

Lithics in the Neolithic of Northern Greece: territorial perspectives from an off-obsidian area

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ABSTRACT – *C. Renfrew's research in the Aegean at the beginning of the 1970's and his hypothesis on the diffusion of obsidian from the island of Milos greatly influenced views of Greek Prehistory. Further lithic studies, especially in the Southern Aegean, have served to further confirmation the prevalence of obsidian in this area during the Neolithic. The aim of this paper is to draw attention to areas such as Northern Greece that are situated on the periphery of the Melian obsidian domain, where local materials occur in connection with imported ones from the North and South. With the aid of various examples from major Neolithic sites, we will discuss the question of procurement strategies in association with the reduction sequences of each material in use in this region, and outline trends of territorial organization among Neolithic farmers in the area.*

IZVLEČEK – *Na poglede o grški prazgodovini so močno vplivale raziskave C. Renfrewa na egejskem področju v začetku 1970-ih in njegova hipoteza o razširitvi obsidiana z otoka Milos. Nadaljnje proučevanje kamenih orodij, posebej v južnem Egeju, je služilo dodatni potrditvi o prevladi obsidijana v neolitiku na tem področju. Cilj članka je opozoriti na področja, kot je severna Grčija, ki leži na obrobju območja melijskega obsidijana in kjer se lokalni materiali pojavljajo v povezavi s tistimi, ki so uvoženi iz severa in juga. S pomočjo različnih primerov iz večjih neolitskih najdišč, bomo pretresli vprašanje strategij pridobivanja surovin v povezavi z redukcijskimi sekvencami vsakega materiala, ki so ga uporabljali na tem področju, in opisali smernice teritorialne organiziranosti med neolitskimi poljedelci na tem področju.*

KEY WORDS – *Neolithic; northern Greece; chipped stone industries; Dikili Tash-honey-Balkan flint*

Introduction

At the beginning of the 1970's, Renfrew's archaeological research in the Aegean and his hypothesis on the diffusion of Melian obsidian had an important impact on Greek Prehistory (Renfrew, Cann & Dixon 1965; Renfrew 1973; Torrence 1986). In the 1980's, the discovery of obsidian in the final Palaeolithic levels in the Franchthi Cave highlighted this lithic raw material as an extraordinary marker of early navigation in the Aegean (Perlès 1979).

More recent lithic studies undertaken by the author in the Southern Aegean have served to further confirm the prevalence of obsidian during the Recent Neolithic in this area. In two caves, Sarakinos, in Central Greece (Kourtessi-Philippakis et al. 2008)

and Alepotrypa, in the Southern Peloponnese (Kourtessi-Philippakis 2008), obsidian occurs in remarkably high percentages, i.e. 94.15% and 91.50% respectively, alongside some tools from various categories of flint which are considered to have been brought ready-made to the settlements. In other words, the raw material distribution pattern in the Southern Aegean during the Recent Neolithic is characterized by a double 'importation'; a massive importation of obsidian from Milos and a minor importation of tools from flint of unknown origin. In territorial terms, we observe the existence of a 'koiné' characterized by the massive Melian obsidian distribution on a regional scale, while the local flint resources, notably those in continental areas, are neglected.

While the pattern of raw material distribution in Southern Greece during the Recent Neolithic has drawn increasingly more attention (*Perles 1990; Demoule & Perles 1993*), research on this topic in areas on the periphery of the Melian obsidian domain has just started.

The case of Northern Greece, from the river Evros in the East to the Pindos Mountains in the West, is particularly interesting in this respect. In this area, human settlement at open air sites – named ‘tomba’ – formed by the accumulation of sediments (*Kotsakis 1999*) was abundant especially during the Recent Neolithic (*Andreou, Fotiadis & Kotsakis 1996; 2001*). The present paper will focus on sites situated in the Drama basin, where extended surveys (*Grammenos & Fotiadis 1980; Grammenos 1991; 1997*) and important excavations have taken place since the 1970’s at major sites such as Dikili Tash (*Treuil 1992; 2004; Koukouli-Chryssanthaki et al. 1997b*), Sitagroi (*Renfrew et al. 1986; Elster & Renfrew 2003*), and Dimitra (*Grammenos 1997*). We will focus on the archaeological level that coincides with the beginning of the Recent Neolithic (Recent Neolithic I phase), particularly from the end of 6th to the beginning of the 5th millennium BC, and also take into consideration settlements in Eastern or Western areas (Fig. 1).

The Dikili Tash I assemblage

The lithic assemblages of the Recent Neolithic I phase, according to the Dikili Tash archaeological material (*Kourtessi-Philippakis 2006b; forthcoming*), are chipped in an important variety of raw materials identified macro and microscopically (*Garnaud & Frohlich in preparation*), including chalcedony, quartz, rock crystal, jasper, various categories of flint,

among which are Balkan ‘honey’ flint, and obsidian. The chalcedony reduction sequence appears to be rather complete. Even if nodules of chalcedony are missing, we find cores and technical pieces in small quantities, flakes, blades, chips smaller than 1cm, abundant debris, as well as retouched or *a posteriori* tools. Prismatic cores do not exceed a length of 5cm and can be considered exhausted, since few of the blanks are situated below this limit (Fig. 2). Tablet cores and crested blades are scarce (0.80%). Debitage products are mostly flakes (50%), which dominate over blades (9%). Chalcedony blades feature unparallel arris and edges (Fig. 3). The debitage technique used was direct percussion for flake and indirect for blade production. The technological structure of the chalcedony assemblage and, particularly, the absence of tested nodules, the low occurrence of cortical flakes and technical pieces make us suggest that the first stages of the reduction sequence (testing nodules, decortication...) took place off settlements. In contrast, the high occurrence of flakes and debris, as well as chips smaller than 1cm, suggests that the stages of production of blanks and re-sharpening of tools took place inside the settlements. Chalcedony at Dikili Tash I occurs in very high percentages (47, 16%).

Among the various categories of flint, ‘honey’ flint is the most interesting (Figs. 3, 4). Its reduction sequence is not complete. No nodules, cores, first flakes, decortication flakes, or debris of ‘honey’ flint were found. It is obvious that the decortication and debitage stages took place elsewhere, outside the Drama basin, and debitage products arrived at the settlements ready for use. These blanks were regular blades with parallel arris and edges and a trapezoidal section. The width of these blades varies from 11 to 22.2cm, and their thickness from 3 to 5.5cm. These

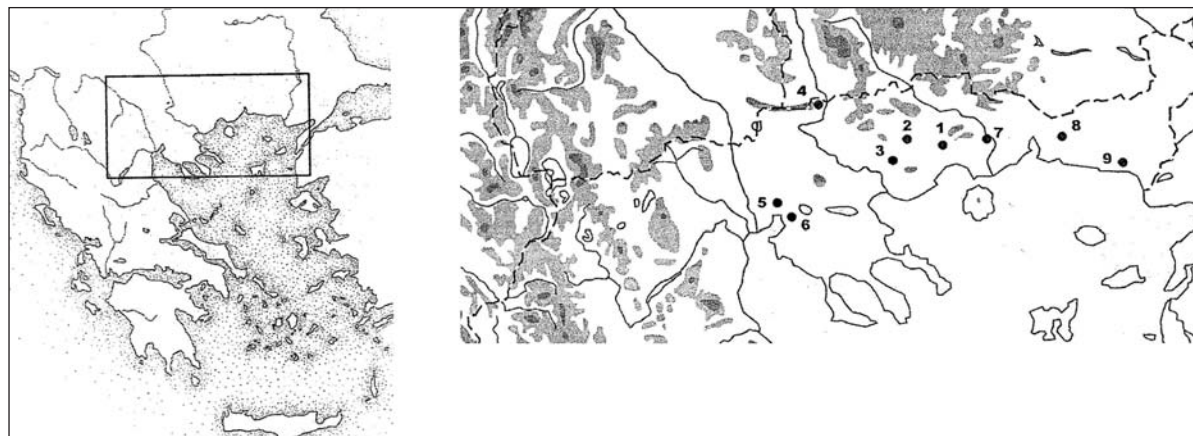


Fig. 1. Northern Greece, with the Neolithic sites mentioned in the text: 1. Dikili Tash, 2. Sitagroi, 3. Dimitra, 4. Promachonas-Topolnitsa, 5. Stavroupolis, 6. Thermi B, 7. Paradeisos, 8. Paradimi, 9. Makri.

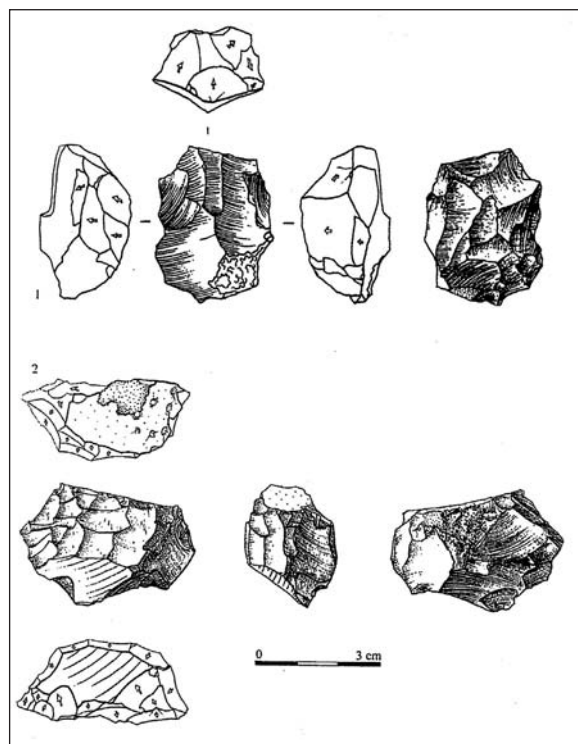


Fig. 2. Dikili Tash lithic assemblage. Cores. Chalcedony (drawings J. Espagne).

modules indicate that blades were produced during the phase of 'full' débitage. Generally, tools were used extensively with a shortened blank. In certain cases, tool re-sharpening was done *in situ* as the important number of chips of 'honey' flint smaller than 1cm indicates. These chips could also be the result of the use of splintered pieces. At Dikili Tash I, the various categories of flint reach 15.45%, and honey flint 8%.

Quartz was also chipped, as indicated by the number of tested blocs and debris. The aim was the production of flakes probably used without retouch. The example of a perforator from Dikili Tash is unique. Quartz occurrence is 3.60% at Dikili Tash I.

Rock crystal occurs in polyhedral blocks, a lot of debris, small flakes, and blades without retouch. Polyhedral blocks measure 24 by 26mm. The length of the complete flakes ranges between 20 and 22mm, and the width between 13 and 20mm. Bladelets do not exceed 20mm in length, and their width varies from 4 to 6mm. Butts are small, mostly linear. The technique of rock crystal débitage was implemented by pressure. Rock crystal occurs in low percentages, such as 2.38% at Dikili Tash I.

The jasper reduction sequence is complete. Besides scarce nucleus and technical pieces, debris is also

present. The aim of the débitage was to produce flakes, as well as blades which were used as blanks for tools. If we compare the jasper reduction sequence to those of the other raw materials, we observe that it is more similar to the chalcedony one. So far, jasper has been considered as a local raw material. Its occurrence at Dikili Tash I is 1.25%.

The few pieces of obsidian which occur in this assemblage are essentially non-retouched bladelets, mostly mesial fragments of triangular or trapézoidal section. (width 8-9cm). This débitage module is very common in the Southern lithic Neolithic assemblages, as we have seen in Sarakinos and Aleptrypa. These bladelets were probably imported from Southern Greece into the Drama basin settlements. Obsidian occurrence at Dikili Tash is 0.37%.

Regional comparisons

A comparison of the raw material occurrence to those of neighbouring Neolithic settlements shows many common points.

In the Dimitra II phase (Kourtessi-Philippakis 1997) the same raw materials occur as in Dikili Tash I. Chalcedony is prevalent (40%), followed by 'honey' flint (26.49%), and quartz (21.95%), which are featured more in this settlement than in Dikili Tash. Jasper and rock crystal (2.24%) constitute, as at Dikili Tash, a category with low representation. Obsidian is absent in the Dimitra II phase. The reduction sequence of each of these raw materials is organized according to the pattern known from Dikili Tash.

In the Sitagroi II phase (Tringham 2003) the same raw materials occur. However, at Sitagroi, 'honey' flint is prevalent (73.3%) and, according to Tringham, was chipped *in situ*. This constitutes an exceptional trend in lithic assemblages in Northern Greece. Chalcedony follows with a rather low representation (9.2%), as well as quartz and rock crystal (7.7%), while obsidian is absent in the Sitagroi II phase. The reduction sequences at Sitagroi suggest the chipping *in situ* of chalcedony and quartz.

If we attempt a comparison with other distant settlements, for example Promachonas-Topolnitsa, near the Greek-Bulgarian border (Koukouli-Chryssanthaki et al. 1979a), we observe (Kourtessi-Philippakis 2001) that in this settlement various categories of flint are used, with a preference for a blue opaque flint which was chipped *in situ*. We also observe the occurrence of 'honey' flint (15%), chalcedony (20%),

quartz (15%), while jasper, obsidian, and rock crystal occur in percentages lower than 1% for each one of these materials.

The picture in the Eastern regions beyond the River Nestos is rather incomplete, as lithic assemblages come either from old excavations, such as Paradimi, (*Bakalakis & Sakellariou 1981*), where no emphasis was placed on lithics, or sites such as Paraisos, where the Recent Neolithic I phase is not represented (*Hellstrom 1987*), or even from new excavations, such as Makri, where only preliminary reports are available (*Skourtopoulou 1998*).

However, the situation changes in western regions and particularly Central Macedonia, between the Strymon and Axios rivers. We observe that the Neolithic settlements of Central Macedonia and especially Thermi B and Stavroupolis, where lithic assemblages have been the object of a specialized study, feature a very different pattern. In Thermi B (*Skourtopoulou 1992*) a local flint (61.90%) is preponderant, followed by quartz (35.3%), various categories of flint, chalcedony, and a few pieces of obsidian. In Stavroupolis (*Skourtopoulou 2004*) quartz occurrence is very high (54.6%). Second to quartz are other local materials, limonite (12.6%), and Melian obsidian, alongside small quantities of various categories of flint and a few samples of chalcedony. In this preliminary report it is stressed that local raw materials such as quartz and limonite were chipped *in situ*, while flakes or blades made from exotic materials arrived at the settlement ready to be used.

Discussion

How can we explain the northern Greek pattern? A look at the lithostratigraphic map of Greece and its organization in vertical juxtaposed zones in the North/West-South/East direction could shed some light on this topic.

The Rhodopian zone, in which Dikili Tash, Dimitra, and Sitagroï are situated, is mostly comprised of chalcedony, followed by quartz and rock crystal. Chalce-

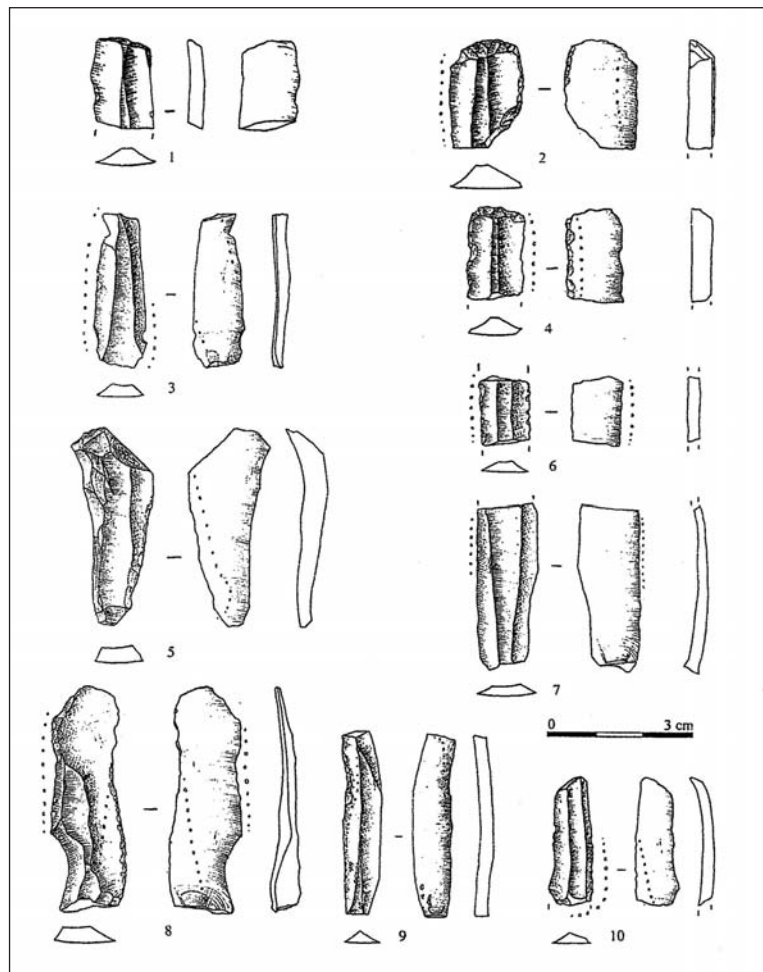


Fig. 3. Dikili Tash lithic assemblage. Sickles. 1: honey flint; 2-4: flint; 5-6: burnt; 7-10: chalcedony (drawings J. Espagne).

dony appears in outcrops near the mouth of the Strymon close to the Serbo-Macedonian zone in the west. Quartz exists in veins in granites, and rock crystal is found in rhyolites, which are abundant in the Rhodopes. Further west, we meet the Vardar zone, which coincides with the Axios basin. Its eastern part features predominantly schists, sandstones, and conglomerate with quartz, while the western part features jaspers. The Pelagonian zone, which follows, is composed of a metamorphic substratum on the top of which, under ophiolites, occur some siliceous levels and especially jaspers. Finally, the Pindus zone, which covers the Pindus Mountains, is rich in red jaspers, with radiolaires and flints outcrops in the Cretaceous lime-stones.

The low, but uninterrupted occurrence of jasper in northern Greek Neolithic assemblages calls for some comments. According to the geological data, jasper occurs in the primary position in the Pelagonian and Pindus zones, farther away from the Drama basin. It is important to stress that these 'geological localisa-

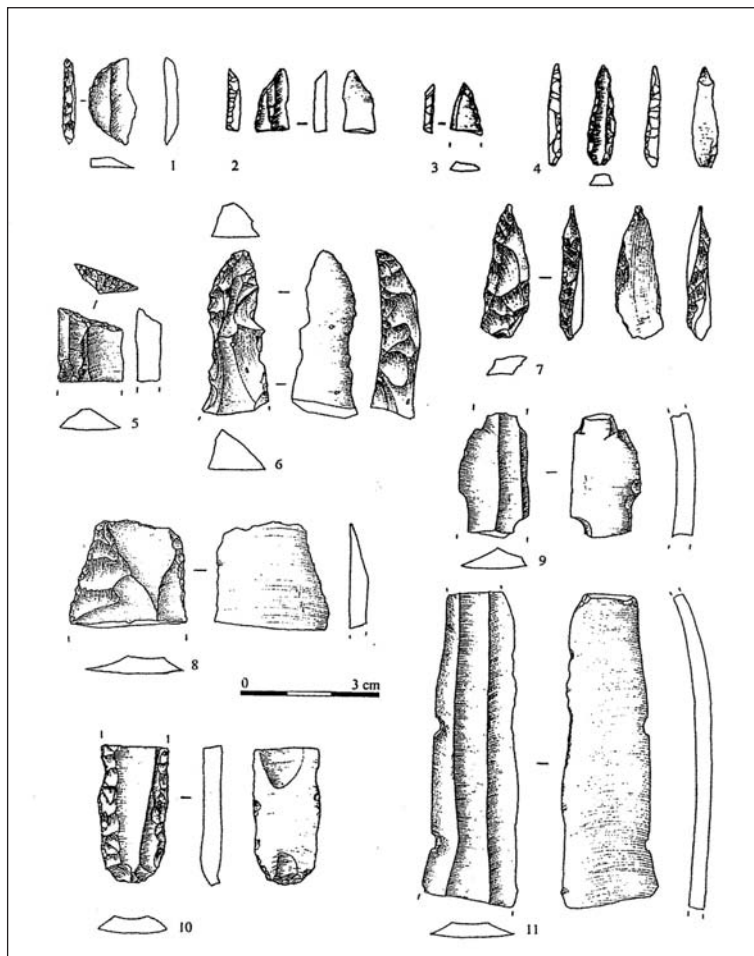


Fig. 4. Dikili Tash lithic assemblage. 1–3: backed pieces-chalcedony; 5: truncation-burnt; 4, 6, 7: perforators-flint; 8: retouched blade-flint; 9: burin-flint; 10: retouched blade - honey flint; 11: notched blade - honey flint (drawings J. Espagne).

tions' are derived from very general studies of the geological and lithological substratum in the area. It is very probable that jasper outcrops also occur in the Drama basin and have not been mapped so far (*pers. comm. from L. Dimadis*). On the other hand, jasper was introduced into Neolithic settlements in the form of small pebbles, with cortex collected in secondary sources of raw material. Indeed, if jasper does not occur in the primary position in the Rhodopian zone, it could be an excellent marker for the study of relations between East and West in Northern Greece. East-West relations could account for a new perspective of research in the area, which has been focussed on the diffusion of raw materials and cultures in the axe North/South along the natural routes of, among others, the Strymon and Axios.

'Honey' flint and obsidian do not occur in outcrops in the Rhodopian zone, or in Northern Greece. The use of 'honey' flint is extensive in the settlements and its occurrence reaches high percentages. This

raw material has also been distributed in Greece, as attested by artefacts found in Neolithic sites of the Peloponnese (*pers. comm. from J. K. Kozłowski*). Nevertheless, its origin is still unspecified. Researchers (*Manolakakis 2005; Tringham 2003*) suggest a north-east Bulgarian origin, but so far no petrological characterization of this material has been conducted. It is important to stress that if 'honey' flint is present in Thrace, Eastern and Central Macedonia, it seems to be absent from the Neolithic settlements of Western Macedonia. Could the distance of these western areas from the main routes of distribution in the North/South direction be one of the reasons for this absence? Obsidian in Northern Greece is, with some exceptions, Melian in origin, as was demonstrated by the analysis carried out on a pan-Hellenic scale of the characterization of prehistoric obsidians organized by the 'Democritus' Archaeometric Centre in Athens. These two raw materials were imported, as indicated by the reduction sequence and the occurrence of blades only.

The composition of Neolithic lithic assemblages in relation to the lithostratigraphic structure of Northern Greece reflects the impact of an important parameter, the physical, which is essential to the relation between the following: lithological background/ settlement/raw materials in use. It is important to stress that chalcedony and quartz were the principal raw materials used by Palaeolithic people in the area. This observation also confirms the local/regional origin of these two materials.

But other parameters, such as the technological, essential to the relation between the following: available raw materials/technological skills/researched products, *i.e.* flakes or blades, and the economic: raw material availability/procurement modalities are also crucial for our understanding of Neolithic societies. Unlike in Palaeolithic hunter-gatherer societies, the availability of raw materials was not the principal criterion for Neolithic settlement. In Northern Greece, Neolithic inhabitants collected the local materials probably in secondary sources of raw ma-

terial, except chalcedony, but this pattern has yet to be confirmed by further research.

Furthermore, a fourth parameter is territorial, which pertains to the relation between the following: sources of raw material/appropriation of the space/sources control and exploitation, and leads us to the following question: how was accessibility to lithic resources, whether primary or secondary, natural or cultural, organized in Northern Greece, and what happened to the distribution networks of raw materials and debitage products? In other words, what is the significance of the notion of territoriality in the Neolithic societies of Northern Greece? In the north, we observe the exploitation of local/regional lithic resources with limited imports. But the northern network is at the same time more complex, because it accounts for many different raw materials of different origins. This contrasts strongly with the pattern in Southern Greece, which is characterized by 'importation', as stressed in the introduction.

Another question raised is the following: can the low occurrence (decrease) of the obsidian in Northern Greece be explained only by the distance from Milos, according to the model proposed by Renfrew – if 'honey' flint comes from northeast Bulgaria the distance is equal and 'honey' flint is abundant – or by the position of the Melian sources to other procurement and distribution networks in Southern Greece? The aim of this proposition is not to rekindle the age-old debate about Northern Greece 'going' with the North or the South (*Heurtley 1939*), but to highlight the territorial parameter for a better understanding of what happened in Northern Greece. Therefore, it is important to take into consideration new approaches and to carry out increasingly more lithic studies in this direction.

Conclusions

In conclusion, in Northern Greece and in contrast to the south, a complex system of lithic raw material procurement was in use. A first group includes local raw materials, such as chalcedony, quartz, rock crystal, and different flints; they were derived from primary or secondary sources of raw material, where they had been tested beforehand in order to transport them to settlements, where the debitage took place, sometimes inside habitations. A second group is constituted by imported materials, such as Melian obsidian from Southern Greece, and 'honey' flint from northern areas, probably in northeast Bulgaria. Blades of 'honey' flint and bladelets of obsidian ready to be retouched were imported to sites. These two imported materials suggest contacts and communications with long-distanced areas, probably by indirect procurement. Jasper constitutes the third group. Outcrops of jasper are situated beyond the Axios River, in the Pindos Mountains in Western Macedonia. If this material indeed originated farther away from the Drama basin, jasper could help us to explore relations between East and West.

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