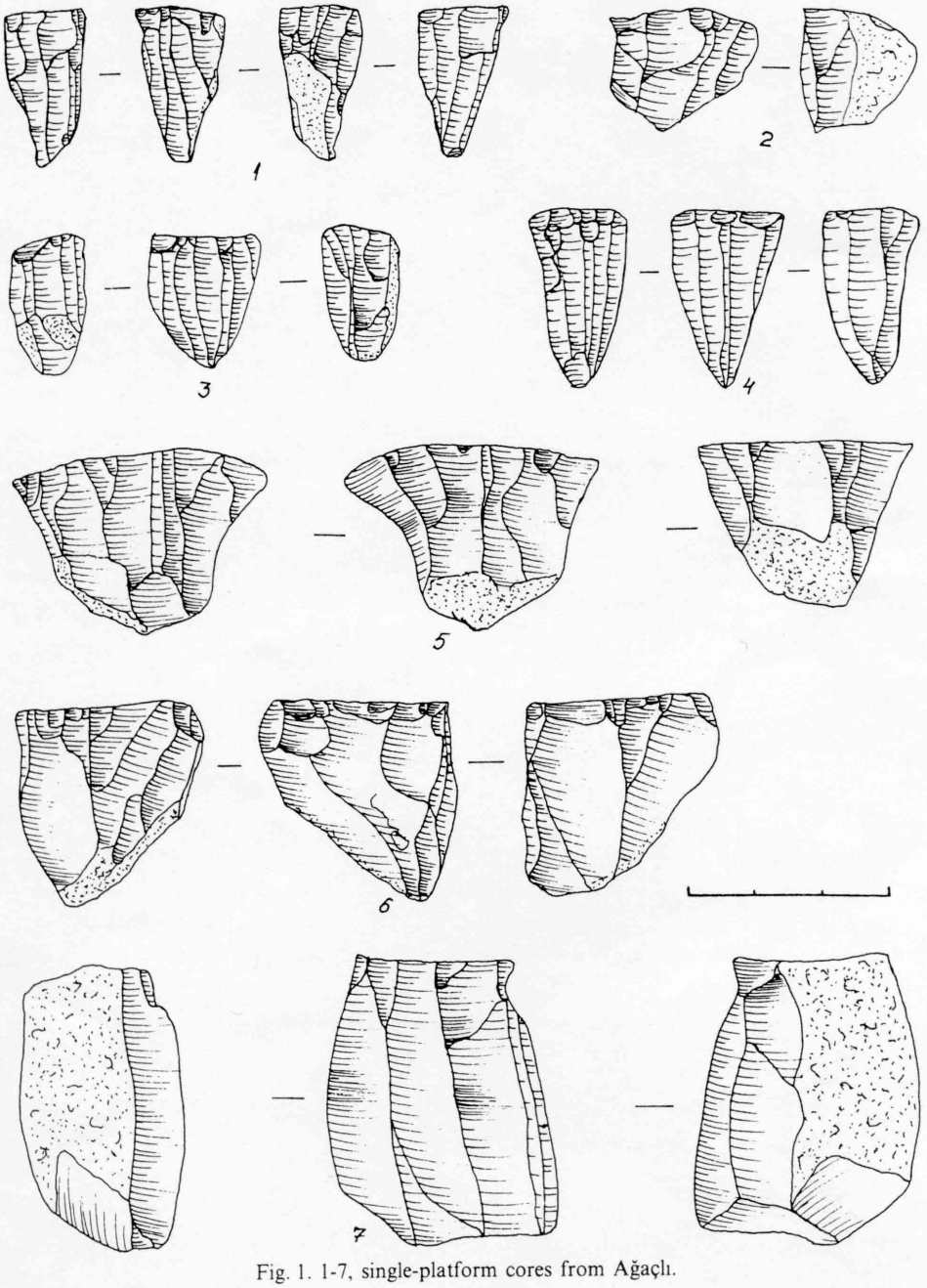

Fig. 1. 1-7, single-platform cores from Ağaçlı.

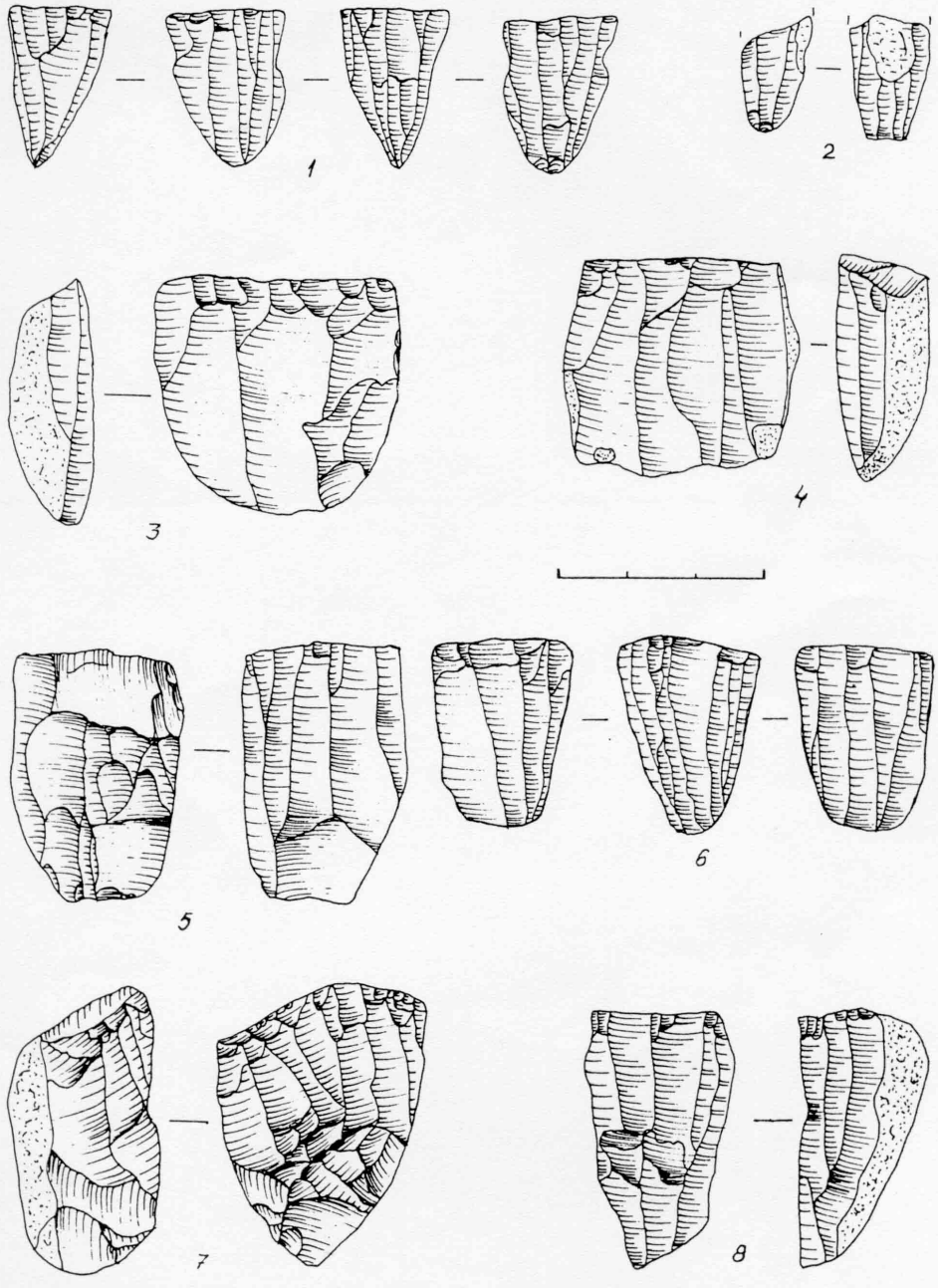

Fig. 2. 1-4, 6, 8, single-platform cores from Ağaçlı.

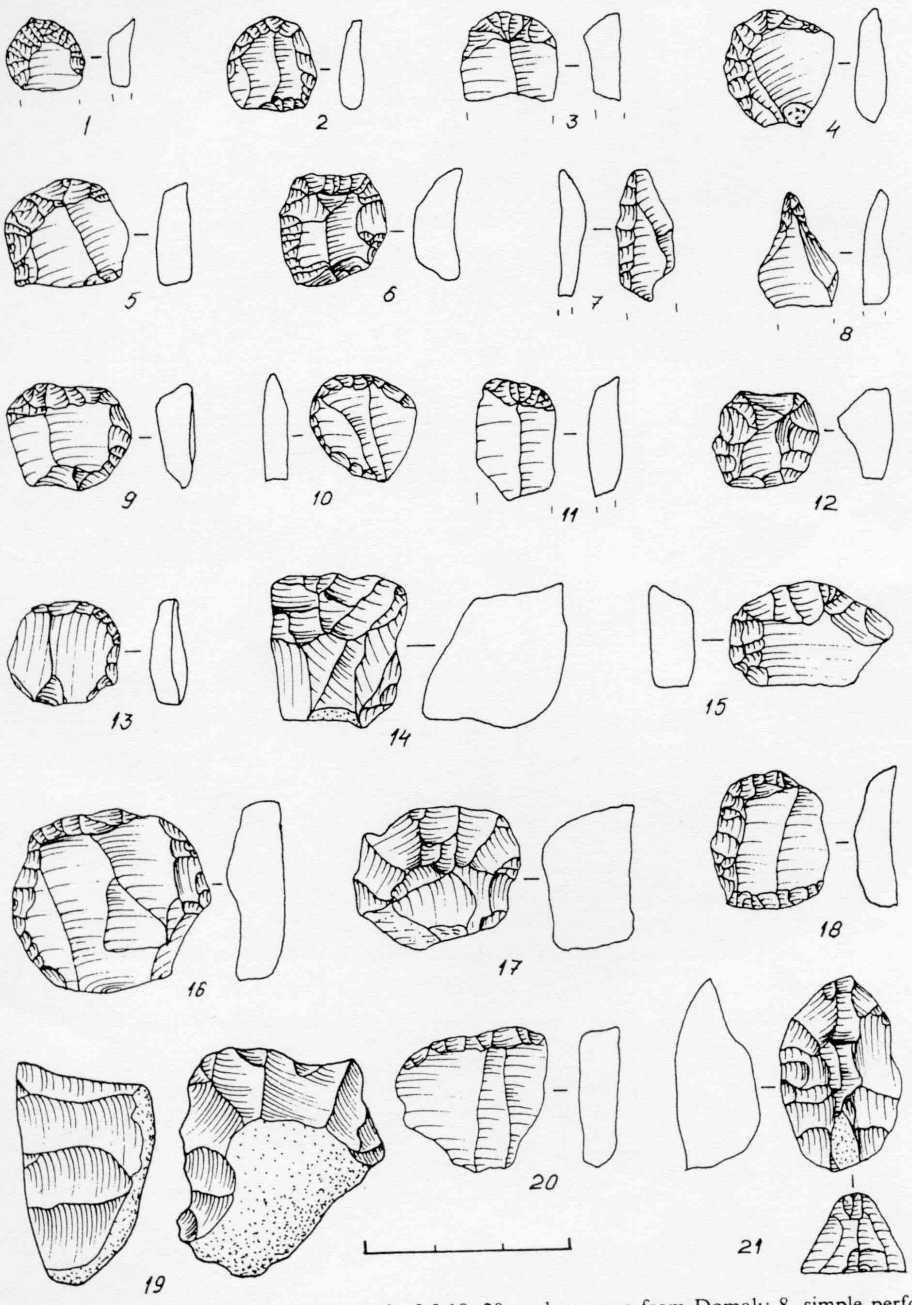

Fig. 3. 1, 3-6, 10-17, 21, end-scrapers from Ağaçlı; 2,9,18, 20, end-scrapers from Domalı; 8, simple perforator on blade, Domalı; 19, steep end-scrapers, Gümüşdere.

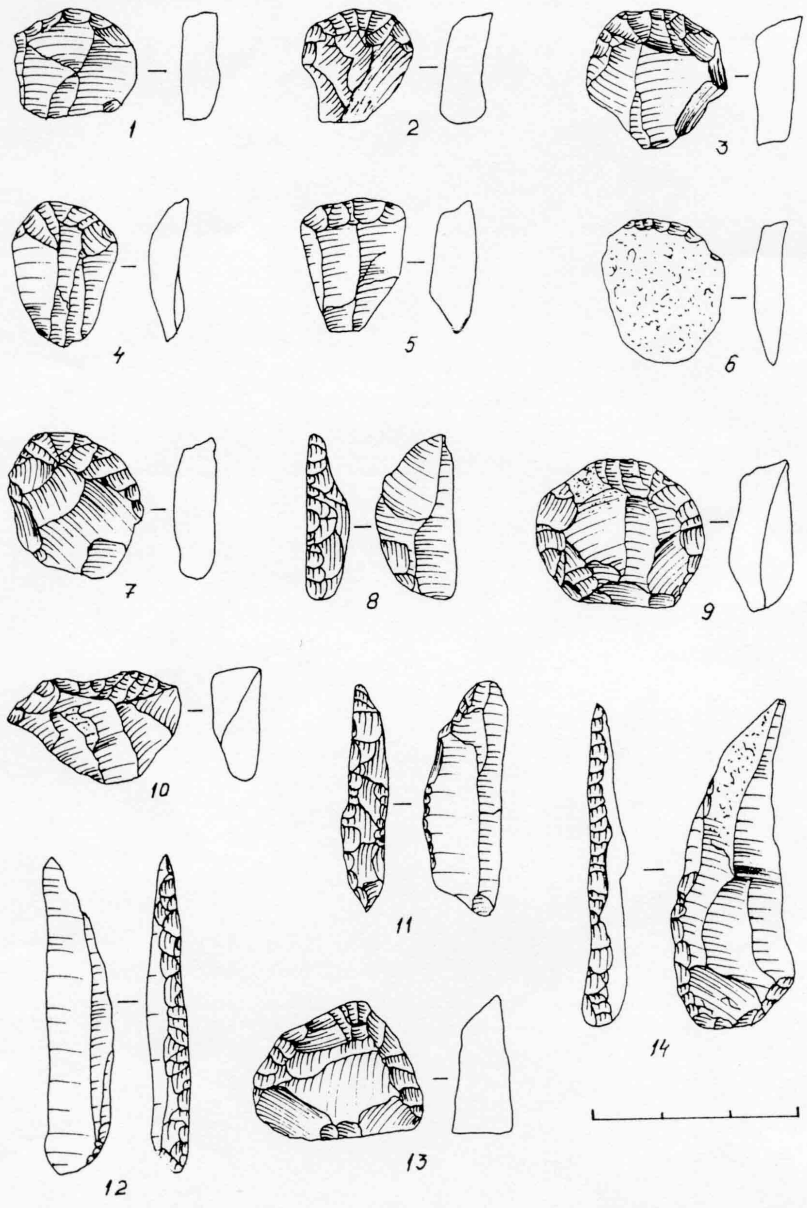

Fig. 4. 1-7, 9, 13, end-scrapers from Ağaçlı; 8, backed piece with arched back, Ağaçlı; 10, scraper, Ağaçlı; 11, 12, backed blades with arched back, Ağaçlı; 14, partially backed blade with arched back, Ağaçlı.

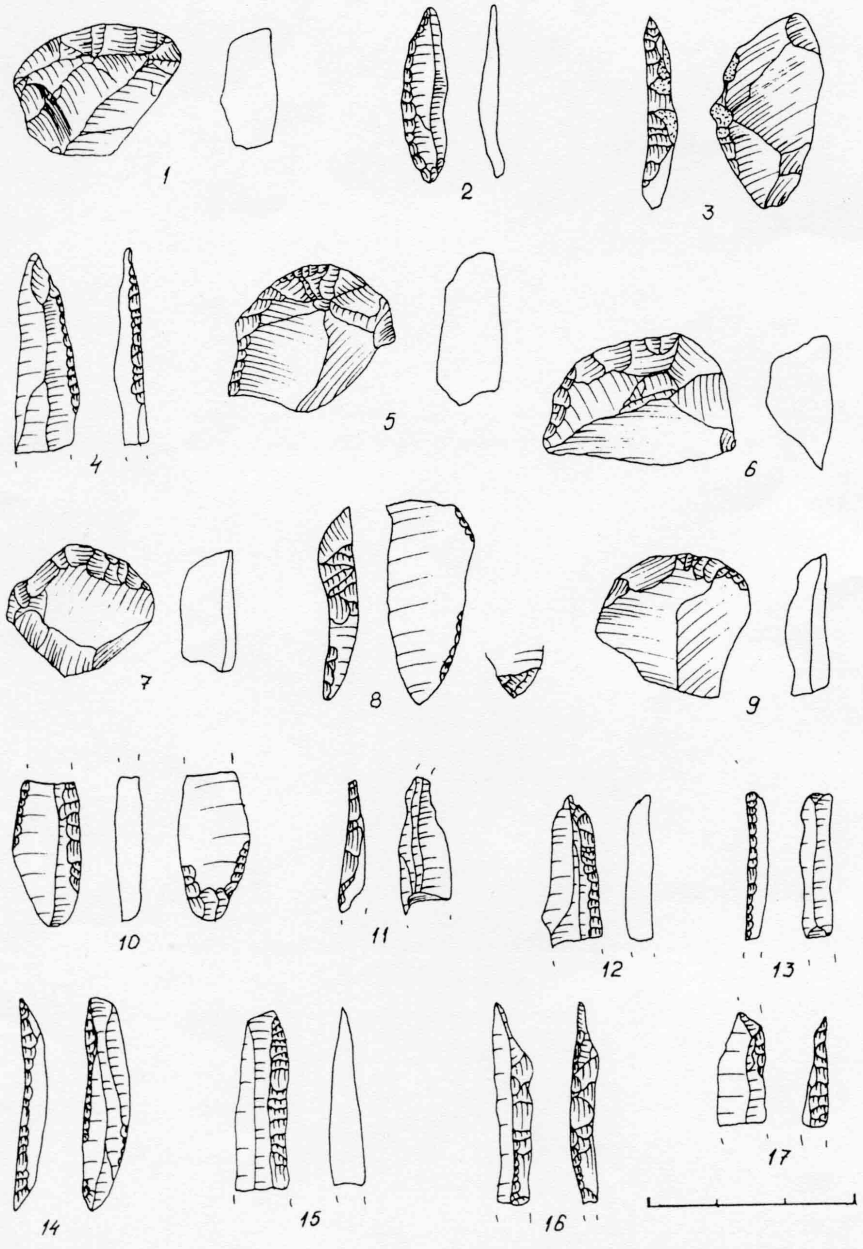

Fig. 5. 1, 5-7, 9, end-scrapers from Ağaçlı; 2, backed blade with arched back, Ağaçlı; 3, backed piece with arched back, Ağaçlı; 4, 8, 10-17, backed blades with straight back, Ağaçlı.

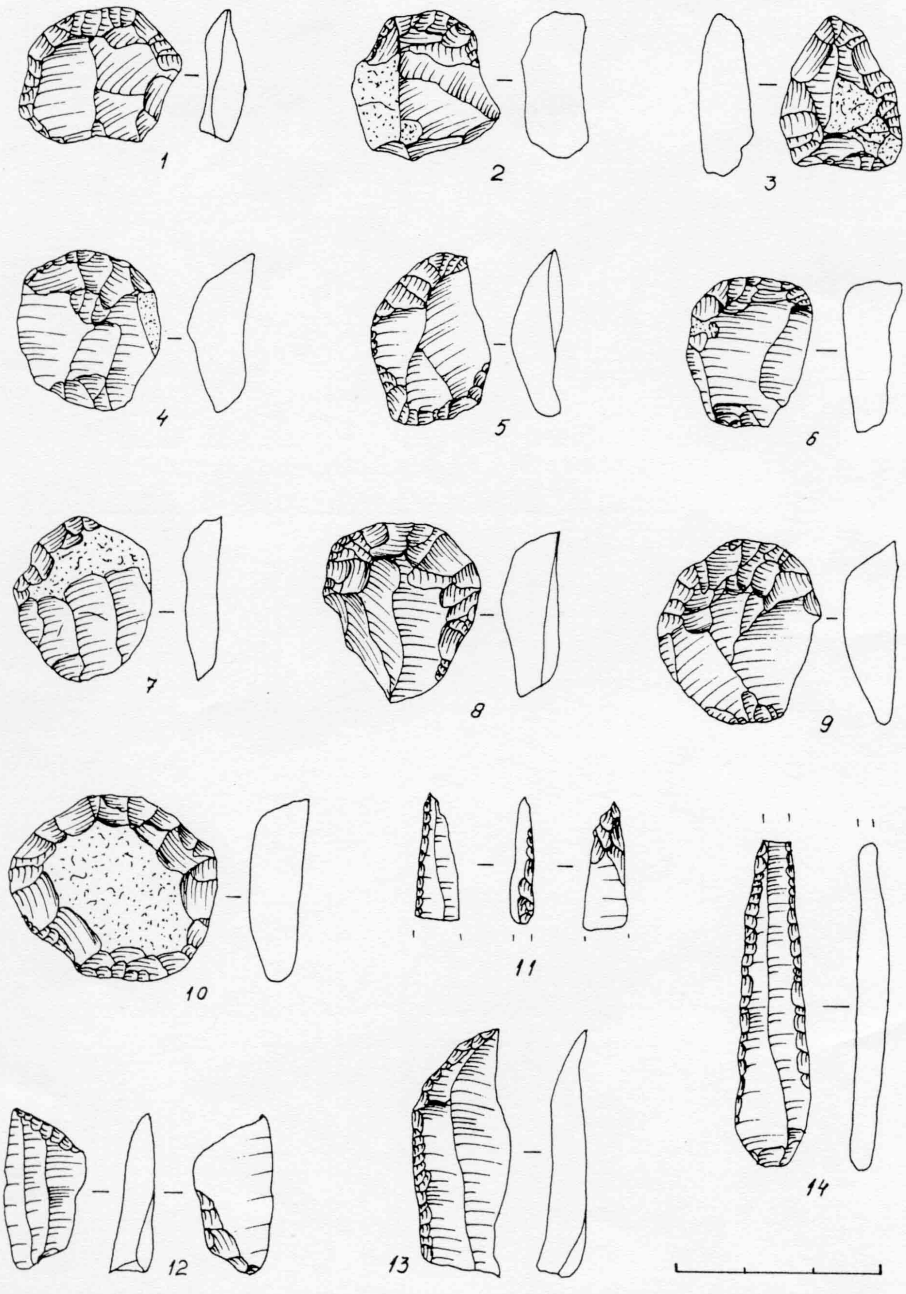

Fig. 6. 1-4, 6-8, 10, end-scrapers from Ağaçlı; 5, end-scrapers from Domalı; 9, end-scraper from Gümüşdere; 11, backed blade with straight back, Ağaçlı; 12, double truncation alternated, Ağaçlı; 13, backed blade with arched back, Ağaçlı; 14, simple perforator on blade, Ağaçlı.

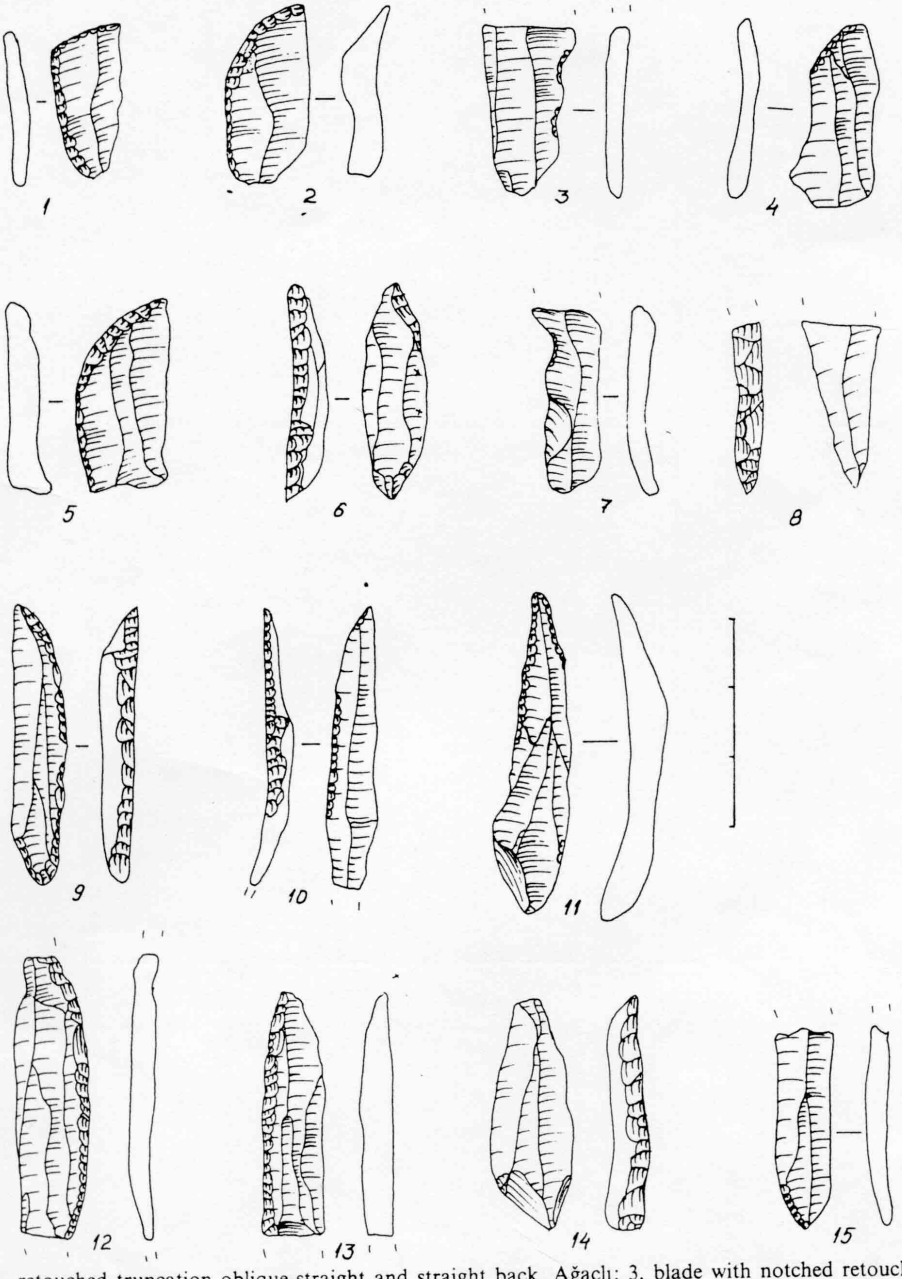

Fig. 7. 1, retouched truncation oblique-straight and straight back, Ağaçlı; 3, blade with notched retouch, Ağaçlı; 4, retouched truncation oblique-straight, Ağaçlı; 6, 9, 12, 14, backed blades with arched back, Ağaçlı; 8, 10, 13, backed blades with straight back, Ağaçlı; 11, simple perforator on blade, Ağaçlı; 15, blade with marginal retouch, Ağaçlı; 2, 5, backed blades with arched back, Domalı.

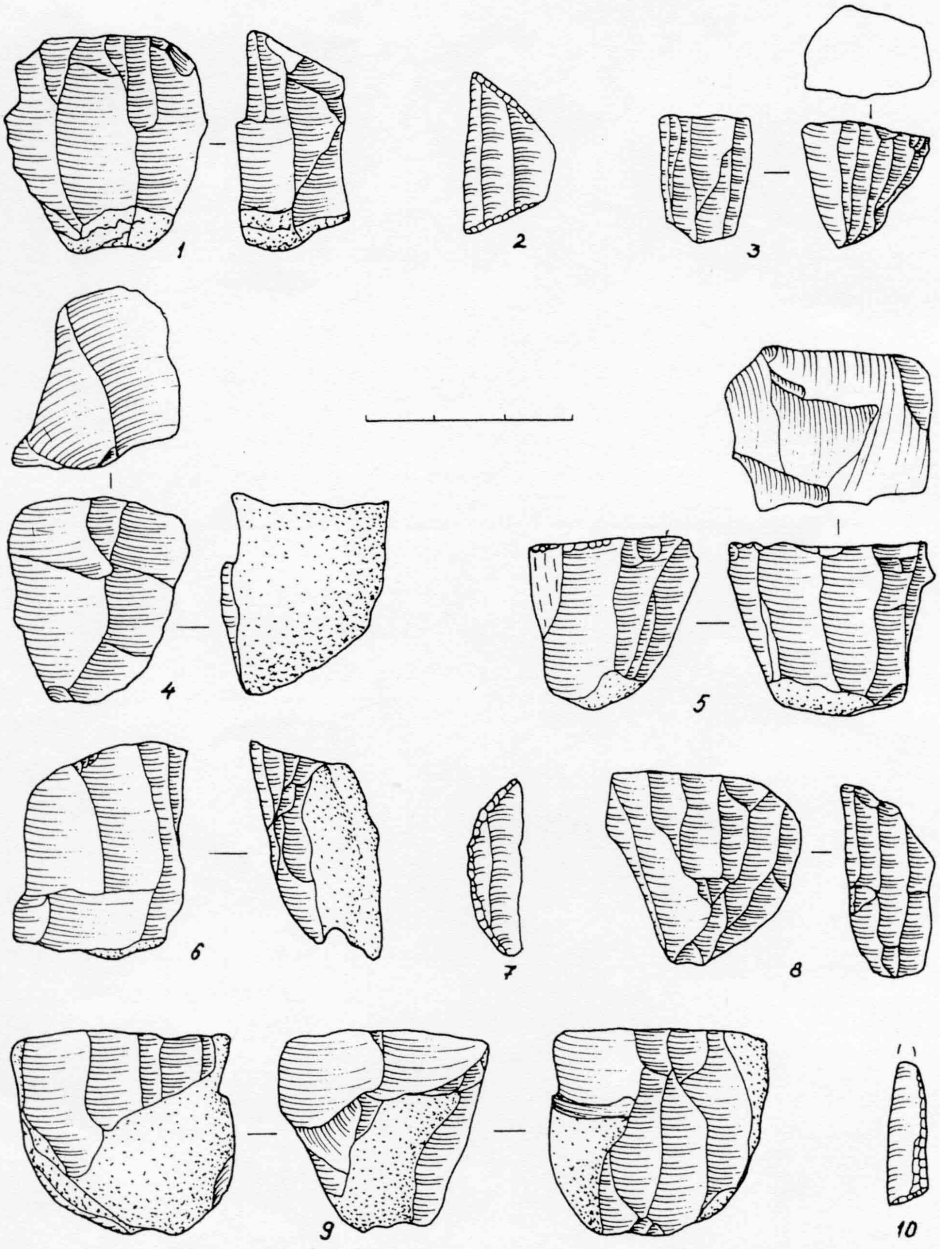

Fig. 8. 1, 6, 8, single-platform cores, Domalı; 4, core with changed orientation, Domalı; 3, 5, 9, single-platform cores, Gümüşdere; 2, trapeze, Ağaçlı; 7, segment, Gümüşdere; 10, triangle, Ağaçlı.

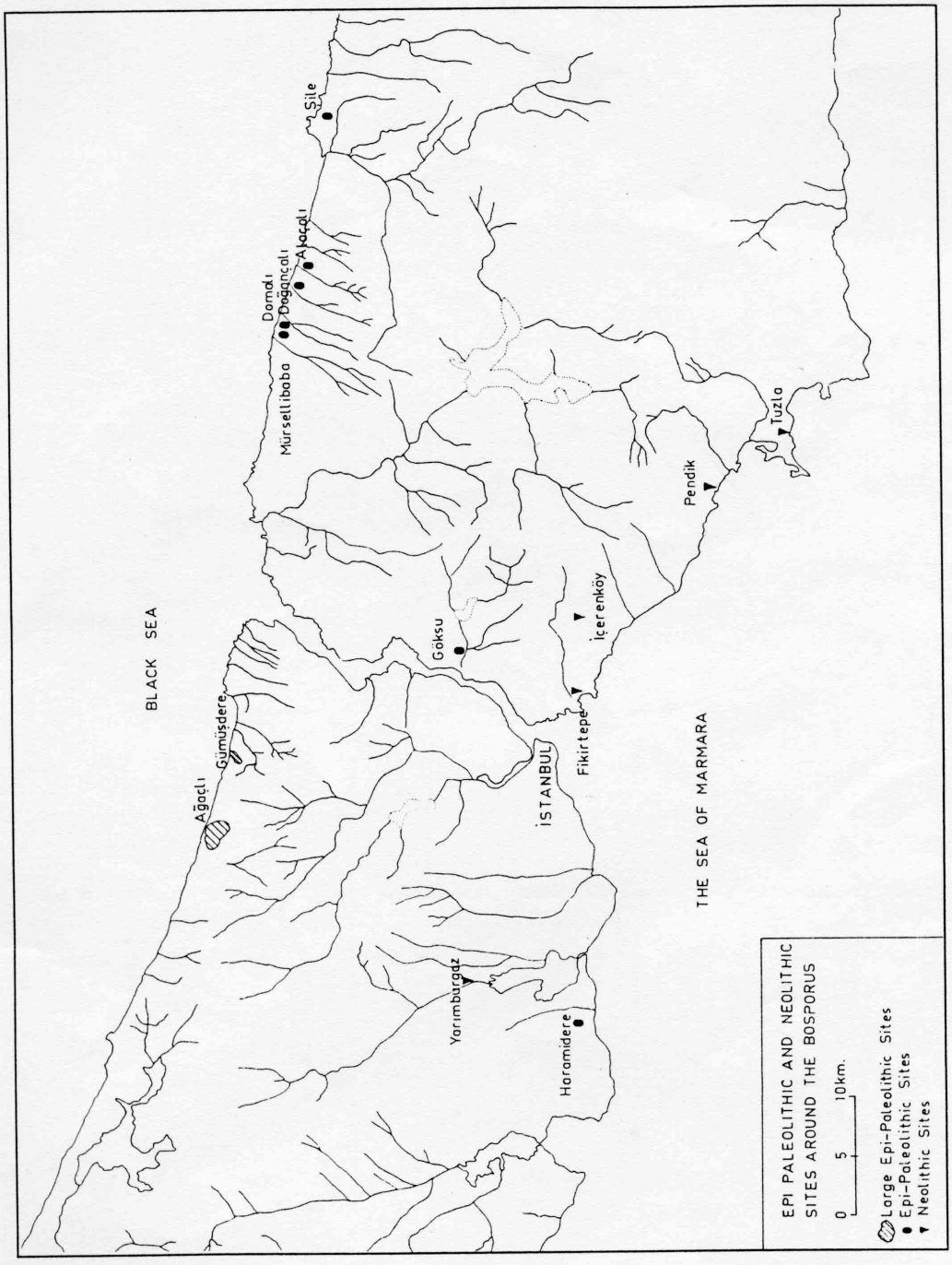

Fig. 9. Map of main early sites around Istanbul.