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A Pre-Pottery Neolithic Site in Southeastern Anatolia: Papazgölü

Çiler ALTINBİLEK-ALGÜL

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Introduction

This paper focuses on the chipped stone assemblages from the survey material of the Pre-Pottery Neolithic site Papazgölü. Papazgölü is located at the northern border of Ergani Plain (Diyarbakır Province, Ergani Town), the piedmont area of a mountain range at the north of the plain (Özdoğan 1990: 461) and at a high altitude (960 m) (Harmankaya *et al.* 1997) (Fig. 1).

The mound was first discovered in 1988, during the Diyarbakır surface surveys which were carried out parallel to the Çayönü excavations by M. Özdoğan and his team. It is approximately 300x150 m in size and with these dimensions was defined as one of the biggest mounds in South East Anatolia belonging to Neolithic period (Özdoğan 1990: 461-462).

During the survey, no pottery was documented on the surface of the settlement; there were plenty of obsidian and flint artifacts, as well as a few numbers of ground stones, a stone bracelet fragment and two pieces of stone beads. According to this assemblage the mound was dated to the Pre-Pottery Neolithic Period during the survey. However, as there is no detailed study on the chipped stone industry, it was not possible to understand which phase of Pre-Pottery Neolithic period -which is quite a long one- the mound is dated to. Therefore, with this study on chipped stone industry, it is aimed to

contribute to the settlements dating process by determining the raw material density, knapping techniques and tool types.

Chipped Stone Industry

Within the survey 2053 chipped stone pieces have been collected. As it was a systematic survey every single piece was collected; this facilitated the analysis of the material. The assemblage is composed of obsidian (88%), flint (11%) and quartz (1%) (Table 1).

Raw Material Procurement

Chemical analysis of the obsidian is not realized yet. However, according to the colours such as emerald green, brown and black and their texture, the obsidian originates probably from Bingöl and Nemrut sources. Due to the dense alteration on the surface of the artifacts, it was impossible to achieve a detailed colour discrimination of their density in the settlement.

Flint material is defined as fine or coarse fabric and different colours (poor quality grey, green and sandy brown, medium quality light brown and good quality pinkish brown, pink, cream and chocolate brown etc.)[1]. Good quality pink and chocolate brown groups are represented with only a few examples. The technological study indicates that these last two raw material groups had been imported into the settlement. The quartz assemblages are of several colours and textures. While the majority of this group is composed of bad quality pieces, the two examples belonging to a quite homogeneous raw material quality have importance.

Technological and Typological Studies

Technological and typological analysis showed that different techniques were applied to different raw materials. Technologically, obsidian is mostly related to blade industry and flint as well as quartz is related to flake industry. According to this, there are differences in the knapping techniques. Similarly, there are differences in the tool types too. Therefore, the technological study results will be explained separately below.

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[1] F. Şaroğlu mentions the presence of flint sources near Çayönü (1990: 12-13). These sources may have been the origin at least of some of the flints from Papazgölü.

Obsidian

Obsidian was dominantly related to blade procurement. In total 1800 pieces of obsidian are composed of 57,9 % blades, 11,7 % flakes, 1,6 % cores and core fragments, 6,6 % core preparation and rejuvenation pieces. Beside these, there is a huge number of flake fragments, small flakes under 2 cm and unidentified pieces (Table 1). According to the knapping systems several techniques have been detected among the obsidian assemblage. These include several practices of pressure techniques[2] and direct percussion technique, but some of these techniques could be related to each other. Knapping techniques are discussed below.

Products related to pressure technique constitute 36 % of the total obsidian material of which 63 % are blades and bladelets. These products are related to bullet (Fig. 2) and pyramidal pressure cores which were documented in high numbers in the survey. The high amount of several products (cortical flakes, tablets, core rejuvenation pieces etc.) that may belong to this knapping system shows that the knapping activity took place at the site. The remarkable amount of the tablets (Fig. 3) and debitage surface correction pieces shows that in some cases correction of the cores were necessary.

Most of the cores related to pressure technique are in exhausted states. The sizes of the exhausted cores whose diameters could be measured are in the range of 1,0-1,6 cm. With these sizes, the final knapping stages of the cores must have been practiced with pressure by hand (Wilke 1996, Pelegrin 2003: 59-62). At most of the exhausted cores knapping took place around all the periphery. However some core fragments and rejuvenation pieces show that at least one back crest had been performed during the preparation stage. All of the complete examples have flat platforms. The high numbers of tablets also support this. Among the assemblage, a flake belonging to the distal end of the core was observed and at least in this example it is understood that the distal end of the core was flat and natural surfaced.

Central blades belonging to this system have a range of different widths (between 0,43 – 2,85 cm) (Fig. 4). This indicates that the pressure technique could have been applied by using different practices (by hand for the micro bladelets, by shoulder or tummy while sitting and standing for the second group blades/bladelets and also by lever technique for the large ones) (Pelegrin 2012: 479). As a result of the experimental studies, Wilke states

[2] Pressure technique is a special method to obtain blade products (blades, bladelets, or microblades) and is made by means of a sharp-end tool by applying pressure (Inizan *et al.* 1999: 76-78).

that the same core can form both a wide and a micro blade, depending on its extent of reduction (1996: 290). It is possible that the pressure blades in Papazgölü may belong to different stages of same core types.

Among the surface collection there are also blades knapped with direct percussion technique. Within the assemblage we observed that one piece of a deformed pressure core continued to be knapped with direct percussion technique. For this reason, small sized blades belonging to this technique can be considered as related to this core types.

In addition to this, the presence of high numbers of wide and thick blades in the assemblage is remarkable (Fig. 5). Some of these are obtained by lever pressure technique. Beside these, there are examples knapped with direct percussion technique. Due to the similarity of thickness distribution, it is possible that they are mostly related to Çayönü Tools production. Some others are retouched or were intensively used along the one or two edges.

It is important to notice the presence of blades that could have been obtained by lever pressure technique (Pelegrin 2002; 2003). Such blades exist also in Çayönü Late PPNB, Final PPNB and Pottery Neolithic layers as well as in Sabi Abyad Pottery Neolithic layers in the Balikh Valley (Syria) (Altınbilek-Algül *et al.* 2012). The existence of this technique in these settlements increases the possibility of the same practice in Papazgölü.

Obsidian Tool Types

Tools constitute 27 % of the obsidian assemblage. Çayönü Tools take the largest share among all tool types (25,1 %)[3]. This tool group is followed by scrapers (12,3 %), notched blade and flakes (7,1 % in total), splintered pieces (1,5 %), truncated blades (1,3 %), denticulated blades (0,6 %) and corner-thinned blades (0,2 %). Many retouched blades and flakes were also observed (Table 2).

Except for a few samples, most of the Çayönü Tools[4] are retouched on both sides. Direct retouch is applied to all samples, except one. All

[3] Most of the Çayönü Tools were found in broken pieces. This might explain their high numbers.

[4] Çayönü Tool is a special tool type found in many settlements of Near Eastern Pre-Pottery and Pottery Neolithic period. They are characterized by a special type of retouch that generate a rectangular, denticulated border, formed by using pressure technique, and an apparent wear mostly on ventral surfaces. As it can be seen in the chronological dispersion prepared by Cauvin (1988), regarding to Near Eastern Neolithic, it is thought that the tools have first appeared in the Anatolian settlements. Regarding to their dispersion in settlements, they have been found in large quantities and constitute an important tool group in the East Taurus settlements, i. e., Çayönü (Caneva *et al.*, 1994; Özdoğan 2011), Cafer Höyük (Cauvin *et al.*, 1999) and Boy Tepe (Balkan-Atlı 1989).

supports on which the tools are formed made of large unipolar central blades (Fig. 6).

End scrapers take a very large portion among the scrapers (Fig. 7). There are a few semi-circular scrapers, side-scrapers, as well as scraper fragments. Flakes were preferred for the production of the scrapers and all of them have a thick scraper front. These features suggest that they have been used in hard activities[5].

The presence of some SBBF (Side Blow Blade/Flake) pieces in the assemblage (Table 12) shows that SBBF technique was also used.

Flint

Flint artifacts yield also a variety of techniques: direct percussion, widely used, indirect percussion and pressure.

Among the flint assemblage (228 pieces), 56,6 % flakes, 12,7 % blades, 4,4 % cores and core fragments, 3,1 % core preparation and rejuvenation pieces; beside there were finds include many flake fragments and flakes smaller than 2 cm (Table 1). With this distribution, it is possible to state that flake industry is dominant in this assemblage. However, differences are observed among flint raw material groups and *chaine operatoires*. Hence results related to flint assemblages will be explained below in accordance with raw material and *chaine operatoire* relations.

1) Poor quality grey, sandy brown and green and medium quality light brown flint groups are especially used for the production of flakes. These constitute the most observed flint group. The existence of flake cores and different sized mostly cortical flakes implies that all the knapping phases, including preparing of the core were executed at the site. In this group four unipolar (Fig. 8) and one multidirectional flake core fragment were observed. In addition three pieces of blade like flakes and two unipolar central blades exist. All of these blades had been knapped by direct percussion technique.
2) A second knapping system is related to pinkish brown flints and contains knapping products from unipolar cores by using direct percussion technique. In this group many pieces of blades and flakes, as well as one piece of an exhausted core, one piece of possible? opening platform and

[5] Although the existence of scrapers is usually related to hide processing, use-wear analysis on the scrapers from Çayönü show different areas of usage (Altınbilek 2000).

one piece of tablet were observed. Most of the flakes are thin (cortical or not) and generally small sized. All of the products are related to the direct percussion technique for this group. Existence of opening platforms, tablets and cores as well as flakes in the knapping products, indicates that knapping – at least the stages after the core preparation- had been done at the site.

3) The third knapping system is composed of bipolar central blades which are represented with only 5 examples (Fig. 9). Among these blades, four of them are related to the pinkish brown, one is related with chocolate brown flints. Some of the pinkish brown flakes mentioned above are possibly related to this group.
4) A fourth group is represented by two blades knapped probably with indirect percussion technique. Both are of good quality buff colour flints. This flint group is composed of only three artifacts. Although all of them are central blades, the knapping technique of the third example was not identifiable since it was a middle part of a blade. As they are not high in number this group is not clear for the moment.
5) The last system is associated with pressure technique and this group is only related to the good quality pinkish flint and brown flints. One piece of pressure core (Fig. 10) and one central blade on pinkish flint and one piece of brown flint blade indicate the pressure technique. Similarly, pinkish flint is a raw material used in Çayönü pressure techniques and D. Binder suggests that it had been imported to the settlement (Binder 2007).

Flint Tool Types

Flint tools represent 24% of the total flint assemblage. Among the tools, the most common group is composed by the scrapers (55,6 %) and sickle blades (16,7 %) follow this group. Other examples in the defined tool group are very few in numbers and these consist of two pieces of burins, one piece of crescent-like backed blade and one piece of tang fragment (Table 2).

The scrapers are shaped especially on flakes (except five sample) (Fig. 11). In terms of flints, all kinds of raw materials were used. As it seems from the complete examples, most of them are in forms suitable to be used with handles. Most of them have thick scraper front and their retouch is generally very steep. These properties suggest that they had been used in a heavy activity and/or several activities. However, as use-wear analysis is not possible on

surface material[6], the real function is not determined. When the scrapers are typologically compared, similar scrapers were documented in the Late PPN period of Çayönü (Altınbilek 2000).

Flint sickle blades are very few in number (Fig. 12). However, it is possible that obsidian blades which are high in numbers could be used as sickle blades. But as no use-wear analysis is possible, it is not possible to say something precise on this subject. As support, flakes had been used as well as blades (2 pieces). In terms of flint choice, a variety is available again.

Only one very small piece of tang fragment was observed in the assemblage. As it is a burnt piece, the raw material could not be understood. Possibly, it must be associated with the bipolar blade group.

Quartz

The majority of quartz artifacts are composed of flakes (84 %), followed by core and core fragments (12 %) and one blade. For this reason, in terms of quartz artifacts, a knapping strategy for flake production can be mentioned. Most of the flakes are cortical and except one piece bad quality raw material has been used for all of them (Table 1).

One of the cores, on a good quality quartz, is a flake core (2,87x3,42x3,49 cm). The other two are very small and exhausted. The only blade is cortical.

The data show that small sized cortical quartz pieces were used for knapping without any preparation. There are more regular extractions on the core associated with good quality raw material. As it was an exhausted core, preparation stages could not be identified, but a knapping strategy similar to flint is possible. During the knapping stages direct percussion technique was used for the all quartz assemblages.

According to the typological examinations only seven tools were defined: one end scraper, one retouched blade and five retouched flakes (Table 2).

Discussions

– According to raw material the percentage of obsidian is very high (88 %) in the settlement and macroscopic observations suggest that obsidian was brought from Bingöl or Nemrut sources. The high amount of obsidian assemblage in the settlement is a characteristic for the East Taurus

[6] There are dense alterations on the material due to wear. Hence, it is not possible to make a use-wear analysis on them.

settlements that points to the end of the Pre-Pottery Neolithic Period in that region (Cauvin *et al*. 1999).

– Several knapping techniques were applied to obsidian as well to flint. But for both raw materials there are some knapping techniques, which dominate the others. A very high portion of obsidian pieces show some applications of specialization-required pressure techniques and that production is related to blade obtainment. There are also pressure blade products which were knapped possibly using a lever. As for flint, flake industry is dominant. Most of these blades which have been found in small amounts and flakes were knapped by using direct percussion which does not require specialization. The differentiation in knapping techniques of obsidian and flint, compared to the Çayönü settlement, starts being obvious in the end of the Late PPNB, and continuously increases in the Final PPNB and also in the Early Pottery Neolithic period (Algül 2008).
– The earliest examples of obsidian bullet cores were found in the settlements of Zagros region (M'lefaat and Nemrik 9) (Inizan – Tixier 2001; Wilke 1996). They appear in many settlements in Eastern and Southeastern Anatolia during the Pre-Pottery and Pottery Neolithic periods. These cores were documented in the several Pre-Pottery Neolithic settlements as Çınaz Höyük (Balkan-Atlı 2007), very close to Papazgolü; Magzalia (Bader 1993); Akarçay Tepe (Maeda 2009; Arimura vd. 2000); Bouqras (Roodenberg 1986) and in the Pottery Neolithic settlements as Salat Cami Yanı (Miyake 2011) and Umm Dabaghiyah (Kozlowski 1999). That long-lasting distribution of the bullet cores indicates a long-lasting tradition in the region[7].
– Bullet-shaped cores were discovered in Çayönü as well (Redman 1982; Binder 2007: 241) but most of them belong to the early phases of the Pre-Pottery Neolithic period and typical ones are usually made of flint. In the later layers of the settlement (end of the Late PPNB) only one broken bullet-shaped core in obsidian was documented. Other core types of that period, which were found in large amounts in Çayönü, are prismatic cores with frontal debitage (Binder 2007; Algül 2008). These core types constitute the most important difference between Çayönü and Papazgölü for the Late PPNB phase. However, in Çayönü, two exhausted obsidian

[7] In the later periods bullet cores were also found in several settlements as Çatalhöyük VIA in the Central Anatolia, (Conolly 1999), Höyücek in the Lake District (Balkan-Atlı 2005) and Aktopraklık in the Marmara Region (Balcı 2011).

cores were discovered during the Final PPNB phase (Algül 2008), which are semi-conical samples resembling bullet-shaped cores. These are similar to the ones found in Papazgölü.

– Obsidian bipolar knapping system was not documented in the assemblage. As for flint there are very few bipolar blades (only five). Points related to bipolar technique are represented only by one sample. Rare usage of bipolar technology and few amounts of points point out again the end of Pre-Pottery Neolithic Period for the settlements in the Southeastern Anatolia. Through the end of this period points can still be observed in this region (Özdoğan 2002: 438-441), but in considerably decreasing amounts (Caneva *et al.* 1994: 258; Algül 2008). Özdoğan claims that these changes might be related to the migration of craftsmen, applying bipolar technology and producing points, out of these regions (2002: 443) and this idea seems rather reasonable for now.
– Among the defined tool types, mostly Çayönü Tools, scrapers, notched blades and flakes, sickle blades and splintered pieces are found in the assemblage. Other defined tools as burins, truncated pieces, backed blades, denticulated pieces are very few in number. In addition some side blow blades/flakes were also observed. These characteristics might indicate the end of the Pre-Pottery Neolithic Period as well and possibly the Early Pottery Neolithic.

Chipped stone assemblages from Final PPNB and the Early Pottery Neolithic period show similarities in general features at least for Çayönü example. Therefore, although no pottery has been found in the survey, there might be layers in Papazgölü that may belong to the Early Pottery Neolithic period too. The reason of the absence of sherds in the survey might be the rare existence of the pottery in the Early Pottery Neolithic period[8]. Sumaki Höyük (Batman) is a good example for that kind of settlements (Özdoğan 2011).

Conclusion

As a conclusion, regarding to chipped stone assemblage Papazgölü shows typical features of Eastern Taurus Neolithic. In the surface collection obsidian has much more higher percentage compared to flint. According to obsidian assemblage blade production by using pressure technique, and flake

[8] Personal communication with Prof. Dr. Mehmet Özdoğan and Asst. Prof. Aslı Özdoğan.

production for flint are dominant. The usage of bipolar technique and points related with this technique are very rare. The dominant tool types are Çayönü Tools, scrapers and sickle blades. Other than this some samples of side blow blade/flake (*SBBF*) technique have been documented. In consequence of all these characteristics, there might be layers in the settlement that belong to the end of Pre-Pottery Neolithic period (end of Late PPNB and Final PPNB) and possibly to the Early Pottery Neolithic period. But one should keep in mind that these conclusions are based on surface material.

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Çiler Altınbilek-Algül
Istanbul University, Faculty of Letters, Prehistory Section
34134 İstanbul / Turkey
cileraltinbilek@gmail.com

Güneydoğu Anadolu'da Çanak Çömleksiz Neolitik Döneme Ait Bir Yerleşme: Papazgölü

Bu çalışma Çanak Çömleksiz Neolitik Papazgölü yerleşmesinin yüzey toplaması sırasında bulunan yontmataş buluntular ile ilişkilidir. Diyarbakır İli, Ergani İlçesi'nde yer alan Papazgölü Ergani Ovası'nın kuzey sınırında, ovanın kuzeyindeki dağ silsilesinin eşik bölgesinde bulunmaktadır (Özdoğan 1990: 461). İlk olarak 1988 yılında M. Özdoğan ve ekibi tarafından yürütülen Diyarbakır İli yüzey araştırması sırasında tespit edilen höyüğün boyutları yaklaşık olarak 300x150 m'dir.

Yüzey araştırması sırasında toplam 2053 adet yontmataş buluntu toplanmıştır. Bu toplama sırasında da seçim yapılarak sadece aletlerin değil, bulunan tüm parçaların toplanması yontmataş buluntular üzerinde teknolojik bir çalışma yapılmasına olanak sağlamıştır. Buluntuların %88'ini obsidiyen, % 11'ini çakmaktaşı ve % 1'lik az bir oranını ise kuvars olanlar oluşmaktadır.

Obsidiyen buluntuların kimyasal analizleri henüz yapılmamış olmakla birlikte, renk (zümrüt yeşili, kahverengi ve siyah) ve dokuları nedeniyle yerleşmeye Bingöl ve Nemrut obsidiyen yataklarından getirilmiş oldukları düşünülmüştür. Çakmaktaşı buluntular için de renk ve doku farklılığına göre hammadde ayrımları yapılmış ve çeşitli gruplar tanımlanmıştır.

Buluntular teknolojik ve tipolojik açıdan değerlendirildiğinde, hammadde grupları açısından farklılıklar dikkati çekmektedir. Teknolojik açıdan obsidiyen daha çok dilgi endüstrisi, çakmaktaşı ve kuvars buluntular ise yonga endüstrisi ile ilişkilidir. Buna göre de yongalama teknikleri arasında farklılıklar olduğu anlaşılmaktadır. Benzer şekilde alet tipleri açısından da farklılıklar gözlenmektedir.

Obsidiyen buluntuların yongalama teknikleri açısından bir çeşitlilikten söz etmek mümkündür. Bu teknikler baskı tekniğinin çeşitli uygulamalarını ve yanı sıra doğrudan vurma tekniğini içermektedir. Fakat bu tekniklerin bazılarının birbirleriyle ilişkili olması mümkündür. Baskı tekniği ile ilgili olan ürünler (dilgiler/dilgicikler) yüzey buluntuları içerisinde en fazla bulunan grubu oluşturmaktadır ve bu dilgiler olasılıkla yerleşmede bol miktarda bulunan mermi biçimli çekirdekler ile ilişkili olmalıdır. Bu dilgi/dilgiciklerin çok çeşitli boyutlarda olması baskı tekniğinin farklı uygulamalarına işaret etmektedir.

Obsidiyen alet tipleri içerisinde en fazla bulunan grubu çok büyük bir oran ile Çayönü Aletleri oluşturmakta, bu aletleri sırasıyla kazıyıcılar, çentikli dilgi

vongalar, ara parçalar, budanmış dilgiler, dişlemeli aletler ve sadece bir örnek ile köşeleri inceltilmiş dilgi takip etmektedir. Bunların yanı sıra ince dilgi kesitleri olarak adlandırılabilecek parçalara rastlanmıştır. Bu örnekler *SBBF* (*Side Blow Blade/Flake*) tekniğinin uygulandığını göstermektedir.

Çakmaktaşı buluntular açısından da farklı yongalama tekniklerinin uygulandığını söylemek mümkündür. Bu teknikler içerisinde en fazla bulunan grubu doğrudan vurma tekniği uygulanarak yongalanan ürünler oluşturmaktadır. Bunların yanı sıra çok az sayıda olmakla birlikte baskı tekniğine ve olasılıkla dolaylı vurma tekniğine ait olabilecek bazı örneklere de buluntu grubu içerisinde rastlanmıştır. Bu teknikler ile farklı hammadde grupları arasındaki ilişki dikkat çekicidir. Özel bir deneyim gerektiren baskı tekniği, dolaylı vurma tekniği ve iki vurma düzlemli yongalama sistemlerine ait çok az sayıdaki örnek için sadece iyi kaliteli çakmaktaşları kullanılmıştır.

Çakmaktaşı alet tipleri içerisinde en fazla bulunan grubu kazıyıcılar oluşturmakta, bunları orak bıçakları, kalemler, birer adet sırtlı dilgi ve okucu parçası oluşturmaktadır.

Bu özellikleri ile Papazgölü, yontmataş buluntuları açısından Doğu Toros Neolitiğine ait tipik bir yerleşme özelliği göstermektedir. Yüzey buluntuları içerisinde hammadde olarak obsidiyen çakmaktaşlarına göre çok yüksek oranlardadır. Obsidiyen buluntular açısından baskı tekniği uygulanarak dilgi üretimine, çakmaktaşları açısından yonga üretimine yönelik yongalama sistemleri hakimdir. Okuçları ve okuçları ile ilişkili iki vurma düzlemli yongalama sistemleri yok denecek kadar az olarak karşımıza çıkmaktadır. Alet tipleri içerisinde baskın olan gruplar Çayönü Aletleri, kazıyıcılar ve orak bıçaklarıdır. Buluntu topluluğu içerisinde bunların yanı sıra *Side Blow Blade/Flake* (*SBBF*) tekniğinin örneklerine de rastlanmıştır. Tüm bu özellikleri nedeniyle yerleşmede Çanak Çömleksiz Neolitik dönemin sonları (Geç PPNB sonları ve Final PPNB) ve belki de İlk Çanak Çömlekli Neolitik döneme ait tabakaların olması mümkündür. Çanak Çömleksiz Neolitik dönemin son evresi olan Final PPNB ve Erken Çanak Çömlekli Neolitik dönem yontmataş buluntuları genel özellikleri ile bölgedeki yerleşmeler açısından benzerlik göstermektedir (Algül 2008). Papazgölü'nde her ne kadar yüzey buluntuları içerisinde çanak çömlek yer almasa da, İlk Çanak Çömlekli Neolitik dönemde çanak çömlek çok az bulunduğundan, yüzey buluntuları içerisinde rastlanmamış da olabilir. Bu nedenle yerleşmede bu evreye ait tabakaların olması da mümkündür[1]. Ancak bu sonuçların sadece yüzey buluntuları ile ilişkili olduğu unutulmamalıdır.

[1] Prof. Dr. Mehmet Özdoğan ve Doç. Dr. Aslı Özdoğan ile özel görüşme.

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	Obsidian	%	Flint	%	Quartz	%
Cores	10	0,6%	8	3,5%	1	4,0%
Core Fragments	18	1,0%	2	0,9%	2	8,0%
Core Prep. and rejuvenation pieces						
Crested flakes/Opening platform	1	0,1%	1	0,4%		
Crested blades	2	0,1%				
Lateral blades	82	4,6%	5	2,2%	1	4,0%
Tablets	22	1,2%	1	0,4%		
Debitage surface correction pieces	11	0,6%				
Central Blades						
Unipolar	1015	56,4%	18	7,9%		
Bipolar	1	0,1%	5	2,2%		
Unidentified	27	1,5%	6	2,6%		
Flakes						
Thick flake with natural surface	16	0,9%	25	11,0%	8	32,0%
Thick flake without natural surface	25	1,4%	12	5,3%	2	8,0%
Thin flake with natural surface	25	1,4%	42	18,4%	5	20,0%
Thin flake without natural surface	145	8,1%	50	21,9%	5	20,0%
Unidentified pieces	66	3,7%				
Total	1466		175		24	
Flake fragments	135		28		1	
Flakes smaller than 2 cm	199		25			
Total: 2053 pieces	**1800**		**228**		**25**	

Table 1 Technological distribution of the raw materials

	Obsidian	%	Flint	%	Quartz	%
Scrapers						
End scrapers	42	8,8%	23	42,6%	1	14,3%
Semi-circular scr.	3	0,6%	2	3,7%		
Side scrapers	2	0,4%				
Scr. Frag.	12	2,5%	5	9,3%		
Çayönü Tools	120	25,1%				
Sickle blades			9	16,7%		
Burins			2	3,7%		
Backed blades			1	1,9%		
Truncated blades	6	1,3%				
Notched pieces	34	7,1%				
Denticulated	3	0,6%				
Corner-thinned blades	1	0,2%				
Splintered pieces	7	1,5%				
Tang fragment			1	1,9%		
Retouched blades	201	42,0%	5	9,3%	1	14,3%
Retouched flakes	45	9,4%	6	11,1%	5	71,4%
SBBF	3	0,6%				
Total	479	100,0%	54	100,0%	7	100,0%

Table 2 Typological distribution of the raw materials

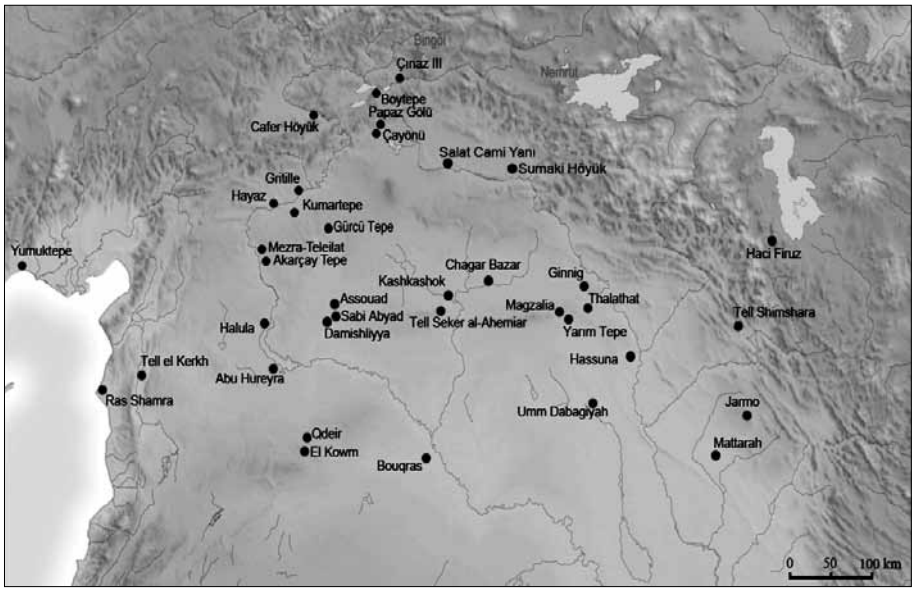

Fig. 1 Late PPNB, Final PPNB and Early Pottery Neolithic sites in the Near East (Composed by Asst. Prof. Erhan Bıçakçı and Yasin Gökhan Çakan).

Fig. 2 Obsidian bullet cores

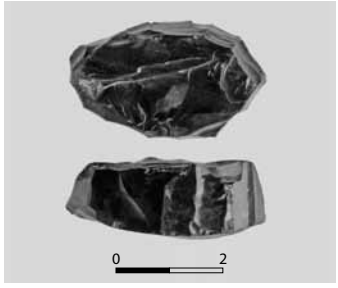

Fig. 3
Obsidian tablet

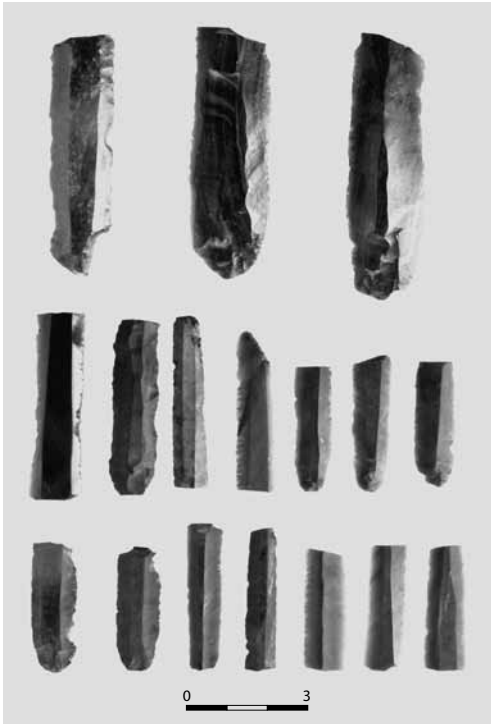

Fig. 4
Obsidian pressure blade and bladelets

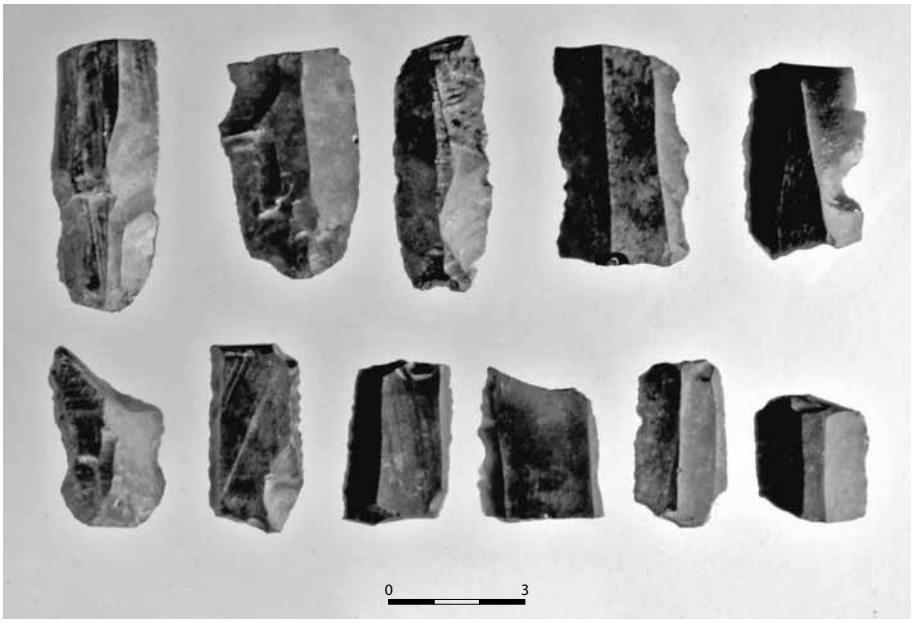

Fig. 5 Obsidian large blades

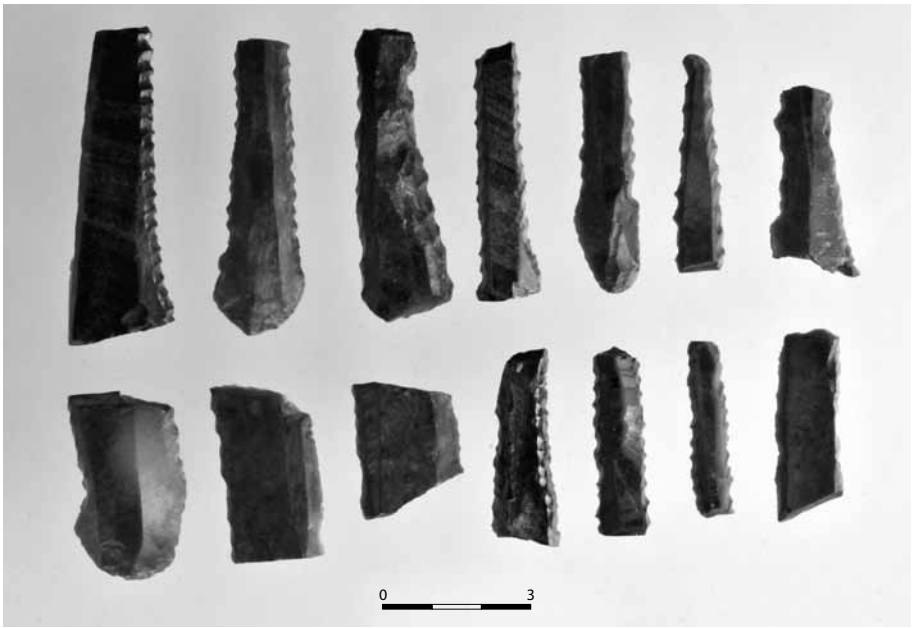

Fig. 6 Çayönü Tools

Fig. 7 Obsidian scrapers

Fig. 8 Flint core

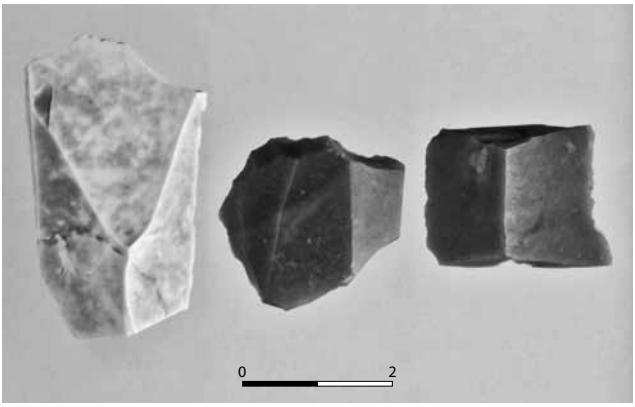

Fig. 9 Flint bipolar blades

Fig. 10 Flint pressure core

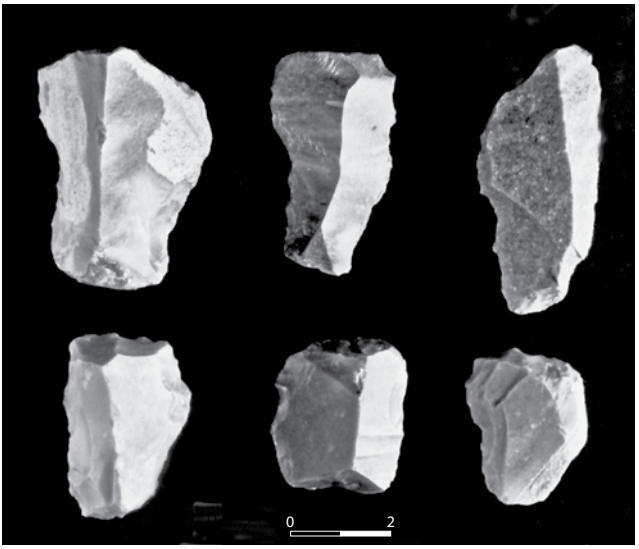

Fig. 11 Flint scrapers

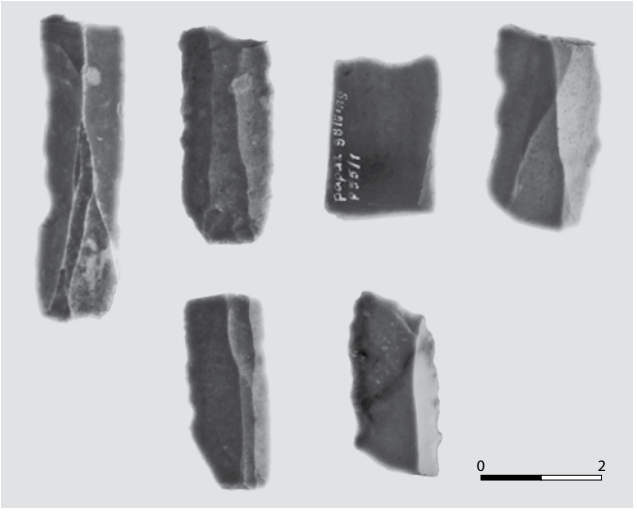

Fig. 12 Flint sickle blades