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# NEOLITHIC CHIPPED STONE ASSEMBLAGES IN NORTHWESTERN ANATOLIA, TURKEY

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**Abstract**

This paper describes the main features of the lithic technology, collected in the settlements in the territory of the South Marmara and Aegean region of West Anatolia during the 7–6 millennia BC. The results of the analysis demonstrate the uniformity in the technological and typological parameters, which may provide direct evidence for common lithic traditions and possibly similar environmental characteristics.

A new question arises following the Central Northwest Anatolia research at the Keçiçayýrý settlement in relationship to the noted earliest traces of PPNB occupation in that area. It is presumed that the bearers of the former lithic industry first penetrated this area prior to the arrival of the first makers of Neolithic pottery.

**Key words:** Neolithic chipped stone assemblages, PPNB, "bullet cores", west Anatolia.

## INTRODUCTION

The known the territory of the 'bullet cores' at the present state of research is confined to part of Northwest Anatolia bounded by the Aegean shores to the west, Yenişehir region to the south and the Marmara Sea. This study presents the chipped stone assemblages including these special cores from the prehistoric settlements in the South Marmara and the Aegean region of West Anatolia. Lithic assemblages from the excavations of Ilıpınar, Menteşe, Fikirtepe and Pendik are included in this paper. Recently additional information is provided from excavations carried out at prehistoric settlements of Barcın Höyük (Gatsov *et al.*, 2009) and Aktopraklık, in the Bursa region (Balci, 2011) as well as from Ulucak, Izmir region (Çilingiroğlu and Abay, 2005; Çilingiroğlu, 2009).

## CHRONOLOGY

Beginning in the mid of 7$^{th}$ millennium BC conical and bullet cores were accompanied by characteristic tool types at Ulucak, level V (Çilingiroğlu and Abay, 2005: 12; Çilingiroğlu, 2009: 7, fig. 2) and Menteşe (Roodenberg *et al.*, 2003: 17–59). Put together, those cores and tool types formed one specific technology. Having in mind the latest appearance of bullet cores at a settlement with sound radiocarbon dates such as Ilıpınar, where phase VB dates to 5 500–5 450 BC (Roodenberg and Schier, 2001: 257–278) one may assume that this particular technology lasted during approximately one thousand years without visible technological and typological changes. This issue is further examined here.

## THE RAW MATERIAL VARIETY

In the region under discussion flint is much more common raw material than obsidian and dominates the lithic assemblages while less than a few percent of pieces were made from obsidian (Gatsov, 2009). The lithic assemblages (Fig. 2) that were already analyzed in Ilıpınar and Menteşe by the authors, or are still under study (sites Barcın Höyük and Aktopraklık) the obsidian is less represented. The situation is not simple as up


**Fig. 1.** Location of the settlements mentioned in the text

to now it was impossible to determine whether or not the initial knapping activities of obsidian cores took place in these sites. Workshops of conical and bullet cores were not identified during the excavations of Ilıpınar and Menteşe. Therefore it seemed that most of the operational sequence of those cores that produced blades and bladelets took place away from the excavated area.

## TECHNOLOGY

The dominant core types during the period and the territory under discussion are unidirectional conical, subconical and bullet cores. The same knapping activities are documented for both flint and obsidian. It was a stable, well-developed, lithic technology, characterized by blade and bladelet blank production from those core types and thus characteristic of the tool assemblages as well. Three types of detachment techniques have been observed. The first one is pressure technique testified by presence of flint and obsidian bladelets – with extremely regular of edges as well as slightly curved profile. This technique has been applied to flint and obsidian bullet cores. Most of the conical cores display flaking surface that takes part of the entire or almost the entire circumference of the volume of the nodule forming a single platform cores with rounded or semi rounded flaking surfaces for the detachment of blades. The final result of these operational sequences is the bullet cores, whose reduction reached a degree of extreme exploitation. In other words the bullet cores could be considered as a last stage of reduction of that single platform rounded cores. In the last stage of reduction their shape is similar to the rifle bullets. It is worth pointing out that the research in 2011 analyzed the bulk of flint and obsidian bullet cores and bladelets among the lithics from Barcýn Höyük. As a rule all detached pieces do not display intentional retouch. Due to the fact that functional analysis was not performed, it's still not feasible to conclude what was the main use of these pieces.

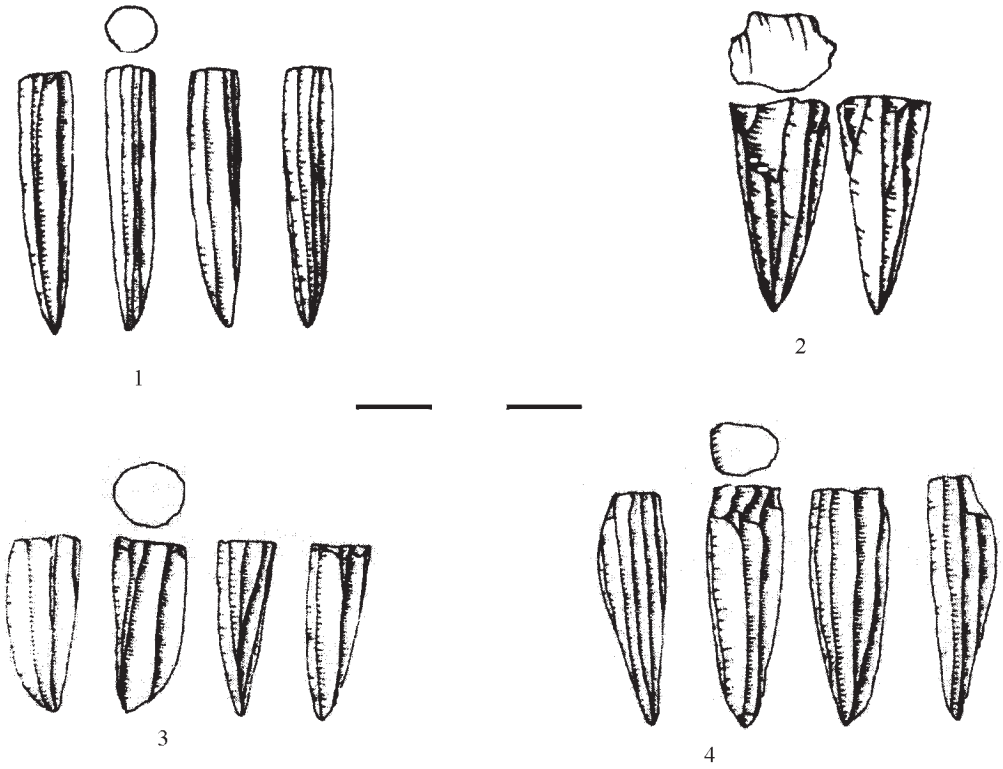


**Fig. 2.** 1–4 "bullet cores" from Ilıpınar, South Marmara region

The second type of blade detachment is linked to the use of punch or indirect percussion technique recorded on the base of "larger" blades. These are relatively thick, irregular curved specimens, and the proximal ends preserved a thick butt, often with a remaining part of the overhang ('lipped platforms'). As far as direct percussion technique is concerned it was also applied to the detachment of flakes.

These detachment techniques were executed in different stages of the knapping process (the operational sequence). Core preparation was mostly done by direct percussion, large blades were obtained during the beginning of core reduction and were accomplished by indirect or punch percussion. The last stage of the *chaîne opératoire* pressure technique that shaped and exploited the bullet core.

## RETOUCHED TOOLS

The best represented formal tools are flat semi-circular or circular end-scrapers often with cortex on the dorsal side, macro end scrapers, micro end scrapers, characteristic perforators and drills on irregular blades, transverse arrowheads, a few retouched blades with marginal partial retouch and denticulated blades. End-scrapers were characterised by more or less flat circular and semi circular specimens. As a rule thick end scrapers are with at least one steeply retouched and curved front. In contrast burins, arrowheads, backed blades, retouched bladelets, segments are virtually absent.

## DISCUSSION AND CONCLUSIONS

The geographic distribution of bullet cores incorporates a large territory spreading out from NW Pontic mountains, Anatolia, Northern or Up-

per Mesopotamia (in sites such as Nemrik) and its tradition lasted from the 9th millennium to the 6th millennium BC. On the other hand the list of typological elements described above distinguishes between territories with chronological and cultural differences. The appearance of bullet cores in such a huge territory and during several millennia characterized by similar reduction stages, can be considered as a supra regional element. At the same time all the other typological and technological elements in the assemblages are entirely different in each area, period and culture affiliation.

In the Northwest Pontic region, the steppe lowlands and the Crimean peninsula, the new and important results (Biagi and Kiosak, 2011). Of great importance are two Mesolithic cultural units – Kukrek and Grebenyky cultures with their eponymous settlements. Kukrek culture, which …" is attributed to …the end of the Paleolithic….. The bearers …produced subconical, bullet and pencil like cores for the manufacture of parallel-side bladelets. Characteristic tools are "Kukrek inserts" and "Kukrek burins", as well as burins on flakes. The microliths consist of a backed retouched point adjacent to an oblique truncation (Biagi and Kiosak, 2010: 24), …"trapezes and microburins are absent" (Biagi and Kiosak, 2010: 23–24). The lithic industry of Grebenyky, the other Mesolithic culture is characterized by conical and bullet core, blade and flake end-scrapers, notched blades, isosceles trapezes, "Kukrek inserts" (Biagi and Kiosak, 2010: 27). The sites of this culture are located in the continental steppe lowlands. New radiometric dates from the key site Myrne, Mesolithic culture Grebenyky, were related to the second half of 8 millennium BC (Біаджи *et al.*, 2008: 35). In the same time the geomorphological conditions, fauna and climate of Kukrek and Grebenyky Mesolithic cultures (Станко, 1982; Biagi and Kiosak, 2010: 21–22) are totally different in respect to Neolithic the settlements in South Marmara region. The former region presents fully developed Neolithic economy with corresponding typological inventory.

Here the question is whether or not the bullet core technology associated with the above listed tool types listed, could be seen as evidence of a local cultural substratum. Up to now in the area under study only the lithics from Ağaçli group (Ağaçli, Gumuşdere and Domalý) from the Turkish Black Sea shore could be considered as evidences of the Epiplaeolithic/Mesolithic substratum (Gatsov and Özdoğan, 1994). The issue is the appearance of backed blades, which do not fit with the South Marmara lithic assemblages and pose a question concerning the connection between the two areas.

From the Konya plain, Central Anatolia the presence of bullet core technology have been recorded at Çatalhöyük and Hacilar (Conolly, 1999). The specimens published by P. Bialor (1962) are larger than the similar core type in the Marmara region…. "blade core with blade facets all around the circumference (Bialor, 1962: 86, fig. 7: 1–4). It was mentioned as well as a "cylindrical blade core with narrow pointed end" (Bialor, 1962: 97, 96, fig. 8, 21). Here, there is also a difference in the bullet core size – the Çatalhöyük bullet specimen are bigger (Carter *et al.*, 2005). In this regard the bullet cores from Çayönü Tepesi (Binder, 2008; Caneva *et al.*, 2001) appear much earlier and the chronological place is different from that of the Marmara Early Neolithic assemblages. In addition, similar cores and perforators from the area of the Eastern Wing of the Fertile Crescent were published (Kozłowski, 1999: II, IV; Kozłowski and Aurenche, 2005: 144). These lithics come from the site of Nemrik, located in Upper or Northern Mesopotamia, and the obtained radiometric dates place the settlement in the 7th millennium BC (Kozłowski, 1999).

In other words, the exact and temporal distribution of the bullet core technology is not well documented. Up until now bullet cores were not found in Cyprus, Crete and continental Greece (Kaczanowska and Kozłowski, in press) or in the Bulgarian territory as well (Gatsov, 2009). We should expect more information from the ongoing research in the South Marmara region and the Aegean region of West Anatolia (Barcın Höyük, Aktopraklýk and Ulucak). If additional elements of this technology will originate in stratified contexts then it would be possible to formulate more refined observations. Nevertheless, at this stage of research the Mesolithic assemblages from Northwest Pontic should not be considered as a formative phase for the earliest Neolithic tradition in the area of Marmara and Aegean region of West Anatolia.

The above description and well defined lithic techno complex appeared during the 7th millen-

nium BC – 6th millennium BC in South Marmara region and Aegean shore. This industry incorporated bullet core reduction techniques joined by flat circular and semi circular end scrapers, macro and micro end scrapers, blade perforators and drills, trapezes, etc.

The preliminary results indicate that the general technological and typological structure of the average lithic assemblage dated to the first half of the 7th millennium BC and first half of 6th millennium BC, is unchangeable. The debitage and tool categories are represented in more or less similar frequencies. This fact suggests a generalised steady behavior and corresponding daily activities by the makers of this industry in respective sites. Probably the appearance of similar technological traditions within similar environment features, may explain to a certain degree the strict analogy between the lithic assemblages, discussed in this paper.

**The Earliest Neolithic artifacts in Central Northwestern Anatolia?**

Recently new questions related to the earliest trace of Neolithic occupations in Central NW Anatolia emerged. Since 2006 salvage excavations have been initiated at at Keçiçayırı led by Turan Efe (2004). The settlement is located in the Eskişehir province 18 km south of Seyitgazi, Central NW Anatolia. The investigations of Turan Efe exposed stratigraphic contexts from the pre- and Early Neolithic as well as Late Chalcolithic periods (Efe *et al.*, in press; Gatsov and Nedelcheva, in press). Then lithics from trench b 88 deserve special attention. The lithic assemblage includes a core from tabular flint with two opposite prepared platform (Fig. 3). its exploitation was completed from both platforms. Initially it was a relatively flat flint nodule which explains why a crest was not necessary at the back. The lack of crest differs the specimen from a real naviform core (Quintero and Wilke, 1995; Wilke *et al.*, 2007). Among the lithics tabular flake cores in the final stage of reduction with traces of preparation are abundant, as well as chipped disks on tabular flint with steep and semi-steep irregular retouch (Fig. 4), and leaf-shaped points with retouch covering both sides (Fig. 5).

The main question is linked agaun to the unsatisfactory level of research into the Epipalaeo-

**Fig. 3.** Core from tabular flint from Keçiçayırı

**Fig. 4.** Chipped disk from Keçiçayırı

**Fig. 5.** Leaf-shaped point with retouch covering both sides from Keçiçayırı

lithic substratum in this are. Until now only a single Palaeolithic site was recorded. Hence, the lack of comparative base collection creates a major difficulty and hampers a better understanding of local lithic evolution. In other words "it is very difficult to distinguish more or less clear lines between pre-and Pottery Neolithic at Keçiçayırı" (Gatsov and Nedelcheva, in press).

Regarding the lithics from Keçiçayırı we should note that they are entirely different when compared to the earliest Neolithic chipped stone assemblages from the Marmara region and the Aegean region of West Anatolia.

The question here is at that point of the research if this region was penetrated by migrating groups related to the PPNB who settled in that region before the first newcomers presenting the Pottery Neolithic?

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