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IN THE EASTERN MEDITERRANEAN**

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ON THE CHIPPED STONE ASSEMBLAGES AT KLIMONAS AND SHILLOUROKAMBOS AND THEIR LINKS WITH THE MAINLAND

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Abstract

Research conducted on Cyprus over the last twenty years had led to renewed interest in the first populations living on the island, and it has created a new framework for thinking about this and other related questions. The survey conducted at Amathus in the years between 1988 and 1991 by the mission of the French School of Athens was highly productive and led to the recovery of a large number of Neolithic sites. The high density of sites of the age is connected with the excellent flint sources that occur in the area. In particular, two sites of major importance were discovered by the survey: Shillourokambos and Klimonas. Both of them were subsequently excavated. This chapter gives a concise review of the character of the chipped stone assemblages recovered at the two settlements, which date respectively to the periods now known as the PPNB and the PPNA on Cyprus. During both times, almost all of the chipped stone tools were made from local sources of flint and chert but there is also evidence for obsidian, which reached the island from sources in Anatolia. What is still lacking on the island at the present time is the phase of transition between these two periods.

Key words: PPNA, PPNB, blade technology, obsidian

INTRODUCTION

Research conducted on Cyprus over the last twenty years had led to renewed interest in the first populations living on the island, and it has created a new framework for thinking about this and other related questions such as early seafaring in the eastern Mediterranean. The excavations at several new archaeological sites have now pushed back the earliest Neolithic habitation on Cyprus from the 7th millennium BC to the first half of the 9th millennium BC. Radiocarbon dates from the earliest phase of occupation at the settlement of Parekklisha-Shillourokambos, (Guilaine *et al.*, 2000, 2011; Guilaine, 2003; Guilaine and Briois, 2007) and from well 116 at Mylouthkia (Peltenburg *et al.*, 2000, 2001) indicate that human

groups were already living on Cyprus as early as 8,400 and 8,300 cal. BC. Their flint industries are characterized by a bipolar blade technology, which is essentially the same as the one found at PPNB sites on the mainland. Such Neolithic societies, living in villages, then continued to develop on the island throughout the 8th millennium with their material culture evolving in the end towards the Khirokitian.

In addition, survey work on Cyprus undertaken by the French mission at Amathus and by the EENC project had brought to light chipped stone assemblages with a unidirectional blade technology and arrowheads (that is, closer to the PPNA on the mainland, suggesting that the island might have been frequented at an even earlier time (Briois *et al.*, 2005; Guilaine and Briois,

2007, McCartney, 1998; McCartney *et al.*, 2006). Of course, some caution was called for, since the lithic material came from the land surface and not from well-dated archaeological contexts. In turn, when excavations were carried out respectively at the sites of Klimonas and Asprokremnos, they would show in both cases that the survey results were actually correct.

In short, the recent excavations at Asprokremnos began to fill a gap in the island's prehistory. There Carole McCartney and her co-workers (McCartney *et al.*, 2006, 2007, 2008, 2010; McCartney, 2010, 2011) found domestic features belonging to a context of PPNA age with a unidirectional blade technology and numerous lozenge points. They interpreted Asprokremnos to be a settlement where late foragers lived by hunting wild pigs and birds. The radiocarbon dates produced by the site fall in the interval between 8,800 and 8,630 cal. BC, which corresponds with the end of the PPNA on the mainland (Manning *et al.*, 2010).

AYIOS TYCHONAS – KLIMONAS

The site of Klimonas is located just to the east of the village of Ayios Tychonas in the southern part of Cyprus (Fig. 1). The relief where the site stands slopes down gradually toward a depression on its south side. The extensive excavations conducted in 2011 and 2012 brought to light several buildings, including a subterranean circular one that is 10 m in diameter (Vigne *et al.*, 2012). This building is similar in size and organization to the sunken rooms of late PPNA age in the northern Levant, which were sometimes decorated and often contained caches of precious objects suggesting ceremonial use. Such buildings are interpreted as multi-functional communal structures that were used for collective storage, meetings and ritual purposes. All the carbon dates cluster tightly, and they provide a secure absolute age from the end of the 10th to the middle of the 9th millennia BC. More precisely the determinations span the time between 9,155 and 8,615 cal. BC (2σ). These dates are contemporary with those from Asprokremnos (that is, 8,800-8,630 cal. BC, as mentioned above; Manning *et al.*, 2010).

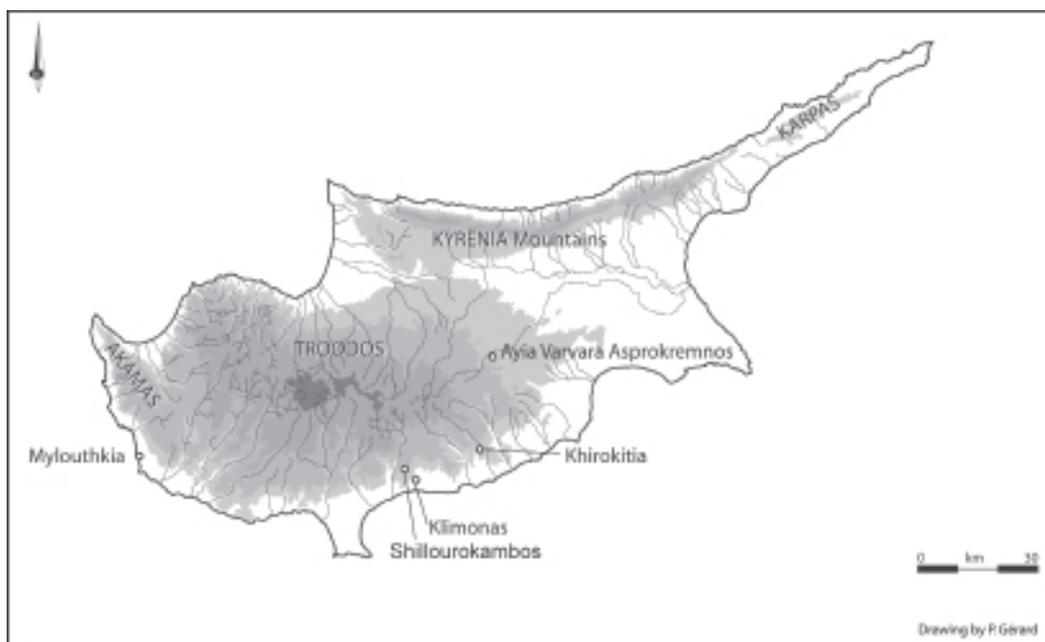


Fig. 1. Map of Cyprus, sites discussed in the text (drawn P. Gerard)

Klimonas and Asprokremnos are the only PPNA sites known on Cyprus at the present time; they are coeval with late PPNA sites in the Levant and also the transitional sites there that date between the end of the PPNA and the Early PPNB (Stordeur and Abbès, 2002; Goring-Morris and Belfer-Cohen, 2011).

The lithics

The vast majority of the chert worked at Klimonas derives from a single geological formation. The vitreous cherts include a high-quality translucent chert, which dominate the site's assemblages, along with less common cherts that are moderately opaque (known as *Lefkara-basal*). The source of both of them is Athiaki, a place located a few hundred meters to the northwest of the site. In contrast with Asprokremnos, obsidian is present at Klimonas; the sources of the three pieces recovered from the excavation in 2012 have yet to be determined.

The main orientation of the reduction technology is clearly towards blades made from flint cores that were shaped at the site itself. Blade production appears to have been exclusively unidirectional; it focused on the production of small triangular blades (4-5 cm long and with a rectilinear profile). Some of them are used for making arrowheads. Larger blades are present as well – with some of them connected with the beginning stages of the preparation of the cores themselves (cortical blades, semi-cortical blades or rough crested blades). Butts are mostly smooth but there are faceted convex ones as well. Blade cores are conical and unidirectional (Fig. 2:9) and show a striking platform made by flat centripetal removals. The flaking angle (of knapping) is almost 90 degrees. This feature combined with the frequent presence of a bulb scar and sometimes ring cracks just behind the impact point may indicate the use of the indirect percussion with a hammer stone. The presence of numerous core rejuvenation flakes reveals a recurrent maintenance of the striking platform at different stages of the working of a core. Many of the cores were abandoned seemingly after an extreme decrease in size or else following a succession of knapping accidents, which made

a given core unusable. Much rarer examples show evidence of reshaping of the active surface, starting from the opposite striking platform. A second type of production involves a bidirectional mode of working a core but cases of this are rare. Of quadrangular morphology, such a core has two opposite striking platforms, and it presents a nearly flat debitage-surface upon which negatives of small blades (with sharp terminations) are visible but no predetermined or central blade is observed in such as case (Fig. 2:10).

The tools themselves comprise a rich and varied corpus that includes recurrent typological markers. The tool set is clearly dominated by burins – most of them being angle burins on a break. There are also dihedral burins and angle burins on truncations. Scrapers represent the next most important class of tools in the chipped stone assemblages at Klimonas. They are often made on thick flakes or blades (Fig. 2:8). Other scrapers are thin ones often taking the form of double scrapers, made by retouching flat flakes. In some cases, the tool combines a burin and a scraper (Fig. 2:7). The group of notched tools constitutes the third most important set. It is essentially composed of multiple direct, reverse or alternate deep notched items, whose status as a tool is not clear. The group of arrowheads represents the fourth set of tools. Among the 195 pieces recovered by the excavations in 2011 and 2012, the most frequent type is a small arrowhead with a short triangular tang and its opposite extremity sharpened by bifacial oblique retouches (Fig. 2:1-6). Among the other tool types are drills of various kinds, including micro-drills made on thin bladelets, sharp drills, small bits (by working the by-products obtained from making a burin) and more massive drills made on small blades (some with a tang). Also attested are some blades with traces of gloss, which probably represent sickles blades. The gloss runs parallel to the edge, and some of the pieces present a regularly spaced micro-denticulation all along the active edge.

PAREKKLISHA SHILLOUROKABOS

Shillourokambos is an open-air sited located in the interior of the south coastal plain of Cyprus (Guilaine *et al.*, 2011). The settlement is situated

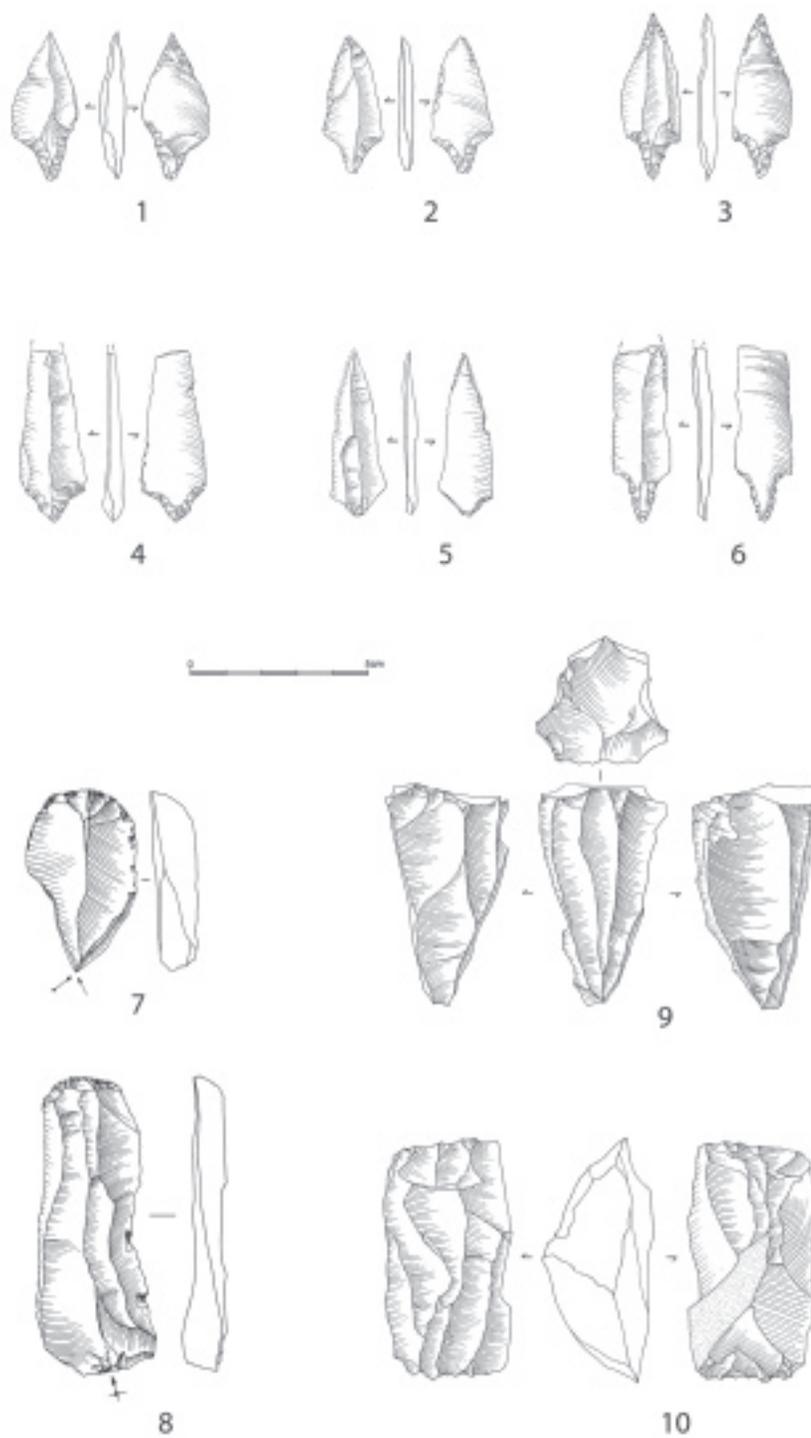


Fig. 2. Ayios Thychonas - Klimonas. 1 - 6: arrowheads; 7: burin and scraper; 8: end scrapers; 9: unidirectional blade core ; 10: bipolar blade core (drawing F. B).

on top of a low hill near the confluence of two small rivers. From 1992 through 2004 it was excavated over an area of more than 5,000 square meters. The part of the site called section 1 consists mainly of large sedimentary layers in which numerous pits, narrow ditches, post holes and wells were dug out and subsequently filled with anthropic soils. Four main phases of occupation, spanning the time from ca. 8,400/8,300 cal. BC to the end of the 8th millennium, have been recognized: Early A, Early B, Middle, and Late. The oldest phase (Early A) is securely dated by a series of radiocarbon determinations to the second half of the 9th millennium cal. BC.

The lithics of Early A

The use of translucent flint is one of the hallmarks of the two early phases of occupation at Shillourokambos. There is also the use of a small quantity of opaque chert. Both of them come from local sources at a distance of about a kilometer to the south of the site. While obsidian is present, it always makes up a low proportion of the assemblage. In all, there are a total of 95 pieces that belong to the phase called Early A. On the basis of characterization studies, most of these pieces come from Kaletepe (90%) and Birtlikeler-Ekinlik in Turkey (Gratuze and Boucetta, 2011). This exotic material is more abundant in the oldest of the two early pre-pottery phases (that is, Early A).

The site was the scene of intense knapping activities from which large amounts of debris were subsequently discarded in pits and wells. During the first phase (Early A), the raw material was brought to the site in the form of massive flakes and preformed-cores, which in turn led to a diversified production of blades and bladelets there. All stages of flint working are attested at the settlement. Blade debitage is, of course, prominent. It is characterized by several different *chaînes opératoires* (Briois, 2011). The first makes use of conical and unipolar cores with a secondary opposed platform occasionally employed (Fig. 3:5). This type of core is very similar to the one that is found in large numbers at Klimonas. The second *chaînes opératoires* involves the working of quadrangular unipolar cores with a secondary

opposed platform (Fig. 3:4). The reshaping of the debitage surface, starting from the opposite striking platform, is commonly observed. The third one is oriented toward the production of bipolar cores with a postero-lateral crest (Fig. 3:7). In this case, the *chaîne opératoire* is more complex, and, without any doubt, the strategy is directed toward the making of central blades and the production of predetermined products: double-pointed morphology, four lateral opposed negatives of the blades (removed together two-by-two) and recutting a central negative. These blanks are then used for making the big arrowheads (Fig. 3:7).

Such arrowheads are characterized by the truncation at the base; sometimes they have two retouched notches and parallel inverse retouch produced by pressure flaking. By-products of the bipolar debitage (lateral blades, convexity correction blades, upsilon blades and so forth) are used for sickle blades: commonly with parallel gloss on blades without retouch. Other categories of tools include notches and burins. Obsidian reached the site in the form of bladelets obtained by the pressure technique (Fig. 3:1-3). Their technical features show close concordance with the bladelets made by the workshop at K m rcu-Kaletepe in the G ll  Dag region of Anatolia, where most of the Shillourokambos obsidian comes from (Briois *et al.*, 1997; Balkan-Atli and Binder, 2000; Guilaine *et al.*, 2011).

CONCLUSION

The results of the recent excavations at Klimonas now document the existence of the PPNA tradition in the southern part of the island. The occupation of the site goes back to the first half of the 9th millennium cal. BC. On the basis of a series of radiocarbon dates, it is contemporaneous with the site of Asprokremnos, which is located some 30 km to the north on the far side of the Troodos range. The lithic assemblage at Klimonas is characterized by the use of a translucent flint of high quality, which comes from a nearby Lefkara formation. Since the local outcrops of this flint occur locally in the basal part of the sedimentary formation (where they are hard to see), this implies a good knowledge of the

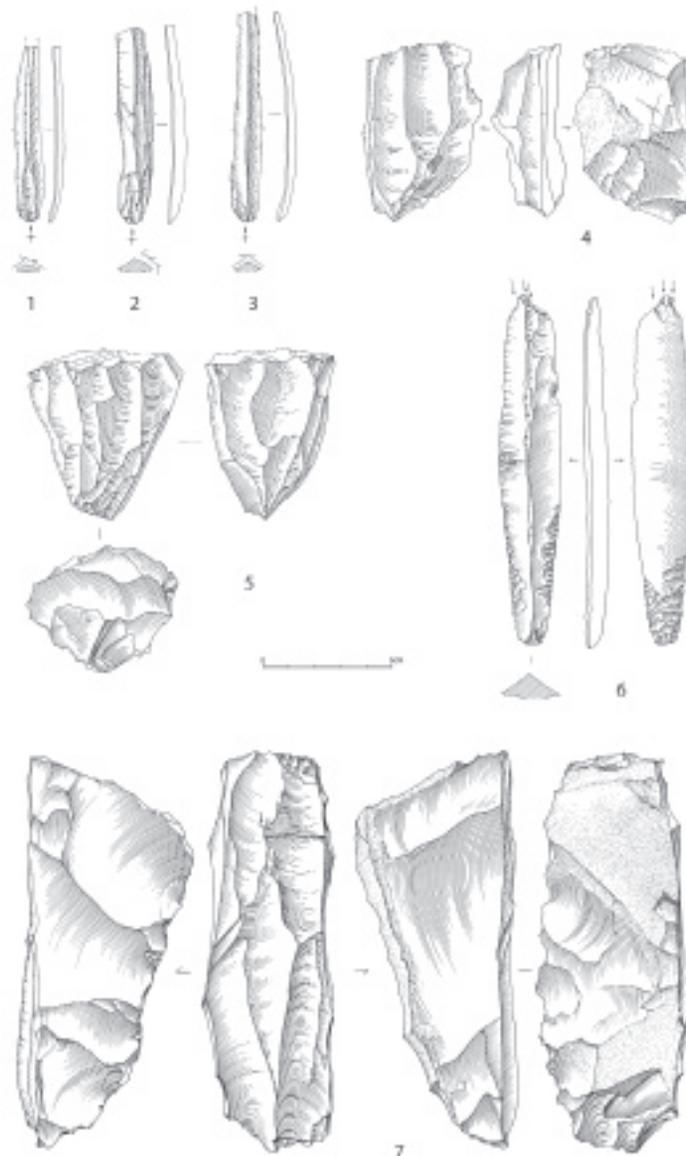


Fig. 3. Parekklisha *Shillourokambos*, (early phase A). 1 – 3: obsidian bladelets; 4: quadrangular unipolar core with a secondary opposed platform; 5: conical unipolar unidirectional blade core; 6: big arrowhead on bipolar centre blade; 7: bipolar blade core (drawing F. B).

territory in the immediate vicinity of the site as well as a good understanding of its exploitation. In addition, there is now evidence that Cyprus was part of the exchange network of obsidian in the Near-East, although the quantities of the

material that reached the island at the time appear to be quite low. In contrast, obsidian is totally absent at Asprokremnos so far. The chipped stone tools recovered at Klimonas are those of hunter-gatherers. Small projectile points represent the

distinctive feature of the lithic assemblage. At the same time, some local differences between Klimonas and Asprokremnos can be observed in this regard. While the former has small points with a short tang or a triangular base (Vigne *et al.* 2011, 2012), one finds at the latter small lozenge and convex-based points (McCartney, 2011). On the other hand, one finds no evidence at either site for El Khiam and H elouan points, which are known at PPNA sites on the mainland. On Cyprus, the arrowheads were used for the hunting of wild boar – something that can now be traced back on the island to an even earlier time (that is, at least 9,700 cal. BC, as recently shown by the carbon dating of the bones of wild boar at Aetokremnos). Of particular interest is the high percentage of burins at Klimonas and also the presence of micro-drills. On the other hand, the architecture found at the site indicates that its inhabitants led a sedentary way of life, which was based on the exploitations of resources available in favourable ecological contexts at the western foot of the Troodos range. The presence of sickles blades also points to the occurrence of harvesting activities near the settlement (recall the presence of the seeds of barley and emmer wheat in the archaeo-botanical studies conducted at Klimonas). The site’s blade technology and its arrowheads can be linked with the “Mureyb etien” tradition of the middle Euphrate, as seen in phase III of Mureybet and at Sheikh Hassan (Abb es, 1993, 2003; Abb es *et al.*, 2001:7; McCartney *et al.*, 2007:35). As in the case of Asprokremnos, the use of distal correction in working unidirectional blade cores, small points with short tangs and well-made burins and scrapers are all diagnostic of late PPNA assemblages in middle part of the Euphrates valley (Coqueugniot, 2003; McCartney, 2011:268).

It is worth noting at this point there is no evidence at the present time that indicates clearly a phase of transition between the end of the PPNA and the start of the PPNB on Cyprus. Whereas the first bipolar blade core technology (used for making the naviforms cores that become characteristic of the PPNB both on the mainland and on Cyprus) make its appearance on the mainland in late PPNA contexts, as seen at Mureybet (phase III), Jerf el Ahmar or D’Jade (phase 1), it is not documented at Klimonas or Asprokremnos so far.

On Cyprus, positive evidence for a bipolar blade core technology goes back at earliest only to about 8,400 cal. BC, as seen at Shillourokambos where this innovation draws upon another type of core that is already a variant of the continental models for arriving at naviform cores. At the same time, conical and unipolar cores as well as prismatic flat ones (similar to those at Klimonas) continue to be made at late PPNA sites in the Near East in spite of the important technological innovation that has already emerged there. Such cores can be interpreted as reflecting a regional or local inheritance of the phase that preceded the early Cypro-PPNB or else deriving from convergence in lithic tradition. There is no clear answer at the present time. Other diagnostic features – such as obsidian, big arrowhead types and the sickle blades – provide evidence of a new outside impulse coming from the mainland. The new influence is also documented by the first arrival on Cyprus of domesticated forms of cattle and goats during the second half of the 9th millennium cal. BC.

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