

Approaching household units from chipped stone assemblages at Alsónyék-Bátaszék, south Hungary

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ABSTRACT

This article summarizes the current state of research on the chipped stone assemblages from the settlement of Alsónyék-Bátaszék. This site belongs to the southeast Transdanubian group of the Late Neolithic Lengyel culture. Over 300 Lengyel culture sites are known in Hungary, about half of which are in southern Transdanubia. However, the site with the largest number of houses and graves is Alsónyék. Its huge extent and more than one thousand archaeological features make this one of the most important Neolithic sites in Central Europe. The chipped stone tools come exclusively from the settlement at Alsónyék-Kanizsa-dűlő. For this reason, only the preliminary results from the Kanizsa-dűlő settlement will be presented. Technological analysis of the chipped stone tools provides an opportunity for the reconstruction of the toolmaking process, which may be the result of the tool production system of a cultural unit. The research emphasis is on raw material identification. The focus of the interpretation is the technological and typological analysis and the aspect of household archaeology.

KEYWORDS

Carpathian Basin, Late Neolithic, Lengyel culture, chipped stone tools, household archaeology, raw materials, technological analysis

Introduction

Alsónyék-Bátaszék is a huge Neolithic site in southern Hungary, more precisely in southeast Transdanubia. This micro-region of Transdanubia is called Tolna Sárköz. The Szekszárd Hills form the boundary of the site in the west and the wide alluvial plains of the former Danube channels in the east. Alsónyék is located at the meeting point of two different regions, the Transdanubian Hills and the Great Hungarian Plain (fig. 1). This area is a contact zone between the Neolithic populations of the northern Balkans and Central Europe.

The Lengyel culture was the main successor of the Linear Pottery (LBK) culture in the Late Neolithic and Early Copper Age in Central Europe. The first and the most typical ceramics were found at the eponymous site of Lengyel (a small village in Tolna County, southeast Transdanubia). This site was explored by Mór Vosinsky in the 1880s. The Late Neolithic (post-LBK) communities of the 5th millennium BC were living in western Hungary (Transdanubia), eastern Austria, western Slovakia, the southern part of the Czech Republic and southern Poland. Research has discriminated several local groups within the culture's enormous distribution area. Alsónyék belongs to the southeast Transdanubian group of the Late Neolithic Lengyel culture. The closest analogues of Alsónyék, i.e. the 'emblematic' sites of the Lengyel culture like Zengővárkony, Pécsvárad-Aranyhegy, Lengyel-Sánc, Mórág-Tűzkődomb and Villánykövesd are located nearby (fig. 2). The Lengyel settlement

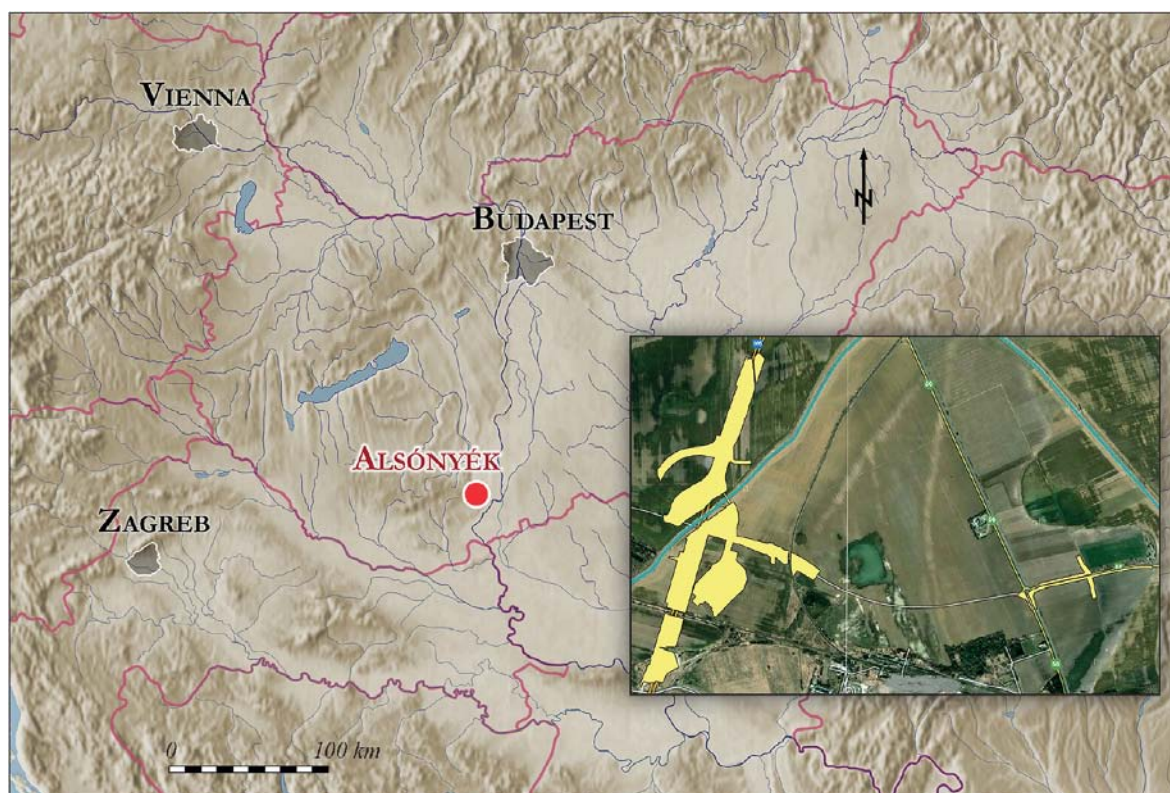


Fig. 1. Location of the Alsónyék-Bátaszék site and outline plan of the excavation
(after Osztás et al. 2013a, fig. 1.)

Обр. 1. Местоположение на обекта Алиньонек-Баташек и общ план за разкопките
(no Osztás et al 2013a, fig. 1.)

of Alsónyék is unique among the culture's known sites and represents a flourishing period in the life of the culture (Zalai-Gaál, Osztás 2009, 262).

Alsónyék is dated by relative chronology to the period Lengyel Ib-II. A total of 217 radiocarbon dates were produced in the course of *The Times of Their Lives* (TOTL) project. The settlement was established in 4735-4695 cal BC (95% probability) and ended in 4715-4680 cal BC (95% probability) at Alsónyék-Kanizsa-dűlő (Osztás et al. 2013b).

Several different periods of occupation are represented from virtually the entire Neolithic at Alsónyék (Starčevo culture, Central European LBK culture, Sopot culture and Lengyel culture). The traces of Lengyel occupation can be seen over the entire excavated area (Gallina et al. 2010; Osztás et al. 2012; 2013b). Nearly 9000 of the almost 15,000 features can be assigned to the Lengyel culture, comprising 2300 burials, hundreds of pits, and 122 post-framed houses. Alsónyék is a very important site for the Neolithic period in Hungary; at no other Neolithic site have so many burials and post-framed houses been found.

The eponymous site's stone assemblage was processed and published by Erzsébet Bácskay and Katalin T. Biró (Bácskay, Biró 1984; Bácskay 1989; 1990; Biró 1989; 1990; 1998). These publications are the starting points of Hungarian research on the topic of the chipped stone assemblage of the Lengyel culture. These examined collections are representative of Lengyel culture chipped stone tools in Transdanubia. Erzsébet Bácskay examined material from the point of view of typology and defined the culture's toolkit. Katalin Biró dealt with raw materials and defined the supply zones and communications network of the Lengyel culture. Małgorzata Kaczanowska's monograph is a key publication on this topic, which

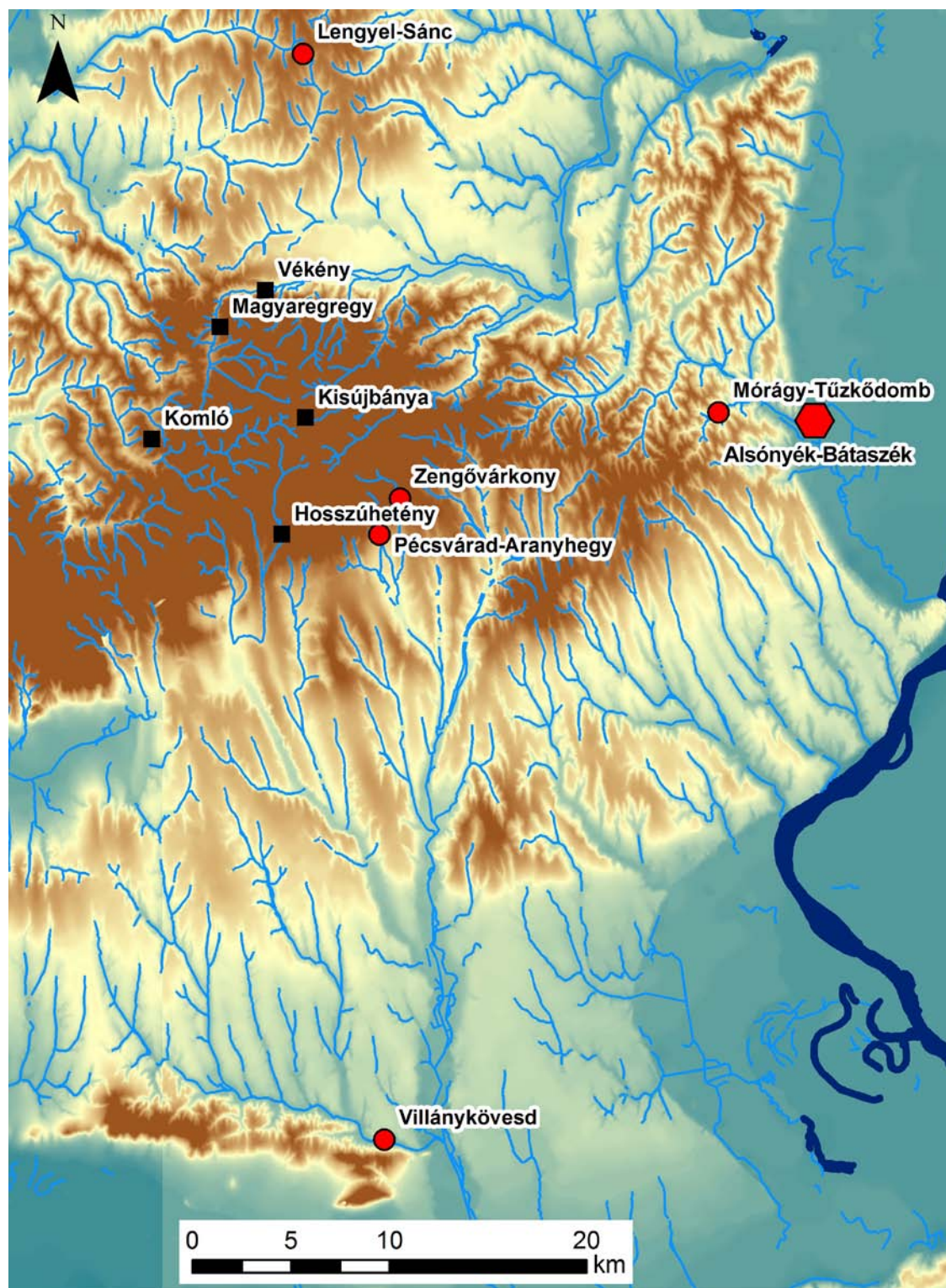


Fig. 2. Location of Alsónyék-Bátaszék and the emblematic sites of the Lengyel culture's southeastern Transdanubian group. (Legend: black squares – geological sources of Mecsek radiolarite; red dots – emblematic sites; red hexagon – Alsónyék-Bátaszék) (figure by P. Czukor)

Обр. 2. Местоположение на Алибонек-Баташек и емблематичните обекти на юго-източната трансданубийска група на културата Ленгиел. Черни квадрати – геоложки източници на радиоларит тип Мечек; червени точки – емблематични обекти; червен шестоъгълник – Алибонек-Баташек (автор П. Чукор)

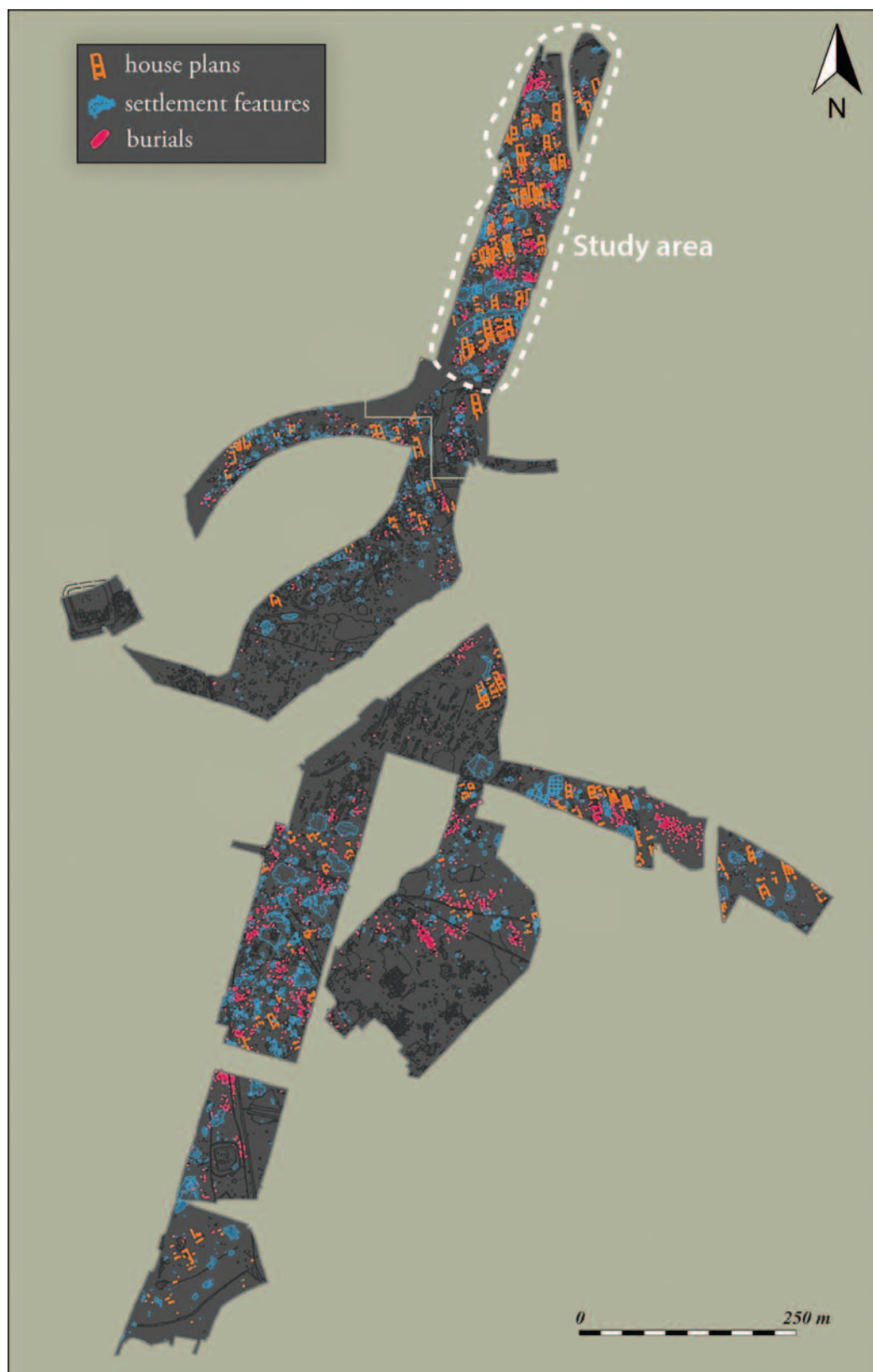


Fig. 3. Spatial distribution of the Lengyel culture features
(modified after Osztás et al. 2013b, fig. 7)

Обр. 3. Разпространение на структурите, отнесени към културата Ленгел
(модифицирано от Osztás et al 2013b, fig. 7)

deals with raw materials, typology and technology of Neolithic chipped stone assemblages from the Carpathian Basin and surrounding areas (eastern Austria, Moravia, Slovakia and southern Poland) (Kaczanowska 1985a; 1985b).

The Alsónyék-Bátaszék site has as many stone tools as all previously known sites together and has provided more information about the archaeological context than was previously available. Thus, from the perspective of the Lengyel culture, this stone collection presents a whole new dimension.

Material and methods

Archaeological features of the settlement

A considerable area of this large site was uncovered by members of the Institute of Archaeology of the Hungarian Academy of Sciences during archaeological work preceding the construction of the M6 Motorway between 2006 and 2009. Altogether, over an excavated area of 254,417 m², 15,443 features were uncovered, reflecting the intensive occupation of the site (Osztás et al. 2013a). This huge site comprises a total of 7 excavated sectors (sub-sites). But it became evident during the excavations that all the different locations were part of a single, very extensive Neolithic site. Systematic archaeological field survey and magnetometer survey were made after the excavation, between 2011 and 2013. Based on these investigations the entire site could have covered as much as 80 ha (Serlegi et al. 2013).

Previously, some buildings from the Lengyel period were known in Hungary, most of them revealed by large-scale excavations in advance of motorway constructions. Alsónyék is unique in terms of the number of buildings found; the remains of 122 above-ground, timber-framed buildings were uncovered at this site. Most of the house plans were not complete, but were quite well preserved, and the original building could be reconstructed in many cases. Based on results of magnetometer surveys, more buildings probably lie in the unexcavated parts of the site (Rassmann et al. 2015). Most houses had a consistent north-north-west to south-south-east alignment, with slight variations across the entire settlement. The length of the buildings generally ranged between 14 and 22 m, although a few were longer. Their widths varied between 6 and 8 m. The houses had rectangular or slightly trapezoidal ground plans, and the frames of the walls were indicated by densely spaced postholes (Osztás et al. 2013b). Because the houses were built on the natural ground surface, stone tools were recovered in only small amounts from the houses.

In some cases, large pits were found along the northern walls of the houses, and likely were associated with the buildings. Some of these pits cut one another (forming pit complexes) and effectively formed a ditch extending parallel to an entire row of buildings in some areas of the site (in the south part of the settlement). Probably, these pits were dug when the house was built and later were filled with household refuse (broken pottery, animal bones, bone tools, ground stones, etc.) (Lenneis 2013). Their enormous size raises the possibility that they can be linked to several contemporaneous houses, and thus the minute examination of the superpositions on the site plans and comparison of various features of the find material might shed light on diachronic changes in the settlement's layout (Osztás et al. 2013b; Souvatzi 2008).

The pits are the most important phenomenon related to the houses. The pits were usually positioned near the northern wall of the houses. This tendency is evident only in the northern part of the site (Alsónyék-Kanizsa-dűlő subsite), and reflects the dense concentration of houses there. The settlement structure was based on a predetermined organizing

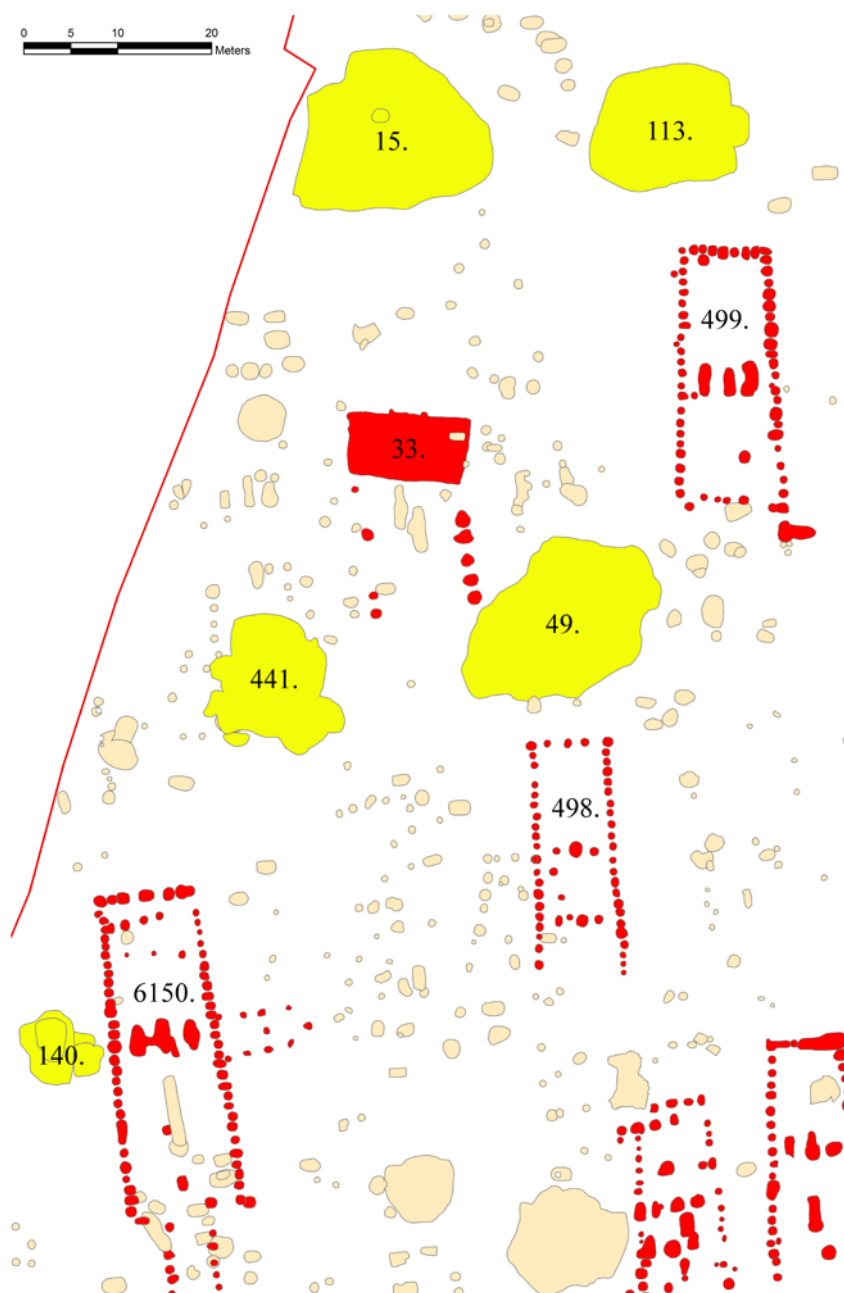


Fig. 4. Map of household unit I (figure by P. Czukor and K. Szilágyi)
 Обр. 4. Карта на I група с домакинства (автор П. Чукор и К. Силаги)

principle (structured space). The southern part of the site has many fewer houses and pits, and this justified starting the research at Alsónyék-Kanizsa-dűlő subsite (study area) (fig. 3). The large sized pits contained most of the finds, therefore the majority of chipped stone tools came from these features, which also provided the most important contextual information.

Household units

Kanizsa-dűlő has most of the houses and burials from among all the subsites, and thus is the most densely filled portion of the site. This subsite covers ca 9 ha and has 71

houses and 862 burials (Osztás et al. 2013b). At the end of the archaeological fieldwork the excavation leaders selected those objects that were clearly associated with the Lengyel culture. The richest stone assemblage determines the methodology that should be applied to the collections from the other subsites. We determined the household unit by its physical location (fig. 4). More houses, pits and pit-complexes belong to one household unit. However, currently we do not know the absolute date of each house, and research on the ceramics is at an early stage. We tried to determine household units at Alsónyék-Kanizsa-dűlő site where the locations of houses and pits were well confined. Moreover, the quantity of chipped stone artefacts must be large enough for comparison between household units (Schiffer 1983; 1996). For intra-site analysis, there are more sites for comparison. The horizontal settlement of the Late Neolithic Polgár-Csőszhalom site is a good analogue. In this case, processing of chipped stone assemblages employed spatial and statistical analyses to identify activity zones and households (Farágó 2016). The late Copper Age Baden culture horizontal settlement of Balatonkeresztúr-Réti-dűlő is a good example of how we can understand household units without any buildings; this research was based on the zooarchaeological remains (Fábián et al. 2011).

Pit size (depth, horizontal area, volume – i.e. potential storage capacity) is not correlated with the quantity of stone tools at Alsónyék. For this reason, it was necessary to combine pits and houses into a larger group, the so-called household unit. Petr Květina's research on the non-ceramic materials at the LBK settlement of Bylany (Czech Republic) suggests that in the case of the bigger settlements, household refuse was deposited commonly: "Refuse management is the least developed and sophisticated in mobile societies, which results in a high spatial correlation between the function of an object and its discard, whereas industrial cities obviously feature the highest degree of refuse management, connected to the need of their populations to maintain a comfortable long-term existence within a limited space" (Květina 2010, 339). Nor can it be assumed that the nearest pit belonged to the house and would have been filled with the household refuse (Schiffer 1972).

From the above-mentioned considerations, it was possible to distinguish, on the basis of the chipped stone tools, a total of four household units. These household units are distributed evenly throughout the Alsónyék-Kanizsa-dűlő subsite. We separated and numbered the household units from the northern part of the settlement toward the southern part. The household units have nearly equal amounts of stone tools (fig. 5).

The entire chipped stone assemblage comprises nearly 6000 pieces (including stray finds). In all cases most of stone tools came from well-defined archaeological features, mainly pits (4533 pc, 83.73%). The chipped stone tools derive exclusively from the settlement at Alsónyék-Kanizsa-dűlő.

Here, we present the preliminary results from the most structured settlement, Alsónyék-Kanizsa-dűlő, based on the analysis of 887 chipped stone artefacts. The research focuses on raw material definition and distribution, with an emphasis on typological and technological analysis. The raw material identification was done by macroscopic analysis and comparisons with reference materials in the Lithotèque collection of the Hungarian National Museum (Biró, Dobosi 1991; Biró et al. 2000). Regarding technological analysis, every technological feature (bulb, platform type, etc.) was entered into a database, and metric data and correlations were recorded. The results of the research so far are presented as a hypothesis showing the main directions and methods of the processing.

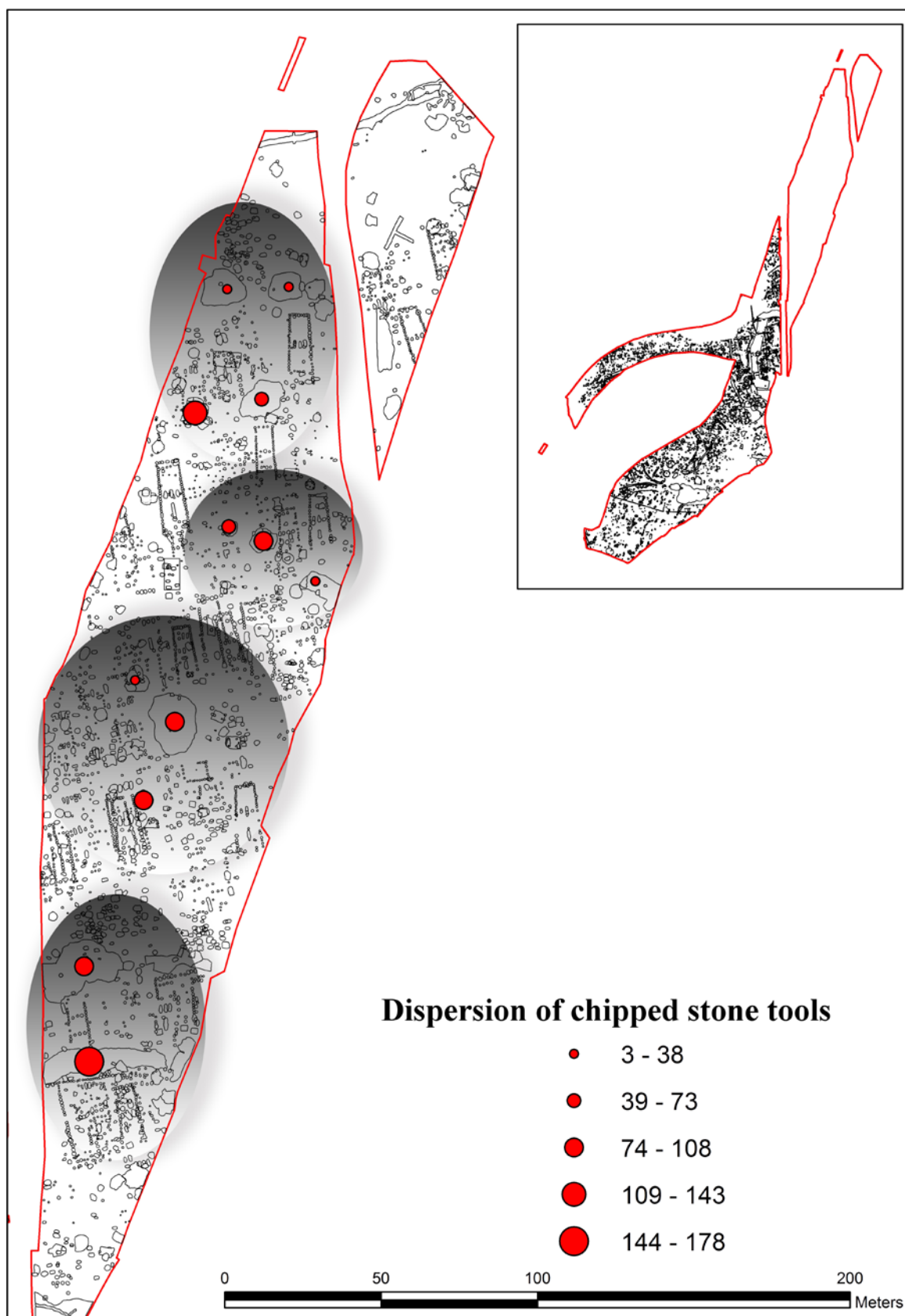


Fig. 5. Distribution of stone tools at the Alsónyék-Kanizsa-dűlő settlement (figure by P. Czukor)

Обр. План за разпространение на каменни изделия в обекта Алишъонек-Каниза-дуюло
(автор П. Чукор)

household unit I		household unit II		household unit III		household unit IV	
Object No.	Quantity (pc)	Object No.	Quantity (pc)	Object No.	Quantity (pc)	Object No.	Quantity (pc)
15	10	69	69	268, 401	18 (15)	3720	100 (22)
49	62 (60)	77	107	304	3	7321	21
508	2	753	18 (10)	395	90	3838	47
140	35 (27)	754	6	806	84	3773	1
349	7	777	1			1020	8
476	1	778	1			4188	1
441	113 (63)					3338	178 (73)
53, 448	17					7262	3
198	22					3314	64
272	7					1309	16
273	2					4400	22
519	2						
113	3						
Total (pc)	223		194		192		223

Table 1. Pits and the quantity of chipped stone tools by household unit
(numbers in italics signify smaller pits)

Таблица 1. Представяне на ямите и количеството артефакти в тях по групи
домакинства (цифрите в италик се отнасят до малките ями)

Results

Raw materials and their distribution

The raw material distribution is homogeneous; two kinds of radiolarite predominate (789 pc, 88.95%) (fig. 6). One type is Mecsek radiolarite (568 pc, 64.04%), and the other is Bakony radiolarite (177 pc, 19.96%). These kinds of radiolarite are suitable for knapping because they are both very homogeneous materials. Mecsek radiolarite was formed in the Upper Jurassic-Lower Cretaceous period. Macroscopically, the colours of Mecsek radiolarite are very varied: from lilac-brown to silky greenish-blue grey. These colour variations can often occur in a single core, thereby making recognition of related items difficult. These radiolarites are typically silky, which distinguishes them from the mostly brightly coloured Bakony radiolarites. Mecsek radiolarite has a rough cortex, which is relatively thin 1-3 mm thick, and sharply separated from the radiolarite. Geological sources of Mecsek radiolarite are known from Komló, Magyaregregy, Kisújbánya, Hosszúhetény and Vékény. The source of the Mecsek radiolarite is a local supply zone; it is in the eastern part of the Mecsek Mountain which is 15-30 km from the site (Bácskay, Biró 1984; Barabás 1986; Biró 1988; 1998; Mateiciucová 2008).

The Bakony radiolarites are one of the most important raw materials for the territory west of the Danube. Bakony radiolarites were formed in the Middle and Upper Jurassic period. These radiolarites are characterized by fine granularity, vivid colours and creamy white to whitish-yellow cortex (porcelanites). Texture is homogeneous, but colour is varied: orange-red, orange-brown, yellowish-brown, mustard and dark brown. The primary geological sources lie in the Jurassic limestone Bakony Mountain to the north of Lake Balaton. The source of the Bakony radiolarite variations determines the regional supply zone, which is in the southern part of the Bakony Mountain, 180-200 km from the settlement (Biró 1998; Mateiciucová 2008).

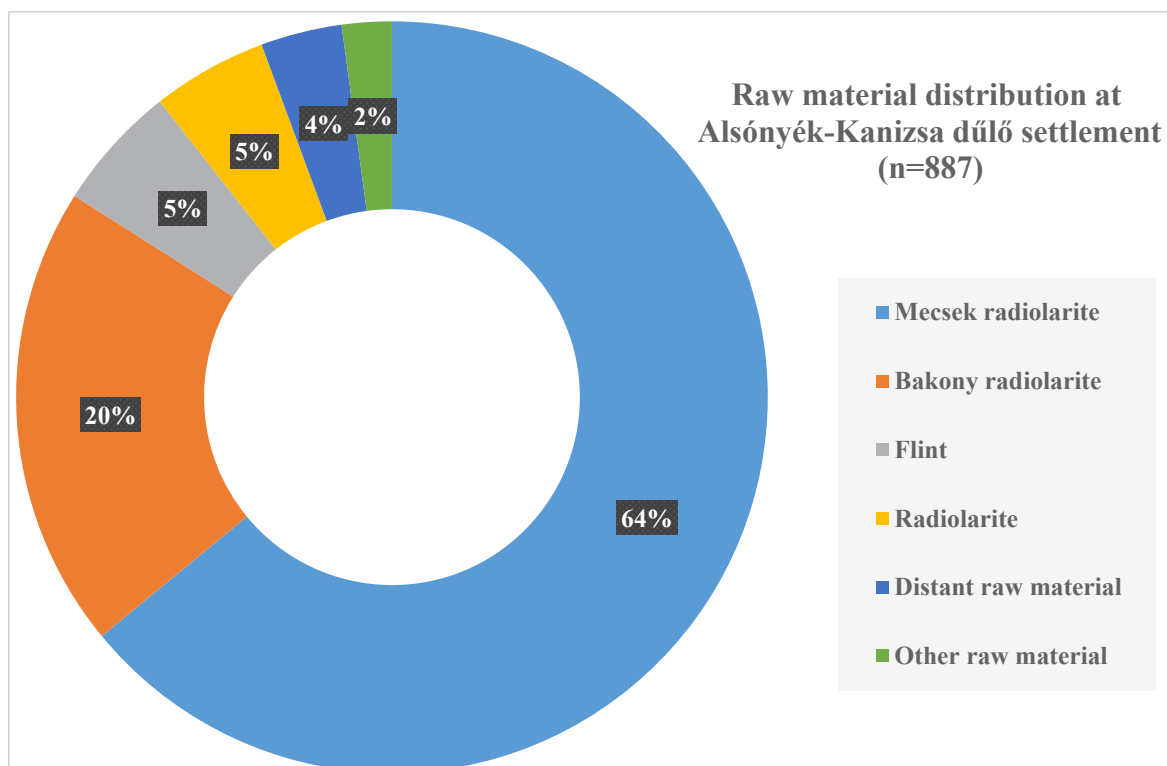


Fig. 6. Raw material distribution at Alsónyék-Kanizsa-dűlő settlement
 Обр. 6. Разпределение на суровините в селището Алиъонек-Каниза-дюло

The appearance of limnic quartzites is quite varied within one geological source, thus their identification is more difficult than that of radiolarites. There are transparent and translucent variants, colours are diverse too (white, bluish-white, bluish-grey, yellowish-brown and yellowish-grey). Six pieces of limnoquartzite may come from the Mátra Mountain, which means a potential regional supply zone as well.

The distant raw materials consist of obsidian (20 pc), Cracow Jurassic flint (4 pc) Chocolate flint (1 pc), Banat flint (5 pc) and Plattensilex (Abensberg-Arnhofen type hornstone) (1 pc). We found these distant raw materials in very small amounts (31 pc, 3.5%). Given the small quantities of these distant raw materials and the detailed literature, we will not explain their properties and precise geological sources. The sources of these raw

Raw material	household unit I	household unit II	household unit III	household unit IV	Total (pc)
Mecsek radiolarite	145	116	131	176	568
Bakony radiolarite	42	42	33	60	177
Flint	11	15	7	15	48
Radiolarite	8	12	11	13	44
Distant raw material	13	6	6	6	31
Other raw material	4	3	4	8	19
Total (pc)	223	194	192	278	887

Table 2. Quantity of raw material by household unit (Chi-square p-value: 0.5475508)
 Таблица 2. Количествено представяне на суровините по групи домакинства
 (Chi-square статистика)

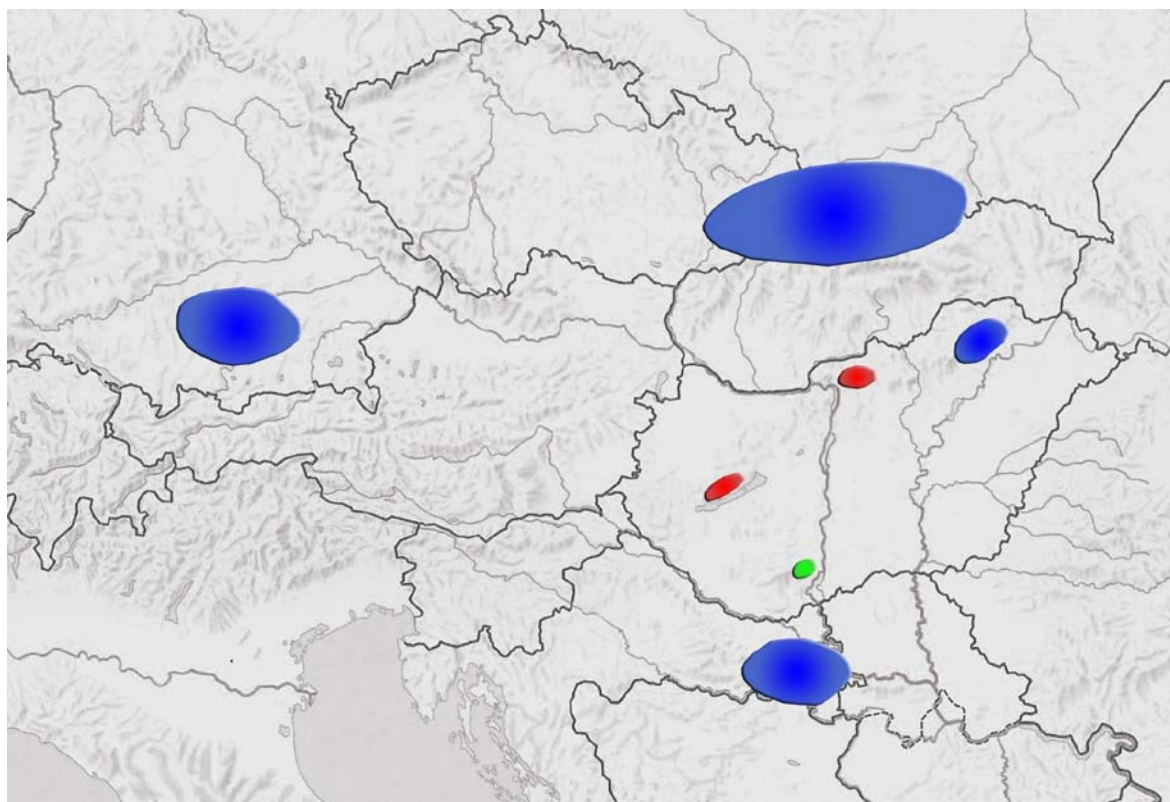


Fig. 7. Raw material's supply zones. (Legend: green – local supply zones, red – regional supply zones, blue – distant supply zones) (figure by P.Czukur)

Обр. 7. Местоположение на зоните за доставка на суровини. Зелена – зона на местно снабдяване, червена – регионални зони на доставки, синя – далечни зони на доставка (автор П. Чукор)

materials reflect distant supply zones, 600-800 km away (Kaczanowska 1985a; Pelisiak 1987; Mateiciucová 2008; Gurova 2011) (fig. 7).

Technological analysis

Technological analysis of the stone tools is the basis of my research on the production activity on the site. Technological analysis of the chipped stone tools provides an opportunity for the reconstruction of the tool making procedure, i.e., the *chaîne opératoire* (Inizan et al. 1999; Andrefsky 2009). Diachronically, the toolmaking process may be subdivided into stages and sub-stages. The operational chain and its stages show the character and location of toolmaking on the site at a rudimentary level. This method enables localization of the activity zones within the settlement (Mester 2013).

The main technological categories are: blades (394 pc), tools (173 pc), flakes (161 pc), cores (140 pc) and blocks of raw material (19 pc) (fig. 8). Cores were made from local Mecsek radiolarite. A few pre-cores represent the initial phase of toolmaking - these pre-cores are covered with pebble cortex. Globular and pebble-shaped radiolarite variants occur in core form (fig. 9). Core lengths varied between 25 and 45 mm. Core types observed are blade cores and atypical cores. Only one core was made of so-called 'Plattensilex', which is important because some pieces of this material are also known from Budmerice, Těšetice and Mórágý-Tűzkődomb (Kaczanowska 1985a).

The definition and description of cores are based on the number of striking platforms

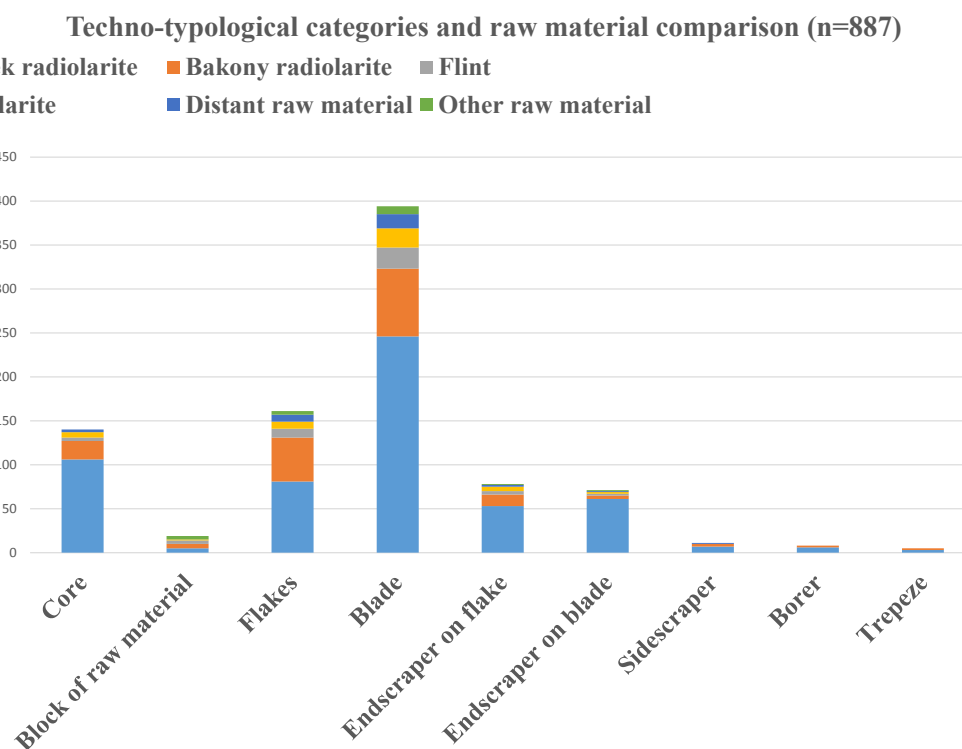


Fig. 8. Raw material composition by techno-typological category

Обр. 8. Представяне на суровините по техно-типологически категории

instead of morphological classification. We can draw more information about core exploitation strategy from the number and features of the striking platform. The blade cores usually have one or two striking platforms and debitage surfaces. All blade negatives are nearly parallel in the same removal direction on the blade debitage surface. Seemingly, the knapper preferred acute angled surface imperfections for percussion. We can find decortication pieces, which indicate the first stages of core formation. These are radiolarite pebbles with heavily worn cortex.

Blades predominate in the assemblage, which is typical of the toolmaking tradition of the Lengyel culture. Blades were knapped by indirect percussion during blade debitage, which is demonstrated by the flaking angle of almost 90°, plan butt frequency and barely prominent bulb (Inizan et al. 1999). Plain and faceted butts are dominant, but there are also dihedral, winged, linear and punctiform butts. The features and number of arrises are very important from the point of view of the blade debitage strategy. Most of blades have two arrises. The knapper deliberately avoided arrise congestion, to be able to remove more blades. The number of knapping accidents is very low, so we assume a skilful knapper. We find many hinged flakes and blades, plunging blades, upper face and lower face languettes. Nearly half of the blades are retouched, which reflects the quality of the raw material. Retouched blades are made of regional or distant raw materials. This is not surprising, because we find numerous correlations between the stone tool production categories and the quality and availability of the different siliceous rocks.

The whole assemblage reflects blade dominance. These blades are made mostly of Mecsek radiolarite. Blades show a high degree of homogeneity in morphometrical aspect, too. Lengths range between 10 and 40 mm. Widths vary from 5 to 17 mm (fig. 10). Many

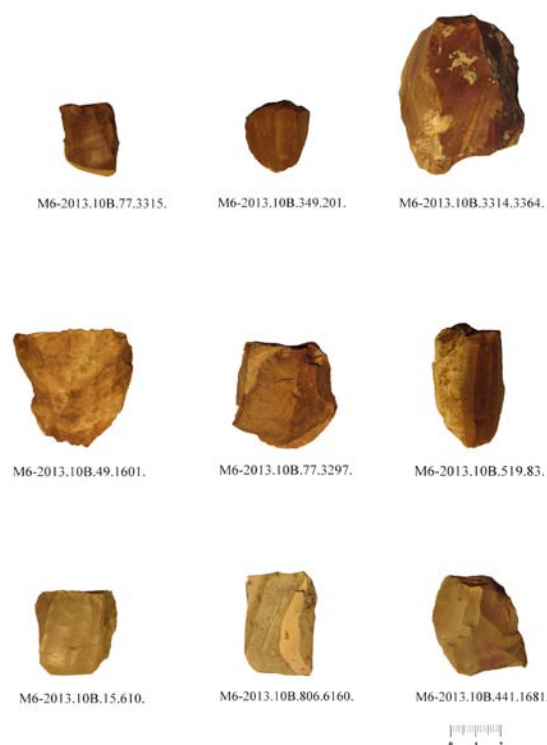


Fig. 9.1. Cores of Mecsek radiolarite
Обр. 9.1. Ядра от радиоларит тун Мечек



Fig. 9.2. Cores of Bakony radiolarite²
Обр. 9.2. Ядра от радиоларит тун Бакон

blades are broken at the distal end. The high number of breaks may be construed as the result of intentional action, but we do not know the functional reason. Half of the blades show macroscopic use-wear traces on the edge. Triangular and parallel edge gloss traces appear on edges. Microscopic use-wear analysis is planned for the future.

Typological analysis

The typological repertoire consists of endscrapers on flakes, endscrapers on blades, side-scrapers, borers and trapezes. Two kinds of endscraper dominate (149 pc, 86.13%). Household unit IV has endscrapers in extremely large numbers. This household unit was in the southern part of the Kanizsa-dűlő subsite, where pits cut one another in ditch-like fashion and 8 houses were built around them. The quantity of endscrapers may be related to the high number of houses. Endscrapers on flakes and endscrapers on blades have very similar morphological and technological features. The scraper support was made by special knapping after the last phase of blade debitage. The scraper's upper face carries the blade debitage surface, which defines the perfect form of the support. The support is the semi-finished product in the *chaîne opératoire*. This special scraper debitage resulted in many atypical cores in the assemblage, representing the last phase of the core's use. The atypical core is a type of core which has no debitage surface. Raw materials originating from long distance circulation tend to be of the best quality and are represented by fewer pieces but by a high level of elaboration. Local raw materials, on the other hand, usually occur in great quantities, showing a low ratio of retouched pieces (Inizan et al. 1999; Andrefsky 2008).

Some of the blades, endscrapers and side-scrapers were made of distant raw materials, thus these artefacts are defined as import tools (fig. 11). The chipped stone assemblages

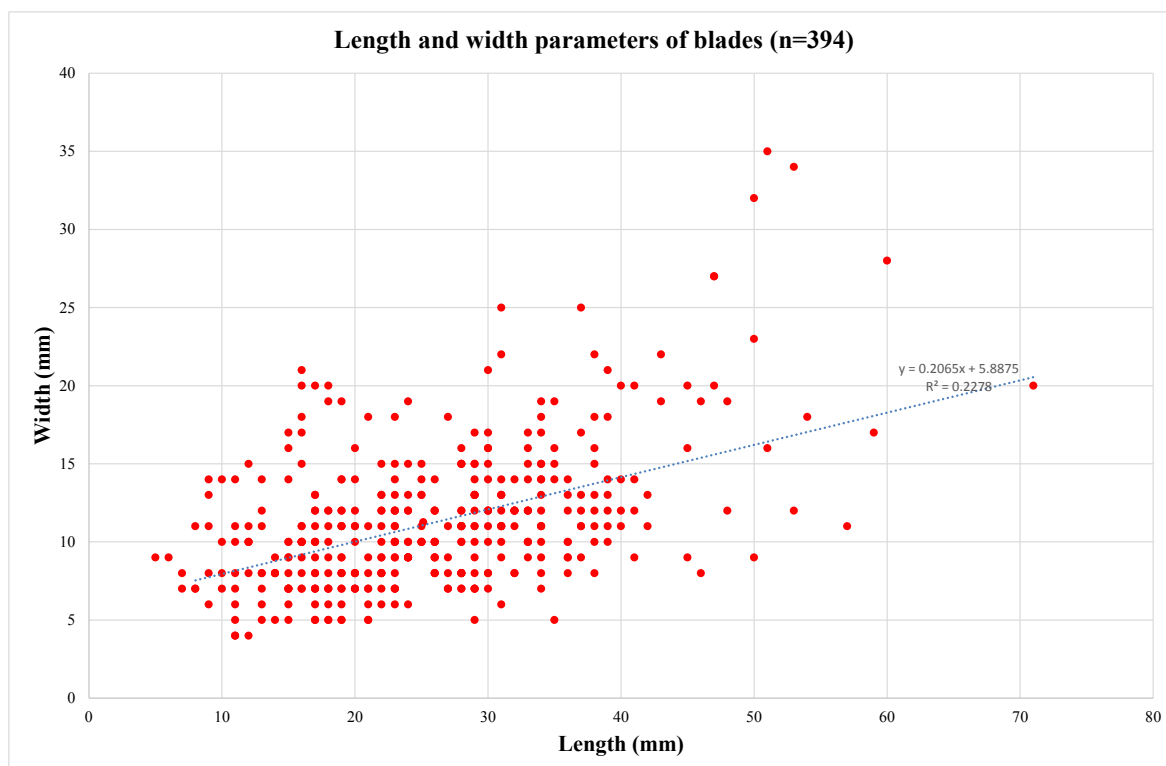


Fig. 10. Length and width parameters of blades
Обр. 10. Дължина и ширина на пластините

of emblematic Lengyel sites have more variants of tools. The reason for this difference is that I did not distinguish very many types of tools based on morphology. For example, Erzsébet Bácskay assigned many subvariants (subvariants within the major variant group) in the endscraper on blade category. These subvariants differ in morphology. I did not discriminate endscrapers or other types on the basis of morphology, but merely distinguished one typological category on the basis of technological features (e.g. endscraper on blade or endscraper on flake). Of course, there are differences among the endscrapers, but I analyze them on a morphometric level. The lengths range between 15 and 35 mm, and the widths vary from 10 to 25 mm (fig. 12).

Discussion

The raw material distribution of the household units reveals a similar ratio (fig. 3, Table 2). This is not surprising because the raw material distribution within the settlement is very homogeneous. Mecsek radiolarite dominated in every household unit, while Bakony radiolarite occurred in significant quantities. A slight difference is evident between household units I and IV. We find more distant raw materials in household unit I, while household unit IV has more Bakony radiolarite. Household unit I has the most retouched artefacts, which were made from distant raw materials. In contrast, household unit IV contained the most cores, which were created using Bakony radiolarite.

All technological and typological categories occur in household units, which leads to the conclusion that all aspects of toolmaking occurred in the settlement (fig. 14, Tables 3-4). Blades dominated in every unit. However, based on differences between technological

Technological categories	household unit I	household unit II	household unit III	household unit IV	Total (pc)
Core	19	21	40	60	140
Block of raw material	6	2	1	10	19
Flake	34	60	25	42	161
Blade	124	74	96	100	394
Tools	40	37	30	66	173
Total (pc)	223	194	192	278	887

Table 3. Quantity of technological categories by household unit

Таблица 3. Количество на артефактите по технологични категории и групи домакинства

Tool categories	household unit I	household unit II	household unit III	household unit IV	Total (pc)
Endscraper on flake	24	11	6	37	78
Endscraper on blade	11	23	15	22	71
Side-scraper	2	1	4	4	11
Borer	2	-	3	3	8
Trapeze	1	2	2	-	5
Total (pc)	40	37	30	66	173

Table 4. Quantity of tool categories by household unit

Таблица 4. Разпределяне на типологическите оръдия по групи домакинства

categories of the household units, the procedures of toolmaking are located partway within the site. Household units III and IV contained the most cores and flakes, thus these places (in the southern part of the settlement) imply the initial phase of toolmaking activity. Preparation and preliminary flakes occur in small amounts, which suggests that shaping of cores happened outside the settlement. Presumably, the cortex was removed near the source of raw material; thus, it arrived at the settlement in pre-core form.

Most blades and tools came from smaller pits in household units I and II. The size of the pits does not correlate with the number of tools. The smaller pits comprise more chipped stone tools, located in the centre of the household unit. Household units III and IV have longer cores than household units I and II. The longer cores may reflect the initial phase of the toolmaking procedure. This is supported by the fact that household unit IV included most of the unretouched and rejuvenation flakes. The numbers of cores and flakes show the most intensive toolmaking activity was in the south part of settlement. The activity zones, defined from the results of technological analysis of all kinds of tools, determine the final household units. Thus, the level of the research and the lack of a relative chronology for these household units signify the initial phase of archaeological processing of the household.

The stone assemblage at Alsónyék is very like the stone collections that came from classical sites of the Lengyel culture in southeast Transdanubia. The range of raw materials and the dominance of blades is very similar in all these sites. From the numbers of cores and flakes, we can presume there was systematic stone tool production in the settlement. The high ratio of blades, retouched artefacts and the nearly identical morphology of endscra-

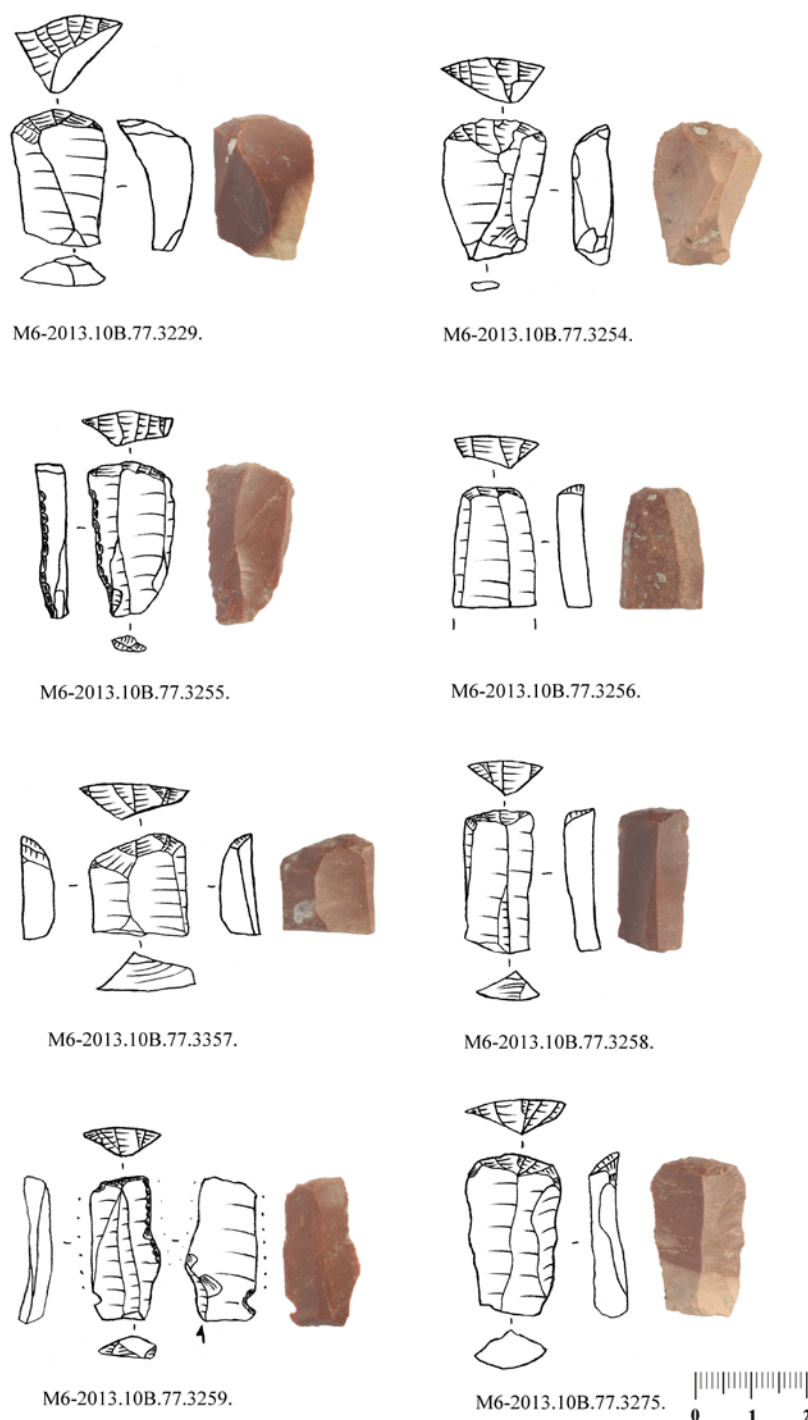


Fig. 11. Endscrapers (photos and drawings by K. Szilágyi)
 Обр. 11. Стъргалки (снимки и рисунки К. Силаги)

pers, side-scrapers, borers and trapezes show the cultural transition between the Central European LBK culture to the Lengyel culture.

Conclusion

The stone collection analyzed is not complete, but it constitutes the major part of the assemblage from the settlement. However, the nearly one thousand chipped stone tools

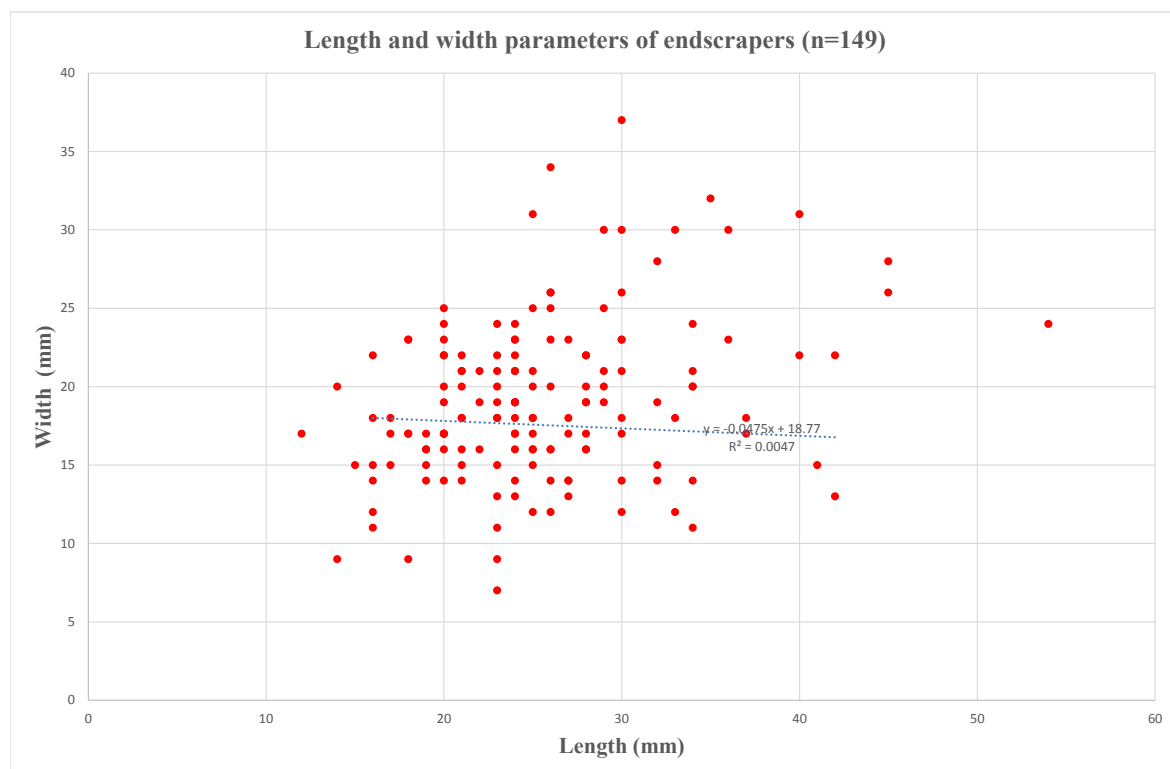


Fig. 12. Length and width parameters of endscrapers

Обр. 12. Дължина и ширина на стъргалките

are sufficient to provide a representative cross-section of the stone assemblage of the settlement.

We suppose that toolmaking occurred throughout the settlement. The local Mecsek radiolarite was of good quality and available in sufficient quantities. The geological sources of this radiolarite were located near Alsónyék. These sources are secondary autochthonous sources, thus the gatherer/knapper could collect the radiolarite pebbles fairly easy (Odell 2006). They did not have to pursue mining or digging activity as in the case of the Bakony Mountain. For this reason, the supply had to be organized in space and time. All in all, Mecsek radiolarite was collected continuously and this activity did not demand bigger expeditions. The farming communities settled generally some distance from the geological sources of the lithic raw materials.

Based on the raw material distribution, the Late Neolithic community at Alsónyék had very robust local networks. The enormous settlement area, the high number of features and finds of the settlement's stone collection do not show such widespread intercultural networks. In contrast, we find imported tools from distant raw material in graves. Based on recent research we can make some distinctions in the role of raw material manipulation.

The site's enormous extent, the structured settlement organization and large number of burials means we can assume intensive intercultural connections of the southeast Transdanubian group of the Late Neolithic Lengyel culture. This hypothesis is not reflected in the settlement's chipped stone tools, in contrast to the stone tools from burials, where we find much more distant imported tools (Zalai-Gaál et al. 2012). There was a clearly defined pattern of raw material manipulation within the site. Local and regional raw materials predominate in the settlement's assemblage (tools for everyday use). It was an extraordinary

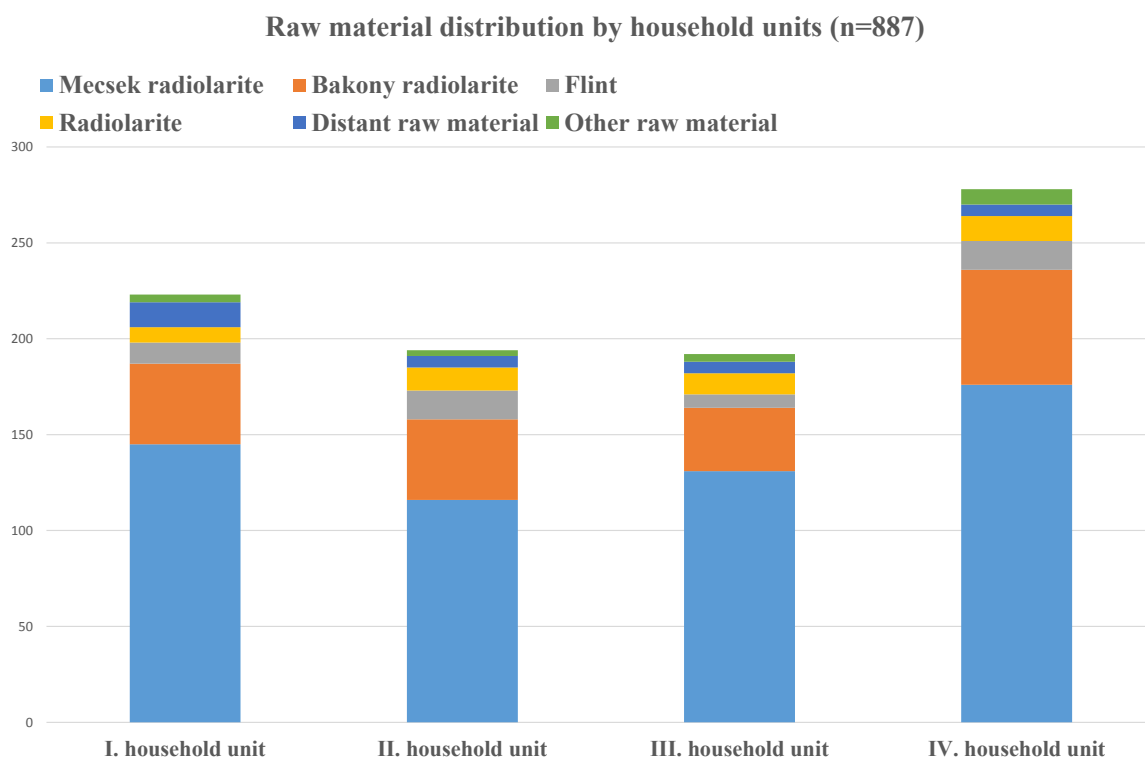


Fig. 13. Raw material distribution by household unit
 Обр. 13. Разпределение на суровините по групи домакинства

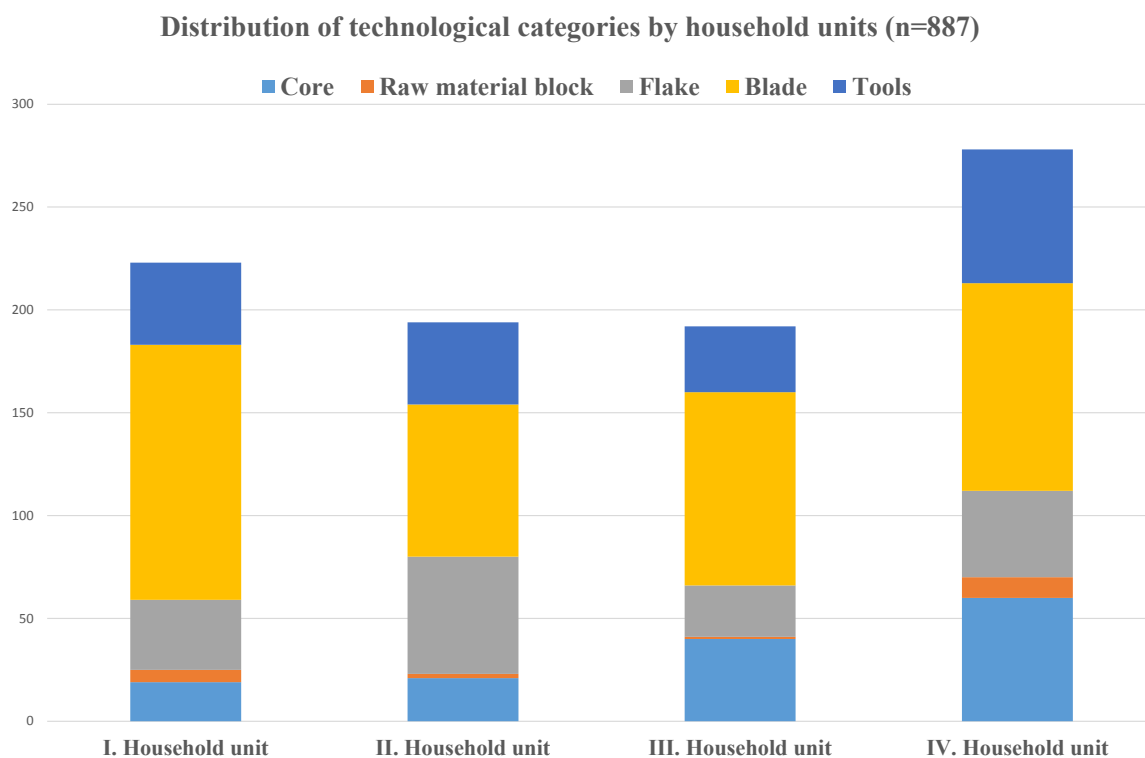


Fig. 14. Distribution of technological categories by household units (n=887)
 Обр. 14. Технологично разпределение на артефактите по групи домакинства

task for the community to collect those lithic raw materials that are located outside the settlement's catchment area. This gathering pursuit happened outside everyday activity, thus this task was a community interest.

Recently, we began a new geoarchaeological research project in the eastern Mecsek to determine the exact geological sources of local radiolarite. In these field surveys, we found many quarries where there was radiolarite in the form of pebbles and blocks. We presume that knapping specialists made a conscious choice of the appropriate geological sources, which depended on what types of artefacts they wanted to create. Lithic raw materials played an important role in the organization of technology. It is apparent that raw material availability, size and quality have complex influences on different aspects of stone tool technology. This fact alone makes lithic raw material an important resource for gaining insight into human land use and mobility patterns, and relating these to lithic technology (Andrefsky 2009).

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Изследване на домакинства от гледна точка на кремъчната индустрия в Алшбонек-Баташек (Южна Унгария)

Ката Силаги

(резюме)

Статията представя кремъчната индустрия на Алшбонек-Баташек, разкрита по време на археологически разкопки в периода 2006–2009 г. Този сравнително голям неолитен обект се намира в Южна Унгария и по-точно Югоизточна Трансданубия. Следите от обитаване, отнесени към културата Ленгиел, се откриват по цялата площ на обекта, като почти 9000 от общо 15000 структури могат да се свържат с тази култура.

В края на полевата археологическа работа бяха отделени изделията, отнесени със сигурност към култура Ленгиел. Стратегията на този подбор се основава на принципите на археологията на домакинството (household archaeology). На базата на тяхното местоположение са идентифицирани четири обособени групи домакинства. Подобен подход бе приложен и на обекта Алшбонек-Каниза-дюло, където местоположението на жилища и ями е ясно дефинирано. В процеса на сравнителен анализ между отделните групи домакинства броят на кремъчните изделия е от съществено значение. В Алшбонек размерът на ямите не е пряко свързан с количеството на намерените в тях каменни сечива. По тази причина се налага интерпретативно обединяване на няколко ями и жилища в едно цяло, което наричаме група домакинства (household unit).

Колекцията от 887 каменни изделия представя пресечна точка на комплексите от Ленгиелските селища. Изследването се фокусира върху дефинирането на суровините и техно-типологически анализ на артефактите, подчинени на принципите на археологията на домакинството (household archaeology).

Сред суровините преобладават два вида радиоларити (радиоларити тип Мечек и Бакон). Източникът на радиоларита тип Мечек е свързан с местната зона за доставка – източната част на планината Мечек. Локалната суровина е събирана редовно и в голяма степен е била в състояние да задоволи нуждите на региона. Суровините, свързани с обмен на големи разстояния, са малко на брой, но са с високо качество и са били използвани за направа на специфични и технологично комплексни изделия. За сравнение – местните суровини обикновено се срещат в големи количества, но основно сред неретушираните изделия.

В колекцията преобладават пластините. Типологическият репертоар се състои от стъргалки на пластини и отломъци, странични стъргалки (стъргала), перфоратори и трапец. Всички технологични и типологични категории се срещат в обособените групи домакинства, което води до презумпцията за сравнително цялостна производствена верига в рамките на селището. От друга страна, разкриващите отломъци са малко, което предполага, че оформянето на ядра се извършва извън селището.

Кремъчната индустрия в Алшбонек е много близка до тази от други 'емблематични' обекти (Зенговарконь, Печварад-Аронхедь, Ленгиел-Шанц, Морадь-Тузкодом

и Виланькьовежд) на културата Ленгиел в Югоизточна Трансданубия. Мащабът на снабдяване със суровини и преобладаването на пластини са почти равностойни в посочените обекти. От количеството ядра и отломъци можем да предположим, че в селището е имало системно производство на каменни сечива. Големият процент на пластини и ретуширани артефакти и морфологичната близост на стъргалките, стъргалата, перфораторите и трапезите показват културната традиция между централноевропейската култура на линейно-лентестата керамика (LBK) и култура Ленгиел.