

Prehistory of Košice – settlement in the Neolithic*

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This article presents the results of archaeological excavations at the sites Košice-Galgovec I-III and Červený rak on the southeastern edge of Košice in 1997–2001 indicated several stages of settlement and their dating. AMS ¹⁴C dates for the Tiszadob group were 6260±35 BP, 5330–5140 calBC; for the early stage of the Bükk culture they were 6310±40-35 BP, 5285±42 calBC. Assessment of residential, farming and settlement features was carried out, and numerous remains of pottery and lithic industry were classified with regard to contemporary sites in the Košická kotlina basin and in northeastern Hungary. The researchers evaluated the settlement in the microregion of Košice from the beginning of the Eastern Linear Pottery culture – the Proto-Linear stage – to the Barca III group and the Tiszadob group and the subsequent settlement during the Bükk culture period.

Keywords: Košice. Middle Neolithic. Settlement. Eastern Linear Pottery Culture. Bükk Culture.

We usually obtain new archaeological relics during earthworks of various kinds, when archaeological contexts and finds are discovered; however, such sites can also be damaged or even destroyed. Thus, it is important to monitor the preparatory works at building sites and try to save as many archaeological features with great historical value as possible. In the last 25 years, several large construction projects have been carried out at the southeastern edge of Košice. Several new sites associated with Neolithic as well as Bronze Age cultures were discovered and investigated during those construction works. The archaeological relics obtained from them serve as a basis for observing the spread of Neolithic civilization in the Košická kotlina basin and the south of Eastern Slovakia.

History of research on the Neolithic settlement in Košice

Sherds and lithic industry suggesting a possible Neolithic settlement were sporadically found on the left-bank terrace of Myslavský potok stream. The space from Košice to Šaca as far as Košice-Barca is divided into two areas on maps. In the western part, the smaller site of Červený rak is situated; the larger eastern part, reaching as far as Košice-Barca, is indicated as the site of Galgovec.

In 1966, Barca III group relics were found at the Košice-Barca-Svetlá III site on the right-bank terrace of the Myslavský potok stream¹ and west of it relics of the Tiszadob group and Bükk culture were found.² The oldest Neolithic monuments were studied in

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1 BÁNESZ – LICHARDUS, *Nové nálezy lineárnej keramiky v Barci*, 291–300.

2 BÁNESZ, *Praveké jamy z Barce-Svetlej III.*, 324–325.

1980 at the Košice-Červený rak site. They belonged to the initial phase of the Eastern Linear Pottery culture, known as the Proto-Linear phase.³

Later, in 1997, when road I/50 from Košice-Červený rak to VSS Košice was relocated, traces of intense settlement of the Galgovec site by the Eastern Linear Pottery and Bükk cultures were discovered in three places.⁴

North of the finds at Galgovec I site, three Neolithic features and seven Bronze Age features were uncovered in 2000, during the construction of the PEMA company.⁵ During the construction of the OPTIMA I shopping centre in 2001, 17 Bükk features were studied at the site of Červený rak.⁶ Furthermore, M. Novák uncovered six features of the Tiszadob group in the western part of the Galgovec I site.⁷ When a NAY shop was being built north of Galgovec I, an obsidian core for Bükk blades was found.⁸ Another Tiszadob settlement was investigated northwest of Galgovec I, approximately 800 m away, during the construction of the Kaufland Shopping Centre (Medzi cestami od Moldavy site) in 2002.⁹ Later, two new sites with signs of Neolithic settlement were discovered on the right bank of the Myslavský potok stream, on new building sites near the road leading to the airport.¹⁰

Palaeolithic and Mesolithic settlements

The prehistoric settlement of Košice is concentrated in its southeastern part along the Myslavský Potok stream. The Neolithic settlement was preceded by settlements in the Palaeolithic and Mesolithic eras. Relics of the oldest settlement, in form of chipped lithic industry and remains of tent-like Palaeolithic dwellings, were found on the right-bank terrace. They belonged to anatomically modern humans from the Upper Palaeolithic Aurignacian culture, from the period before 34,000–28,000 BC.¹¹ As these areas developed further, Gravettian hunter-gatherers from the period 28,000–20,000 BP appeared as well.¹² Chipped lithic industry, including geometrically shaped tools made of obsidian, found in the nearby site of Košice-Barca I are Mesolithic.¹³

Advance of the Neolithic civilization

In the Early Neolithic, the Neolithic civilization proceeded from the North Balkans to the Carpathian Basin. Around 5600–5500 BC, the Linear Pottery culture was grown out of the Starčevo culture in Transdanubia and southwestern Slovakia.¹⁴ In the southern

3 KAMINSKÁ, *Archeologický výskum v Košiciach-Barci*, 129–131. ŠIŠKA, *Kultúra s východnou lineárnou keramikou*, 58.

4 KAMINSKÁ, *Záchranný výskum na preložke cesty v Košiciach*, 93–94.

5 KAMINSKÁ, *Záchranné výskumy v Košiciach*, 96–97.

6 KAMINSKÁ – NOVÁK, *Sídliskové nálezy bukovohorskej kultúry*, 82–83.

7 BÉREŠ – NOVÁK, *Záchranný výskum na polohe Košice-Galgovec*, 35.

8 BÉREŠ – NOVÁK, *Nález obsidiánového jadra z Košíc*, 34.

9 HORVÁTHOVÁ, *Záchranný výskum v Košiciach*, 55–56.

10 P. TAJKOV, oral information. LUŠTÍKOVÁ, *Záchranný výskum v Barci*, 162.

11 BÁNESZ, *Barca bei Košice*.

12 BÁNESZ, *Paleolitické sídliskové objekty*, 285–295.

13 PROŠEK, *Mesolitická obsidiánová industrie*, 145–148, 193.

14 KALICZ – MAKKAY, *Probleme des frühen Neolithikums*, 77–92. PAVÚK, *Ältere Linearkeramik in der Slowakei*, 7–87. PAVÚK, *Zur relativen Chronologie*, 135–149. BÁNFFY, *The 6th Millennium BC Boundary*. BÁNFFY, *The northern and western frontier*, 15–22. OROSS, *Architecture of the Linearbandkeramik settlement*, 63. OROSS –

Tisza River basin and Transylvania, the Körös culture developed contemporaneously with the Starčevo culture. The Körös culture arrived in the central Tisza River basin in the period between 5850 and 5650 BC. The transfer of the Körös culture northwards along the Tisza River is associated with the use of obsidian resources in the Tokaj region.¹⁵ In further development in the territory of Alföld (the Great Hungarian Plain), the Szatmár group evolved from the late Körös culture and the Méhtelek group.¹⁶

The Szatmár group also represents the initial phase of the Alföld (Eastern) Linear Pottery culture.¹⁷ Dating of the Szatmár group and the earliest phase of the Alföld Linear Pottery culture falls within the span of 5620–5470 BC.¹⁸ In Hungary, the Middle Neolithic starts with the Szatmár group.¹⁹

The beginnings of the Neolithic in Eastern Slovakia are also associated with the Szatmár group. The bearers of this culture arrived in the Košická kotlina basin along the Hornád River valley,²⁰ and came to the Východoslovenská nížina lowland along the Tisza and Bodrog River valleys.²¹ In Hungary, the development of the Alföld Linear Pottery culture (called the Eastern Linear Pottery culture in Eastern Slovakia)²² is divided into four phases, contemporary with the groups in Eastern Slovakia.²³ The period in which the Linear Pottery culture existed in Hungary has been specified to 5600/5500–5100/5000 BC.²⁴

As they developed, individual groups of the Linear Pottery culture split into independent regional groups in Eastern Slovakia,²⁵ similar to the mode of development observed in northeastern Hungary.

The Kopčany group in the Východoslovenská nížina lowland corresponds with the second stage of the Linear Pottery culture in the Košická kotlina basin (the group Barca III). The third stage is analogous with the Tiszadob group in the Košická kotlina basin and the Raškovce group in the Východoslovenská nížina lowland. The Slovak groups differed from each other in terms of pottery decoration. In the Košická kotlina basin,

BÁNFFY, *Three successive waves of Neolithisation*, 179. KALICZ, *Méhtelek*. PAVÚK – FARKAŠ, *Beitrag zur Gliederung*, 213–236.

15 KACZANOWSKA – KOZŁOWSKI, *The Körös and the early Eastern Linear Culture*, 9–37. KALICZ, *Méhtelek*, 39. RACZKY et al. *Ecological barrier*, 159.

16 KALICZ, *Méhtelek*.

17 KALICZ – MAKKAY, *Die Linienbandkeramik*, 22. RACZKY, *Chronological Framework*, 234. DOMBORÓCZKI, *Report on the excavation*, 157. KALICZ – KOÓS, *Mezőkövesd-Mocsolyás. Újkőkori telep*, 33. KALICZ – KOÓS, *Mezőkövesd-Mocsolyás. A neolitikus Szatmár-csoport*, 85. KACZANOWSKA et al. *Conclusions*, 245. WHITTLE et al. *3. Hungary*, 51.

18 DOMBORÓCZKI – RACZKY, *Excavations at Ibrány-Nagyerdő*, 215.

19 DOMBORÓCZKI, *Radiocarbon data*, 27–28. DOMBORÓCZKI – RACZKY, *Excavations at Ibrány-Nagyerdő*, 210. KALICZ – KOÓS, *Mezőkövesd-Mocsolyás*, 82. RACZKY – ANDERS, *Neolithic enclosures*, 273.

20 CSENGERI, *Az alföldi vonaldíszes kerámia kulturája*, 41–67. CSENGERI, *A short report on the research*, 329–336.

21 ŠIŠKA, *Kultúra s východnou lineárnu keramikou*, 33–34. KOZŁOWSKI, *The Early Linear Pottery Culture*. KOZŁOWSKI – NOWAK – VIZDAL, *Early farmers of the Eastern Slovak Lowland*.

22 ŠIŠKA, *Kultúra s východnou lineárnu keramikou*.

23 RACZKY, *Chronological Framework*. RACZKY – ANDERS, *The internal relations*, 155–182. RACZKY – ANDERS, *Settlement history*, 31–50. STROBEL, *Ein Beitrag zur Gliederung*, 9–98.

24 DOMBORÓCZKI, *A Körös-kultúra északi elterjedési határának problematikája*, 10.

25 ŠIŠKA, *Kultúra s východnou lineárnu keramikou*, 36. KAMINSKÁ, *Košice-Galgovec*.

engraved ornamentation was used. In the Východoslovenská nížina lowland, pottery was decorated with black paint. However, the motifs were very similar.²⁶

Stages II and III of the Linear Pottery culture in Hungary have been dated to 5285–5056 BC and stage IV dated to 5293–5068 BC.²⁷ In Hungary, the Bükk culture is considered to be the last stage IV of the Alföld Linear Pottery culture, following directly from the Tiszadob group.²⁸ Between the end of the Tiszadob group and the beginning of the Bükk culture in Hungary, a transitional stage between the Tiszadob group and Bükk culture has been identified. It is characterized by a change in the proportion of pottery decorated with the Tiszadob group and Bükk culture ornamentation.²⁹ Dating of the transitional stage obtained from several grave finds falls within the period between 5320 and 5030 BC.³⁰ At the same time, this marks the beginning of the Bükk decorative style³¹ or the Bükk culture. In Eastern Slovakia, the Bükk culture is considered an independent culture genetically associated with the Tiszadob group and, in its initial stage, probably partly contemporary with it.³²

The Neolithic settlement in Košice

Settling of the Košická kotlina basin is associated with the advance of the Linear Pottery culture in the beginning of the Middle Neolithic. It is obvious from the character of the finds that the first farmers arrived in the Košická kotlina basin from northeastern Hungary along the Hornád River valley. Relics from first Neolithic farmers in the territory of Košice were concentrated on the left-bank terrace of the Myslavský potok stream, Červený rak and Galgovec sites in particular. They belonged to the Eastern Linear Pottery culture and the following Bükk culture (Figure 1). During the excavations in 1997 and 2000, they were discovered in separate features. Besides, features with various numbers of pottery from both cultures – the Tiszadob group prevailed – were uncovered. The pottery material from these features was classified in the Tiszadob-Bükk transitional stage and the typical shapes were assessed together with the Tiszadob group pottery.

The Eastern Linear Pottery culture

Development of the Eastern Linear Pottery culture is divided into several stages and groups: Proto-Linear stage, Barca III group and the Tiszadob group. The following transitional stage is on the interface of the occurring Bükk culture under influence of the Tiszadob culture.

The Proto-Linear stage

26 VIZDAL, *Zemlín v mladšej dobe kamennej*. ŠIŠKA, *Abdeckung von Siedlungen*, 3–15, 101–104. ŠIŠKA, *Kultúra s východnou lineárnou keramikou*. KOZŁOWSKI, *The Early*. VIZDAL, *Pottery finds*, 43–141. KOZŁOWSKI – NOWAK – VIZDAL, *Early farmers*. KAMINSKÁ, *Košice-Galgovec*.

27 RACZKY – ANDERS, *The internal relations*. RACZKY – ANDERS, *Settlement*. RACZKY – ANDERS, *Neolithic*, 280, Figure 9.

28 KALICZ – MAKKAY, *Die Linienbandkeramik*, 93–110, Table 2.

29 CSENGERI, *Late groups*, 502.

30 CSENGERI, *Settlements*, 230, Tab. I. CSENGERI, *Late groups*, 505. RACZKY – ANDERS, *Neolithic*, 280.

31 CSENGERI, *Settlements*, 230.

32 LICHARDUS, *Studien zur Bükker Kultur*. ŠIŠKA, *Die Bükker Kultur*, 245–292. ŠIŠKA, *Kultúra s východnou lineárnou keramikou*, 131, 138. ŠIŠKA, *Dokument o spoločnosti mladšej doby kamennej*. RACZKY, *Chronological*. HREHA – ŠIŠKA, *Bukovohorská kultúra*.

The oldest finds of the Eastern Linear Pottery culture belong to the Proto-Linear pottery stage. They were studied in 1980 at the site of Košice-Červený rak.³³ The origin of the culture with the eastern linear stage, its oldest part, is associated with influence of the Szatmár group from northeastern Hungary.³⁴ Two features were investigated during the excavations in 1980: an oven and a refuse pit containing mostly sherds from several thick-walled vessels, probably storage jars.³⁵ One of the storage jars has been restored. It is 108 cm tall. Its slightly conical neck is divided from the egg-shaped belly by two horizontal plastic bandes with finger indentations. The jar's body is decorated with two rows of anthropomorphic and zoomorphic motifs made from plastic bandes with finger impressions and round bosses with finger impressions (Figure 2). The symbols of bull and man (orant) suggests the ritual relevance of bulls in the transitional period from the Körös culture to the Linear Pottery culture.³⁶ In the Körös culture, people or animals – goats or sheep – were depicted.³⁷ After the settlement had moved northwards, to the Great Hungarian Plain, Neolithic people arrived in areas with altered ecological conditions and were forced to switch to breeding cattle and pig.³⁸ Adaptation to these new natural conditions caused changes in nutritional strategies, which were also reflected in abstract thinking. In the period of transition from the Körös culture to the Alföld Linear Pottery culture (Szatmár group), people started to fashion figurines of cattle and so-called "sacred horns",³⁹ as documented at the sites of the Szatmár group in Füzesabony-Gubakút⁴⁰ and in Mezőkövesd-Mocsolyás.⁴¹ Reliefs of bull heads and human figures decorating a storage jar of the Proto-Linear stage from the site of Košice-Červený rak have been associated, by Šiška,⁴² with the Körös culture or the Szatmár group. The settlement at Košice-Červený rak was the northernmost site of the expanding early stage of the Linear Pottery culture.⁴³

Besides pottery, lithic tools were also discovered. Most of them have been identified as blade lithic industry, chipped mainly from limnosilicites and obsidian. As for polished tools, only a small trapezoidal axe is represented.⁴⁴ AMS dating of the Proto-Linear stage from Košice-Červený rak to 5540–5410 BC⁴⁵ is in accordance with the dating of the Linear Pottery in Hungary and the oldest finds of pottery at the Východoslovenská nížina lowland.⁴⁶

33 KAMINSKÁ, *Archeologický výskum. ŠIŠKA, Kultúra s východnou lineárnou keramikou*, 58–61.

34 ŠIŠKA, *Kultúra s východnou lineárnou keramikou*, 59, 114. KAMINSKÁ – KACZANOWSKA – KOZŁOWSKI, *Košice-Červený rak*, 83–91. CSENGERI, *Az alföldi*. CSENGERI, *A short report*. KALICZ – KOÓS, *Mezőkövesd-Mocsolyás*, 86, 87.

35 KAMINSKÁ, *Archeologický výskum. ŠIŠKA, Kultúra s východnou lineárnou keramikou*, 58–61. KAMINSKÁ – KACZANOWSKA – KOZŁOWSKI, *Košice-Červený rak*, Figures 4–6.

36 KAMINSKÁ – KACZANOWSKA – KOZŁOWSKI, *Košice-Červený rak*, 85–87, Figures 7; 8.

37 KUTZIÁN, *A Körös-kultúra*, 75–78, Tables XX: 1a, 1b, 3; XXII: 2; XLII: 1, 3.

38 RACZKY et al. *Ecological barrier*, 148.

39 KALICZ – RACZKY, *Siedlung der Körös-Kultur*, 13–24.

40 DOMBORÓCZKI, *Füzesabony-Gubakút*, 19–27.

41 KALICZ – KOÓS, *Mezőkövesd-Mocsolyás*. KALICZ – KOÓS, *Mezőkövesd-Mocsolyás*, Figures 21–23.

42 ŠIŠKA, *Kultúra s východnou lineárnou keramikou*, 114.

43 KAMINSKÁ – KACZANOWSKA – KOZŁOWSKI, *Košice-Červený rak*, 90.

44 *Ibidem*, 86, 87, Figure 12.

45 *Ibidem*, 88.

46 NOWAK, *Absolute chronology and plant exploitation*, 215–234.

Barca III group

The early stage of the Eastern Linear Pottery culture in the Košická kotlina basin was dominated by the Barca III group.⁴⁷ Important finds have come from the following sites: Košice-Barca III,⁴⁸ Košice-Barca-Svetlá III,⁴⁹ Košice-Barca-Gyilkos,⁵⁰ Košice-Šaca,⁵¹ as well as the wider surroundings of Blažice,⁵² Čečejevce,⁵³ Valalíky-Všechsvätých⁵⁴ and Ždaňa.⁵⁵ Barca III pottery is mainly medium-thick and thick-walled. Typical shapes include pedestalled bowls, conical and rounded bowls, spouted vessels, colanders, barrel-shaped pots and storage jars. The surface of vessels was typically decorated with wide grooves creating linear patterns, ellipses and lobular motifs, meanders and chevron tapes. Vessels with a surface coating of black paint with engraved decoration were less common.⁵⁶ Only one dating from charcoals is available – from feature 4/79 in Čečejevce with result 6180±30 BP, 5135±54 BC,⁵⁷ which does not correspond with its chronological classification. The Barca III group was contemporary with the Kopčany group in the Východoslovenská nížina lowland. For the Kopčany group, data from Moravany suggests 5400–5300 BC⁵⁸ and from Zemplínske Kopčany (Bln-1785), 6420±60 BP,⁵⁹ 5401±56 BC. We assume the chronological interval for the Barca III group was identical. Comparing these sites with ¹⁴C datings from northeastern Hungary and Eastern Slovakia, the Barca III group, together with the Kopčany group, can be classified into sites dated to the period 5400–5300 BC.⁶⁰ At the site of 1 Polgár-Ferenci-hát, the dating for corresponding connected stages of Linear Pottery II-III is also 5285–5056 BC.⁶¹

Tiszadob group

The Tiszadob group is the younger and more developed stage of the Eastern Linear Pottery culture. The excavations between 1997 and 2002 revealed only a few pottery finds belonging to the Tiszadob group from Košice. A rescue excavation was carried in 1997 out during the relocation of the I/50 road from the crossroads at Červený rak to Košice-Barca.⁶² Along the route of the bypass, in the Galgovec site, three concentrations of finds in the west-east direction, designated as sites Galgovec I, II and III, were studied (Figure 1). Seventeen features were uncovered altogether; seven of them belonged to

47 ŠIŠKA, *Kultúra s východnou lineárnu keramikou*, 62.

48 HÁJEK, *Chronológia východoslovenského neolitu*, 13. HÁJEK, *Nová skupina páskové keramiky*, 3–9, 33–36.

49 BÁNESZ – LICHARDUS, *Nové nálezy lineárnej keramiky v Barci*.

50 BUDINSKÝ-KRIČKA, *Nálezy z prieskumu na východnom Slovensku*, 65–81.

51 NOVOTNÝ, *Slovensko v mladšej dobe kamennej*, 16, Table VIII: 1.

52 PÁSTOR, *Blažice, Bohdanovce i Hranična*, 87–95.

53 ŠIŠKA, *Neolitické a halštatsko-laténske sídlisko*, 204–207.

54 NOVOTNÝ, *Sídlisko s alföldskou lineárnou keramikou*, 3–8.

55 BÉREŠ, *Záchranný výskum neolitického a včasnostredovekého sídliska*, 33.

56 ŠIŠKA, *Kultúra s východnou lineárnu keramikou*, 62–67.

57 STADLER et al. *Status of the Austrian Science Fund Project*.

58 NOWAK, *Absolute chronology*, 227.

59 ŠIŠKA, *Kultúra s východnou lineárnu keramikou*, 67, 125.

60 HORVÁTH – HERTELENDI, *Contribution to the ¹⁴C based absolute chronology*, 118.

61 RACZKY – ANDERS, *Settlement history*.

62 KAMINSKÁ, *Záchranný výskum*.

the Tiszadob group, one to the Tiszadob-Bükk transitional phase and three to the Bükk culture. Six features dated from the Bronze Age. In 2000, during the construction of the PEMA plant at the site of Galgovec I, two features from the Tiszadob-Bükk transitional stage were studied. Younger settlements on the studied territory are represented by seven features of the Bronze Age Piliny culture.⁶³ For a more complex picture of the Neolithic settlement on the terraces of the Myslavský potok stream, we have added features from excavations at Košice-Galgovec and Košice-Červený rak in 2001 to the features studied in 1997 and 2000.

Dating of the Tiszadob group in Košice-Galgovec III falls within 5300–5210 and 5170–5140 BC. Dating of the Tiszadob group finds at the settlement in Šarišské Michaľany falls within the period of 5230–5016 BC.⁶⁴ The Raškovce group in the Východoslovenská nížina lowland was contemporary with the Tiszadob group and is similarly dated to 5350/5300–5250/5150 BC.⁶⁵

Dating of the Hungarian sites associated with the Late Alföld Linear Pottery culture, i. e. the Tiszadob group or ALP IV, corresponds with dating of Slovak sites of the Tiszadob and Raškovce groups. The site of Mezőkövesd-Mocsolyás has been dated to 5234–5034 BC;⁶⁶ in Polgár-Ferenci-hát, the ALP IV stage was dated to 5293–5068 BC;⁶⁷ and at the site of Tiszaszőlös-Domaháza-puszta, it is 5200–5100 BC.⁶⁸ Dating of the site at Polgár-Piócási-dűlő, which contains a mixed Tiszadob-Bükk horizon, suggests 5297–5068 BC.⁶⁹

The demise of the Tiszadob and Raškovce groups overlaps the beginning of the Bükk culture. It is evidenced by terrain contexts as well as the analysis of finds at many sites in Slovakia and Hungary.⁷⁰ For cases where the archaeological record contains both Tiszadob pottery and Bükk culture pottery, P. Csengeri⁷¹ has suggested the term “Tiszadob-Bükk transitional stage”. Dating of this transitional stage was obtained from the site of Garadna-Elkerülő út. (site 2) from grave S20: 5303 calBC–5057 calBC and grave S191: 5296 calBC–5046 calBC.⁷² Finds from Grave 22 correspond with the dating of the site to the initial stage of the Bükk culture at Sajószentpéter-Kövecses,⁷³ i.e. 5214 calBC–5068 calBC.⁷⁴ These finds could mark the beginning of the Bükk decorative

63 KAMINSKÁ, *Záchranné výskumy*.

64 STADLER et al. *Status of the Austrian Science Fund Project*, 47.

65 NOWAK, *Absolute chronology*, 227.

66 KALICZ – KOÓS, *Mezőkövesd-Mocsolyás*, 87.

67 RACZKY – ANDERS, *Settlement history*.

68 DOMBORÓCZKI, *A Körös-kultúra*. DOMBORÓCZKI, *Settlement structure*, 75–127. DOMBORÓCZKI – RACZKY, *Excavations at Ibrány-Nagyerdő*, 214.

69 NAGY et al. *Evolution and environment*, 277.

70 KALICZ – MAKKAY, *Die Linienbandkeramik*, 43, 101. VIZDAL, *Zemplin*. LICHARDUS, *Studien zur Bükker Kultur*, 112. ŠÍŠKA, *Kultúra s východnou lineárnou keramikou*, 138. RACZKY, *Chronological Framework*, 235. RACZKY – ANDERS, *Settlement history*, 40–41. PIATNIČKOVÁ, *Current state of research*, 241. PIATNIČKOVÁ, *The Eastern Linear Pottery Culture*, 173. HREHA – ŠÍŠKA, *Bukovohorská kultúra*, 127.

71 CSENGERI, *Late groups*, 502.

72 CSENGERI, *Settlements*, 230, Table 1.

73 CSENGERI, *A bükki kultúra*.

74 CSENGERI, *Late groups*, 505, Figure 3.

style.⁷⁵ Graves from stage IV of the Linear Pottery culture from the site of Polgár-Ferenci-hát are similarly dated: 5320–5030 BC.⁷⁶

Settlement features of the Tiszadob group

The features uncovered over the studied area were divided into three groups. The first group included ground plans of two above-ground houses, one associated with the Tiszadob group (feature 2/97, Košice-Galgovec III) and the second with the Tiszadob-Bükk transitional phase (feature 1/97, Košice-Galgovec I). A large sunken feature with a hearth (feature 9/97, Košice-Galgovec III) from the Tiszadob group dominates the second group of features. Feature 8/2000, with an oven, and another large feature, 9/2000, belong to the Tiszadob-Bükk transitional phase. Other features are represented by smaller settlement pits from all three periods.

Vegetal remains in the form of both carbonized and non-carbonized seeds, cereal cymes, wild grasses and charcoals of wood have been found. In daub, imprints mainly of wood and wild-growing plants were found. Charcoals⁷⁷ was mostly from oak (*Quercus* sp.) and were used for dating. The vegetal remains document the cultivation of einkorn wheat (*Triticum monococcum*) and emmer wheat (*Triticum dicoccon*). Only fragments of animal bones were preserved in the clay loam, and they have been identified as bones from cattle.⁷⁸

Above-ground houses

Feature 2/97 (Košice-Galgovec III) is an above-ground house of the Tiszadob group, NE-SW oriented and 3.9 x 5.6 m in size (Figure 3). Daub imprinted with 4 and 18 mm diameter stakes suggest that the feature had wattle-and-daub walls. The bottom of feature 2/97 reached 40 cm below the level of the terrain and was not specially modified. A hearth formed an important part of the feature. The fill of the feature contained a large amount of sherds from thin-walled as well as thicker pottery and lithic industry. Charcoals from oak (*Quercus* sp.) discovered in the hearth was dated by AMS ¹⁴C to 6260±35 BP, 5258±35 BC.

The second house is feature 1/97 (Košice-Galgovec I), which belongs to the Tiszadob-Bükk transitional stage. The size of the feature was 4 x 4.5 m and its bottom was sunken by 12–26 cm. Postholes were not detected in or near the feature, but its fill contained daub with imprints of stakes which might have come from its walls. There were also ceramic sherds and lithic industry remnants.

Very few houses of the Tiszadob group are known. Their above-ground features can be represented by three ground plans indicated by daub, under which there were hearths. The features were uncovered at the Peder site in the Košická kotlina basin.⁷⁹

75 CSENGERI, *Settlements*, 230.

76 RACZKY – ANDERS, *Neolithic enclosures*, 280.

77 HAJNALOVÁ, *Výskumná správa archeobotanická č. VS 13937/98*. HAJNALOVÁ, *Výskumná správa archeobotanická č. VS 13939/98*. HAJNALOVÁ, *Výskumná správa archeobotanická č. VS 14497/2001*. HAJNALOVÁ – MIHÁLYIOVÁ, *Archeobotanické nálezy v roku 1998*, 72–78. HAJNALOVÁ – MIHÁLYIOVÁ, *Archeobotanické nálezy v roku 2000*, 77–81.

78 We would like to thank M. Nývltová Fišáková for identification.

79 LAMIOVÁ-SCHMIEDLOVÁ, *Römerzeitliche Siedlungskeramik*. ŠÍŠKA, *Kultúra s východnou lineárnou keramikou*, 40–42, 161–162.

Features with hearths and ovens

Many Neolithic settlements contain features used for production or farming activities. Two features containing hearths or ovens were also studied in Košice-Galgovec.

Feature 9/97 (Košice-Galgovec III) with a hearth is associated with the Tiszadob group. It is the largest feature at the site. It was disturbed by features of the Pilyi culture from the Bronze Age and by construction works. A 9.8 m long segment with maximum depth of 220 cm has been preserved. The fill of this feature, especially 10–15 cm above the bottom, comprised a layer of sherds, daub, lithic artefacts and animal bones. In the northeastern part of the feature, there was an oval-shaped hearth, 150 x 94 cm in size and 36 cm thick. Oak charcoals from the hearth has been dated by AMS ¹⁴C to 6260±35 BP, 5258±35 BC.

In 2001, feature 2/2001 of the Tiszadob group was investigated as part of a research project at the western edge of Košice-Galgovec I.⁸⁰ It was a quadrangular pit with rounded corners, 140 x 130 cm in size and 23 cm deep. At the bottom, there was a loam layer mixed with a considerable amount of daub and charcoals.⁸¹ Half of the feature's ground plan was marked by daub and it strongly resembled features identified as ovens uncovered in 2001 at the site of Košice-Červený rak and associated with the Bükk culture.

Feature 8/2000 (Košice-Galgovec I), from the Tiszadob-Bükk transitional stage, was also large: 8 x 9 m. In its southern part, the deepest part extended over an area of 4.4 x 3.1 m and was 95 cm deep. The bottom and the bottom parts of walls were made up by alternating layers of red-burnt clay and charcoals. Above this, numerous sherds – mainly from thick-walled vessels – and daub with preserved imprints of twigs with diameters of 1.5–1.6 cm were situated. We assume that an oven was situated in the deepest part of the feature and the daub came from its dome. Numerous pieces of pottery, clay artefacts, daub, lithic tools and artefacts and animal bones were also found in other parts of the feature. Settlement pits with hearths belonging to the Tiszadob group were found in Lubotice-Šarišské Lúky (previously Prešov-Šarišské Lúky).⁸² In Šarišské Michal'any, destroyed remains of an oven (feature 223) in an open area were detected,⁸³ similar to feature 2 in Prešov-Šváby.⁸⁴ A description of the destroyed remains of an oven with a dome from Kapušany was published by F. Blahuta.⁸⁵

Sunken features

Sunken pits are the most common features in settlements of the Tiszadob group.⁸⁶ Sunken pits of various sizes and shapes, partly destroyed by construction works before the investigation, were also the most numerous features at the site of Košice-Galgovec I-III. They contained pottery, chipped lithic industry and daub. Features from the transitional stage include feature 9/2000 (Košice-Galgovec I): a large pit detected in

80 BÉREŠ – NOVÁK, *Nález obsidiánového jadra z Košíc*.

81 HREHA, *Neolitické nálezy z Košíc*, 137, Figure 5.

82 ŠIŠKA, *Sídlisko z mladšej doby kamennej*, 84–87. ŠIŠKA, *Kultúra s východnou lineárnou keramikou*, 45, Figure 8.

83 ŠIŠKA, *Kultúra s východnou lineárnou keramikou*, 168.

84 BUDINSKÝ-KRIČKA, *Výskum na sídlisku s bukovo-horskou kultúrou*, 465–470, 497–500. ŠIŠKA, *Kultúra s východnou lineárnou keramikou*, 164.

85 BLAHUTA, *Bukovo-horské sídlisko*, 10, Table IV.

86 ŠIŠKA, *Kultúra s východnou lineárnou keramikou*, 46–49.

the profile of the PEMA building. It was unevenly sunken, 9 m long and had uneven bottom 1.2 m deep. The feature contained daub, pottery sherds, lithic industry, lithic artefacts, animal bones and charcoals on its bottom.

During the investigation at the site of Košice-Galgovec I in 2001, a clay exploitation pit (feature 7/2001) and a storage pit (feature 6/2001) with walls conically widening towards the bottom were discovered.⁸⁷

Pottery of the Tiszadob group

The investigations in 1997 and 2000 at the site of Košice-Galgovec I-III brought to light 13,545 sherds, together with several restored vessels. Among them, 7,196 sherds belong to the Tiszadob group. 5,801 sherds were classified into the Tiszadob-Bükk transitional stage; most of them have decoration typical of the Tiszadob group.

The pottery finds were classified according to type, decorative motifs and thickness of walls, the latter being defined as thin-walled pottery (1–6 mm), medium-thick pottery (6–10 mm) and thick-walled pottery (11–27 mm). The thin-walled pottery with decoration, which quickly reflected changes in styles, was important for the classification of sherds into the Tiszadob group.

The Tiszadob thin-walled pottery was made of finely washed clay with small pieces of broken sherds and mica used as a temper. The surface of the vessels was polished, even burnished. Pottery shapes with thicker walls typically had small stones and broken sherds added to the clay mass. Walls of thick-walled vessels also contained organic material, most frequently chaffs, grains, parts of cereals and weeds.⁸⁸ The surface of these vessels was coarser and had lower quality finish.

The large amount of pottery suggests local production and its decoration documents highly developed aesthetics of its creators. The surface of most thin-walled vessels – but also those with medium-thick walls – was covered with finely engraved ornamentation. The number of engraved lines varied from one to seven. The engraved decoration started with rows of straight or slightly wavy lines under the vessel's rim and the same above its bottom. The space between these motifs was covered with an ornament consisting of straight, oblique, vertical, arcuate and zigzag lines or meanders (Figure 6: 6). As the amount of Bükk elements increased in the transitional stage, one increasingly finds incisions under rims of bowls instead of engraved lines (Figure 6: 5). Engraved decoration on the inner surface of bowls was rather frequent. The above-mentioned types of linear decoration are the main features of the Tiszadob group and are represented at all sites from its territory.⁸⁹

Rounded bowls with flat (Figure 4: 1) or slightly inverted mouths and flat bottoms (Figure 4: 2) were the most common type of thin-walled pottery. A suggestion of quadrangular-shaped mouths and bodies are visible on the restored bowls. The shape is sometimes emphasized by small protuberances incorporated into the decoration at the bowls' maximum diameter. Larger bowls with protuberances or perforations below mouths are independent shapes (Figure 5: 1).

87 BÉREŠ – NOVÁK, *Záchranný výskum. HREHA, Neolitické nálezy z Košíc*, 138.

88 HAJNALOVÁ – MIHÁLYIOVÁ, *Archeobotanické nálezy*, 73.

89 ŠÍŠKA, *Kultúra s východnou lineárnou keramikou*, 84–90. PIATNIČKOVÁ, *Problematic of Linear Pottery*.

Analogous shapes are used for decoration of bowls from Peder in the Košická kotlina basin,⁹⁰ from Kapušany in Šariš,⁹¹ from Šarišské Michalany,⁹² Ľubotice-Šarišské Lúky⁹³ and Fintice.⁹⁴ They are also known from the Tiszadob environment in northeastern Hungary, the sites of Tiszavasvári-Paptelekhát,⁹⁵ Tiszavasvári-Józsefháza,⁹⁶ Hajdúnánás-Eszlári út.,⁹⁷ Tiszalök-Hajnalos.⁹⁸

Conical bowls and bowls on tall, rounded (Figure 5: 2), sporadically bell-shaped pedestals or small bowls on conical pedestals (Figure 6: 7) were also frequent. The mouths of conical bowls were sometimes lugged. Similar shapes are known from Peder,⁹⁹ Kapušany,¹⁰⁰ Šarišské Michalany¹⁰¹ and Ľubotice-Šarišské Lúky.¹⁰²

Hemispherical bowls, S-profiled bowls, deep bowls with barbotine, cups (Figure 6: 4) and small vessels occurred less frequently. A bowl of the Tiszadob group from Kapušany has a distinct undecorated shape.¹⁰³ The same applies to a small bowl from the site of Tiszalök-Hajnalos.¹⁰⁴ In Kapušany, slightly S-profiled bowls with engraved decoration also occurred.¹⁰⁵ Bowls with barbotine were discovered in Kapušany¹⁰⁶ and Šarišské Michalany,¹⁰⁷ as well as in feature 7/2001 in Košice-Galgovec I.¹⁰⁸ Pottery with medium-thick walls was decorated with wider and shallow grooves, creating an ornament with wider spacing. The ornamental style follows from the previous Barca III group.

Pottery shapes occurring mainly with medium-thick walls included vases with cylindrical or conical necks. Spouted vessels had identical shapes. Both vessel types were sometimes decorated with an ornament of finely engraved lines. Vase necks from Košice-Galgovec were usually shorter than in vases from Ľubotice-Šarišské Lúky¹⁰⁹ and Kapušany,¹¹⁰ which tended to have taller decorated necks. Spouted vessels were

90 ŠIŠKA, *Kultúra s východnou lineárnu keramikou*, Figure 28, Table 30: 14.

91 BLAHUTA, *Bukovohorské sídlisko*. BLAHUTA, *Archeologický profil Šariša*, 95–119.

92 ŠIŠKA, *Kultúra s východnou lineárnu keramikou*, Tables 32: 1, 3, 5–7, 10.

93 ŠIŠKA, *Sídlisko z mladšej doby kamennej*, 88, Tables VII: 12, 16, 18, 23, 24; VIII: 24. ŠIŠKA, *Kultúra s východnou lineárnu keramikou*, Figures 23: 6; 6: 24–26.

94 PIATNIČKOVÁ, *The Eastern Linear Pottery Culture*, Pl. 2: 2, 5; 4: 3, 4.

95 KALICZ – MAKKAY, *Die Linienbandkeramik*, Table 77: 15.

96 KALICZ – MAKKAY, *Die Linienbandkeramik*, Table 94: 11.

97 RACZKY – ANDERS, *Neolithic enclosures*, 280, Figures 12: 1, 3.

98 FÜZESI, *Tiszalök-Hajnalos*, Figure 2: 1.

99 ŠIŠKA, *Kultúra s východnou lineárnu keramikou*, Table 30: 13.

100 BLAHUTA, *Bukovohorské sídlisko*, Tables XVIII: 4; XXIII: 1–3.

101 ŠIŠKA, *Kultúra s východnou lineárnu keramikou*, Table 32: 13.

102 ŠIŠKA, *Sídlisko z mladšej doby kamennej*, 85, Tables VI: 2, 3; X: 10.

103 BLAHUTA, *Bukovohorské sídlisko*, Table XX: 1.

104 FÜZESI, *Tiszalök-Hajnalos*, 50, Figure 3: 4.

105 BLAHUTA, *Bukovohorské sídlisko*, Tables XIX: 4; XXI: 2.

106 Ibidem, Table XXVIII: 2. BLAHUTA, *Archeologický profil*, Figure on p. 101: 3.

107 ŠIŠKA, *Kultúra s východnou lineárnu keramikou*, Table 33: 6.

108 HREHA, *Neolitické nálezy z Košíc*, 138, Figure 9: 1.

109 ŠIŠKA, *Sídlisko z mladšej doby kamennej*, Tables VIII: 19–21; IX: 26. ŠIŠKA, *Kultúra s východnou lineárnu keramikou*, Figure 22.

110 BLAHUTA, *Bukovohorské sídlisko*, 1959, Table XVIII: 3. BLAHUTA, *Archeologický profil*, Figure on p. 101: 4.

also found at the latter two sites, Lubotice-Šarišské Lúky¹¹¹ and Kapušany.¹¹² A spout with perforations¹¹³ is known from Košice-Barca I.¹¹⁴ Spouted vessels have also been found at the Hungarian sites of Tiszavasvári-Keresztfal,¹¹⁵ Polgár-Nagy Kasziba¹¹⁶ and Hajdúnánás-Eszlári út.¹¹⁷

Specific pottery shapes which could have been used in cultic rituals include vase-shaped vessels depicting human faces, known as face-decorated vases. Five fragments of such vessels were found in three features of the Tiszadob group in Košice-Galgovec (Figure 7). Face-decorated vases appear in Eastern Slovakia in the Tiszadob group and continue in the Bükk culture. Similar finds have previously been discovered in Šarišské Michal'any, in settlement pits and in the Tiszadob cultural layer.¹¹⁸ Their design is close to the finds from Košice-Galgovec. From Šarišské Michal'any, we have 36 other sherds depicting human faces belonging to the subsequent Bükk culture settlement of the site.¹¹⁹ Similar items are also known from Bükk culture finds in the caves of the Slovenský kras karst – Domica¹²⁰ and Ardovo.¹²¹ In Western Slovakia, we come across depictions of human faces on pottery made by the Želiezovce group,¹²² which was contemporaneous with the Bükk culture in Eastern Slovakia.

Depictions of faces are more frequent in northeastern Hungary in the Tiszadob group, the Bükk culture, and the contemporaneous cultures of Szilmege and Esztár.¹²³ Their most extensive use falls within the end of the Tiszadob group and the beginning of the Bükk culture.¹²⁴ These types of vessels were found in Füzesabony-Kettőshalom, Tiszavasvári-Paptelekhát, Sájoszentpéter,¹²⁵ Mezőzombor,¹²⁶ Polgár-Nagy Kasziba¹²⁷ and Garadna-Elkerülő út., settlement 2.¹²⁸

A fragment of a miniature altar – “a bench” with engraved white-encrusted decoration – was classified as an artefact with cultic content. A small boat-shaped vessel with engraved and white-encrusted decoration, a miniature bowl with engraved decorations and remains of black coating, and a sherd from a hanging vessel were classified as rare pottery sherds. Artefacts called “benches” are known only from the

111 ŠIŠKA, *Sídliisko z mladšej doby kamennej*, 87, Table VIII: 6.

112 BLAHUTA, *Bukovohorské sídlisko*, Tables XXV: 10; XXVIII: 7. BLAHUTA, *Archeologický profil*, Figure on p. 101: 6.

113 ŠIŠKA, *Kultúra s východnou lineárnu keramikou*, 152, Table 31: 3, 8.

114 HÁJEK, *Zur relativen Chronologie*, 59–76.

115 KALICZ – MAKKAY, *Die Linienbandkeramik*, Tables 48: 1–3.

116 RACZKY – ANDERS, *Neolithic enclosures*, 275, Figure 5: 2.

117 *Ibidem*, 280, Figure 12: 5.

118 ŠIŠKA, *Kultúra s východnou lineárnu keramikou*, 107–110, Figures 39, 40.

119 HREHA – ŠIŠKA, *Bukovohorská kultúra*, 71, 72.

120 LICHARDUS, *Studien zur Bükker Kultur*, 57, Figure 17.

121 *Ibidem*, 58, Figure 18: 4; Tables 6: 2; 7: 1. ŠIŠKA, *Kultúra s východnou lineárnu keramikou*, Table 26: 10.

122 PAVÚK, *Kultúry staršieho a stredného neolitu*, 20–64. KUZMA, *Plastika železovskej skupiny*, 429–252.

123 KALICZ – MAKKAY, *Die Linienbandkeramik*, 61–64, Figure 3; 4.

124 RACZKY – ANDERS, *The internal relations*, 159.

125 KALICZ – MAKKAY, *Die Linienbandkeramik*, 61, 62, Figure 3: a, b, c.

126 KALICZ – KOÓS, *Újkőkori arcok edények*, Figures 1; 2.

127 RACZKY – ANDERS, *Neolithic enclosures*, 275, Figure 5: 1.

128 CSENGERI, *Settlements*, 230, Table 1.

Bükk environment in Šarišské Michaľany.¹²⁹ A fragment of a hanging vessel from the Tiszadob group has been found on the same site.¹³⁰

Thick-walled pottery was represented by barrel-shaped and conical pots, plate-like pots and clay pads. Pots often had a row of perforations under their rims and various protrusions on their bodies. Storage jars were the most massive shapes. Two types of storage jars were found: i) conical storage jars with perforations under the rims and protrusions on the body (Figure 5: 3), and ii) larger storage jars with conical-shaped necks separated from the bodies by dimpled plastic tapes. Necks of storage jars were smooth or with dimpled decoration (Figure 8: 1, 2), bodies were dimpled, with barbotine or without decoration, or with more massive dimpled protrusions, or with attached short dimpled tapes of various shapes.

Clay ornaments

Together with clay vessels, clay ornaments were also found, including rings that were probably used as bracelets, pearls (Figure 6: 1–3) and discs with perforations which might have been used as pendants. Such artefacts have been found in many sites of the Tiszadob group. A clay pearl was found in Košice-Galgovec I, feature 7/2001, and has been identified as belonging to the Tiszadob group.¹³¹ Clay pearls¹³² and bracelets¹³³ have been found in Ľubotice-Šarišské Lúky and a larger quantity of fragments of clay bracelets has been found in Sečovská Polianka.¹³⁴

Lithic industry and other lithic artefacts

Chipped lithic industry, polished lithic industry and lithic artefacts including plaquettes and upper and lower grinding stones have been found in features associated with the Tiszadob group and in collections. Out of 971 examples, 581 artefacts belong to the Tiszadob chipped lithic industry and 331 artefacts belong to the Tiszadob-Bükk transitional stage. The chipped lithic tools of the Tiszadob group were made of imported stone processed in the area of the settlements. This is evidenced by the occurrence of cores (Figure 9: 13–16, 18, 19), hammerstones and a predominance of flakes. The leading raw material was limnosilicite (58.97 %), which is known to be present in the Slanské Vrchy hills (Banské and other types¹³⁵), i.e. it is a local raw material. Obsidian (36.23 %) from sources near the Zemplínske vrchy hills was another regional raw material¹³⁶ used in the settlements of Košice-Galgovec.

Due to the Tiszadob group's advance towards the Šarišské podolie hills, obsidian (65.38 %) is more common than limnosilicite (34.62 %)¹³⁷ at the Ľubotice-Šarišské Lúky site. At the Tiszadob settlement in Šarišské Michaľany, radiolarite prevails (10

129 ŠIŠKA, *Plastika bukovohorskej kultúry*, 280, Figures 2: 20–22.

130 ŠIŠKA, *Grabung auf der neolithischen und äneolithischen Siedlung*, 440, Table II: 9. ŠIŠKA, *Kultúra s východnou lineárnou keramikou*, 85, Table 32: 9.

131 BÉREŠ – NOVÁK, *Nález obsidiánového jadra z Košíc*, 34.

132 ŠIŠKA, *Sídlisko z mladšej doby kamennej*, 89, Tables VIII: 12, 13.

133 ŠIŠKA, *Sídlisko z mladšej doby kamennej*, 89, Table VIII: 8.

134 JENČOVÁ, *Sídlisko kultúry s východnou lineárnou keramikou*, 80, obr. 6: 9; 7: 19; 8: 6.

135 KAMINSKÁ, *Die Nutzung von Steinrohmaterialien*, 81–106. KAMINSKÁ, *Sources of raw materials*, 99–110.

136 KAMINSKÁ, *Význam surovínovej základne*, 19. PŘICHYSTAL – ŠKRDLA, *Kde ležel hlavní zdroj obsidiánu*, 215–226. BAČO et al. *Occurrences of Neogene Volcanic Glass*, 207–230.

137 KOZŁOWSKI, *The lithic industry*, 377–410.

artefacts) over obsidian (6 artefacts). Radiolarite is a local raw material found in the Torysa River basin. Its sources are located in the klippen belt in Kamenica, Milpoš and Hanigovce. Due to weathering of siliceous rock, this mineral ends up in the Torysa riverbed and is carried southwards to the Hornád River.¹³⁸

Obsidian started to prevail in the Tiszadob-Bükk transitional stage in Košice-Galgovec, while limnosilicites became the second most frequently used raw material. Other regional raw materials, such as menilithic chert, silicified sandstone and radiolarite, were used only sporadically.

Rocks from remote areas, e.g. Volhynian flint from the Dnester River valley and Jurassic Kraków flint from the territory of Poland, are found only very occasionally. These raw materials are also rarely represented in the industry from Šarišské Michaľany.¹³⁹

In the typological composition of the chipped lithic industry, blades and retouched blades prevail (Figure 9: 1–4, 6, 8–11). Other tools used in everyday activities in households, such as end-scrapers (Figure 9: 7), burins (Figure 9: 12), perforators, side-scrapers (Figure 9: 17), notches and splinter pieces, are rarely represented. Sickle blades occurred as well (Figure 9: 5).

There was an unusually low number of polished lithic artefacts, mainly tools for wood processing. They included one damaged horseshoe adze and a fragment of a flat axe. Low numbers of polished industry items have been documented at other Tiszadob sites as well. There is a single unfinished small radiolarite axe from Šarišské Michaľany.¹⁴⁰ Lithic axes have also been discovered in Kapušany.¹⁴¹

Lower grindstones (Figure 10) made mostly of shale and upper grindstones provide evidence for the production of flour from cultivated cereals. Fragments of lower grinding stones have also been found at the Tiszadob settlement in Sečovská Polianka.¹⁴² Other lithic artefacts, namely flat grinding stones, were used for processing plant foods and grinding mineral pigments, most probably hematite, several lumps of which have been discovered.

The Bükk culture

The Bükk culture is a distinct Middle Neolithic culture of Eastern Slovakia and northeastern Hungary. It was spread over the original territory of the Eastern Linear Pottery culture (Východoslovenská nížina lowland, Košická kotlina basin, Šarišské podolie hills and Gemer region). It also reached Spiš and, in form of imports, penetrated the adjacent territories, mainly Central and Western Slovakia.¹⁴³ It settled not only lowland areas, but also moved to the higher-altitude sites and caves of the Slovenský kras karst.¹⁴⁴

The Tiszadob group, which preceded the Bükk culture, had the strongest impact on the latter culture's origin.¹⁴⁵ In Hungary, a model proposing the contemporaneity of

138 KAMINSKÁ, *Význam surovínovej základne*, 20. KAMINSKÁ, *Sources of raw materials*, 100, Figures 3; 4.

139 KACZANOWSKA – KOZŁOWSKI – ŠIŠKA, *Neolithic and Eneolithic chipped stone industries*, 38–41.

140 *Ibidem*, 41.

141 BLAHUTA, *Bukovohorské sídlisko*, 9.

142 BUDINSKÝ-KRIČKA, *Neolitické sídlisko*, 32–33. JENČOVÁ, *Sídlisko kultúry s východnou lineárnou keramikou*, 81.

143 ŠIŠKA, *Architektúra neolitickej osady*, 187–204.

144 LICHARDUS, *Jaskyňa Domica*. LICHARDUS, *Studien zur Bükker Kultur*. ŠIŠKA, *Die Bükker Kultur*, 245–292.

145 ŠIŠKA, *Sídlisko z mladšej doby kamennej*, 92. KALICZ – MAKKAY, *Die Linienbandkeramik*, 43, 101. ŠIŠKA, *Kultúra s východnou lineárnou keramikou*, 138. PIATNIČKOVÁ, *Current state of research*, 245. PIATNIČKOVÁ, *The*

the Tiszadob group and the Bükk, Eszátár and Szakalhát cultures is used.¹⁴⁶ In Slovakia, a subsequence of the Linear Pottery culture (Tiszadob and Raškovce groups) and the Bükk culture is used.¹⁴⁷

Finds from feature 2/97 in Košice-Galgovec I belong to the early stage of the Bükk culture. The result of dating is 6310±40–35 BP, 5300–5210 and 5285±42 BC. This dating suggests an overlap between the beginning Bükk culture and the disappearance of the Tiszadob group. Similarly dated traces of the Bükk culture have also been found Domic cave – 5210–4850 BC and 5350–5220 BC.¹⁴⁸ Dating of the Bükk culture at Šarišské Michalany is 5230–5016 BC;¹⁴⁹ the date 5170±84–5016±9 BC applies to the late stage of the Bükk culture.¹⁵⁰

Dates obtained for the Bükk feature from Košice-Galgovec I are rather high, but similar to the dating of Hungarian sites from the cultural horizon of the Szakálhát-Esztár-Bükk culture, i.e. 5260–4880 BC.¹⁵¹ For a more precise explanation of the beginnings of the Bükk culture in Eastern Slovakia, more data from other sites will be necessary.

The Bükk culture settlement features

Features of the Bükk culture over the area of excavations from 1997, 2000 and 2001 are represented by sunken shapes with various functions and uses. Based on their shape and construction, some features can be identified as ovens, while others are common settlement pits whose purpose cannot be determined exactly. Together, they create an important Bükk culture settlement structure.

Remains of plants, preserved in form of carbonized and non-carbonized seeds, cereal cymes, wild-growing grasses and charcoals of plants, were found in samples of floated loam from several features. Charcoals from hearths were mainly from oak (*Quercus* sp.) and they were used for dating. Wood from maple (*Acer* sp.), beech (cf. *Fagus sylvatica*) and ash (*Fraxinus* sp.) was also used.

Vegetal remains confirmed the cultivation of einkorn wheat (*Triticum monococcum*), emmer wheat (*Triticum dicoccon*), barley (*Hordeum vulgare*) and peas (*Pisum sativum*). Fragments of animal bones indicate cattle breeding. The diet was complemented with fish, whose scales were discovered in the fill of the Bükk feature 2/97 (Košice-Galgovec I).

Ovens

Sunken features, subsequently classified as ovens, were uncovered at the site of Košice-Červený rak while monitoring works associated with the construction of OPTIMA I Shopping Centre in 2001. 17 features were studied in the southern part of the building site.¹⁵²

Eastern Linear Pottery Culture, 173.

146 RACZKY – ANDERS, *Settlement history*, 40–41.

147 ŠIŠKA, *Kultúra s východnou lineárnou keramikou*, 116–117. HREHA – ŠIŠKA, *Bukovohorská kultúra*, 127.

148 GRADZIŃSKI et al. *Age of black coloured laminae*, 39–45.

149 STADLER et al. *Status of the Austrian Science Fund Project*, 47.

150 HREHA – ŠIŠKA, *Bukovohorská kultúra*, 131.

151 HERTELENDI et al. *Radiocarbon chronology*, Table 1.

152 KAMINSKÁ – NOVÁK, *Sídliskové nálezy bukovohorskej kultúry*, 82, Figure 61. HREHA, *Neolitické nálezy z Košíc*, 137, Figure 4.

Six of them (features 10–13, 16a and 17a/2001) are considered to be kilns for firing pottery. They were rectangular, with rounded corners, approx. 150 x 70 cm in size, with bowl-shaped bottoms 30–35 cm deep. The edges of the features were lined with a 5–10 cm wide layer of terracotta-red burned clay. Their bottoms were covered with pebbles, mostly quartz, which were cracked due to firing. There was a 3–5 cm thick layer of charcoal under them.¹⁵³ We cannot make a statement regarding the question of the chronological procedure of building the kilns, because we lack relevant dating, but it is probable that they were built in a relatively short time interval. Finds of Bükk pottery from other features in Košice-Červený rak and features from Košice-Galgovec I from 1997 and 2000 belong to the early stage of the Bükk culture.¹⁵⁴ Thirteen ovens from Horné Lefantovce belonging mainly to the Želiezovce group, which was contemporary with the Bükk culture in Eastern Slovakia, represent their analogies.¹⁵⁵ Sunken features with hearths and ovens were found in farming or production features associated with the Eastern Linear Pottery and Bükk cultures.

Sunken features

Settlement pit 2/97 (Košice-Galgovec I) is an important feature. It was partly damaged by earthworks. The preserved part had oval ground plan of 140 x 120 cm; its walls were convex, widening towards the flat bottom which was 65 cm deep. In the dark brown soil of the feature's fill, there were sherds of pottery, chipped lithic industry, vegetal remains, charcoal and fish scales. Numerous large pieces of daub with imprints of stakes and chipped wood at least 10 cm wide were also discovered.¹⁵⁶ AMS ¹⁴C dating obtained from oak is extremely important: 6310±40–35 BP, 5282±42 BC.¹⁵⁷

Remains of other two features (3/97 and 4/97 Košice-Galgovec I) were uncovered in the profile of the road, 30 cm below the topsoil. They were remains of oval pits with slightly convexly widened walls which narrowed above the flat bottom. A small number of sherds, chipped lithic industry, daub and charcoal were found in them. The third feature, 10/2000, disturbed pit 9/2000. In the profile of the PEMA construction, we uncovered a 1.25 m long part of the feature, with walls obliquely sloping towards a bowl-shaped bottom 0.85 m deep. It contained distinctly decorated pottery of the Bükk culture, daub and charcoal.

At the site of Košice-Červený rak, there were 13 (1–9, 16, 17/2001) settlement pits of the Bükk culture of various sizes, mostly only shallowly sunken.

Pottery of the Bükk culture

At the site, we studied four Bükk culture features concentrated at the site of Košice-Galgovec I in which 584 pottery artefacts were found. Sherds with decorative motifs of the Bükk culture also occurred, though in smaller numbers, in features from the Tiszadob-Bükk transitional stage.

153 KAMINSKÁ – NOVÁK, *Sídliskové nálezy bukovohorskej kultúry*, 83.

154 KAMINSKÁ, *Košice-Galgovec*.

155 BÁNESZ, *Neolitické pece z Horných Lefantoviec*. In: *Archeologické rozhledy*, 470–482, 501–502. BÁNESZ, *Neolitické pece z Horných Lefantoviec*. In: *Študiijné Zvesti AÚ SAV*, 21–46.

156 HAJNALOVÁ, *Výskumná správa archeobotanická č. VS 13937/98*. HAJNALOVÁ – MIHÁLYIOVÁ, *Archeobotanické nálezy v roku 2000*, 73.

157 STADLER et al. *Status of the Austrian Science Fund Project*.

Bükk pottery included thin-walled, medium-thick and thick-walled vessels. In terms of design, they are similar to Tiszadob group vessels. The clay used for their production contains mineral temper and broken sherds. The surface of the vessels is burnished. In the case of one partly restored bowl (Figure 11: 3), it was coated with red-brown clay smear. Pottery shapes are less variable. Among the finds of thin-walled pottery, bowls were prevalent – usually rounded, less frequently hemispherical. There were also conical bowls and conical pedestalled bowls. Conical bowls in Bükk pottery material are known from Zemplínske Kopčany¹⁵⁸ and Ražňany.¹⁵⁹ Pedestalled bowls occurred in Kašov¹⁶⁰ and also in Hungary at the Sajószentpéter-Kövecses site.¹⁶¹

Vases and beakers/cups were less frequent. Most sherds came from conical or barrel-shaped pots. There were also sherds from storage jars. More rarely, clay pads were found.

Rows of incisions were situated below the rims of bowls and on the body, complemented with ornaments composed of arcuate or zigzag lines (Figure 11). Other decorations included engraved lines, hatched triangles, spirals, incisions, dimples, plastic protrusions, plastic dimpled tapes and perforations under the rim. These decorative motifs occur on the Bükk pottery from Lubotice-Šarišské Lúky,¹⁶² Zemplínske Kopčany,¹⁶³ Čierne Pole,¹⁶⁴ Šarišské Michaľany¹⁶⁵ and Ardovo cave,¹⁶⁶ and can be described as typical decoration of the pre-classical stage of the Bükk culture.¹⁶⁷ These motifs are also represented at the early Bükk culture sites at Sajószentpéter-Kövecses¹⁶⁸ and Tiszavasvári-Paptelekhát.¹⁶⁹

The vessels do not have burnished surfaces, and the negative ornament typical of the Bükk culture in its classical stage was not used to decorate them. Angular arcuate lines, known as gothic windows, did not occur either. Based on the character of its decoration, this pottery represents the beginning of the Bükk culture.

Decorative clay artefacts were represented by a single pearl.

Lithic industry and other lithic artefacts

Eighty-eight chipped lithic industry and four other lithic artefacts – 92 partly published lithic artefacts altogether – have been found in Bükk culture features.¹⁷⁰

In terms of the raw material composition of the chipped lithic industry, obsidian strongly prevails (84.10 %) over limnosilicites (15.90 %). Only one core was discovered; flakes made up almost half of all finds; more than 20% were blades and 28% were

158 ŠIŠKA, *Die Bükker Kultur*, 261, Tables X: 6; XI: 4; XII: 4.

159 KARABINOŠ et al. *The contribution of finds*, 337–349.

160 ŠIŠKA, *Keramika a datovanie neolitckej dielne v Kašove*, 70, Figure 2: 10.

161 CSENGERI, *A bükki kultúra*, 31–46, Figure 5: 3.

162 ŠIŠKA, *Sídlisko z mladšej doby kamennej*, 90, Table XII: 7.

163 ŠIŠKA, *Die Bükker Kultur*, 264, Figure 17: 1.

164 Ibidem, Tables II: 4, 23, 26; III: 3; V: 4, 5.

165 HREHA – ŠIŠKA, *Bukovohorská kultúra*, Table CXXII: 4.

166 LICHARDUS, *Studien zur Bükker Kultur*, Figure 27: 4.

167 ŠIŠKA, *Die Bükker Kultur*, 264.

168 CSENGERI, *A bükki kultúra*, Figure 5: 7.

169 KALICZ – MAKAY, *Die Linienbandkeramik*, 176, Table 66: 9.

170 KAMINSKÁ – KACZANOWSKA – KOZŁOWSKI, *Stone Industry from Košice-Galgovec*, 5–29.

tools. Among the tools, retouched blades, sickle blades, retouched flakes and a splinter piece were identified.

Other lithic artefacts included one example each of a plaquette, a pad, an upper grindstone and an artefact from a drilled hole of a lithic tool. The situation at the Bükk culture settlement in Šarišské Michaľany is different: polished artefacts were produced there.¹⁷¹

Conclusion

According to our current knowledge, settlement of the microregion in the southern part of Košice started at the beginning of the Middle Neolithic with the advance of bearers of the Szatmár culture from northeastern part of Hungary northwards along the Hornád River basin. As a result, the oldest – Proto-Linear – stage of the Eastern Linear Pottery culture was created at the site of Košice-Červený rak on the left-bank terrace of the Myslavský potok stream, dated to 5540–5410 calBC. In the stage of the Eastern Linear Pottery culture that followed – represented by the Barca III group – development of independent regional groups in the Košická kotlina basin started. Barca III group settlements have been detected over a wider area, mainly in the residential area of Košice-Barca. Known sites include the eponymous settlement of Košice-Barca III, on the right-bank terrace of the Myslavský potok stream, as well as Košice-Barca-Svetlá III, Košice-Barca-Gyilkos and Košice-Šaca. In the wider surroundings, there are sites at Čečejevce, Valaliky-Všechsvätých, Ždaňa and Blažice. The later stage of the Eastern Linear Pottery culture, the Tiszadob group, is characterised by stabilized settlement on the terraces of the Myslavský potok stream at the sites of Košice-Galgovec I-III and Košice-Červený rak, as well as sites further afield. Small settlements probably consisted of several above-ground houses with farming features and adjacent fields and pastures. Their inhabitants cultivated cereals and bred cattle, and manufactured household goods, including the production of pottery and lithic tools. The timescale of Tiszadob group settlements falls within the period 5300–5140 calBC.

Tiszadob group settlements in the southern part of the Košická kotlina basin spread northwards and westwards. They moved to the territories of Šariš and Gemer, where they also arrived in the caves of the Slovenský kras karst. Tiszadob group sites have also been documented on the periphery of the Východoslovenská nížina lowland and in the region of Horný Zemplín.

The Tiszadob group greatly influenced the emergence of the Bükk culture, with which it was – as suggested by dating – partly contemporary. The Bükk culture feature in Košice-Galgovec I is dated to 5300–5210±42 calBC. With the Bükk culture, Neolithic development in the Košická kotlina basin and the whole area of Eastern Slovakia ended. In the following period, the Late Neolithic, the previously intense settlement of the Košice microregion was interrupted. Distinct resettlement of the region is associated with the cultures of the Eneolithic.

Translated by Mgr. Viera Tejbusová

¹⁷¹ KACZANOWSKA – KOZŁOWSKI – ŠIŠKA, *Neolithic and Eneolithic chipped stone industries*, 114.

BIBLIOGRAPHY

- BAČO, Pavel – KAMINSKÁ, Lubomíra – LEXA, Jaroslav – PÉCSKAY, Zoltán – BAČOVÁ, Zuzana – KONEČNÝ, Vlastimil. Occurrences of Neogene Volcanic Glass in the Eastern Slovakia – Raw Material source for the Stone Industry. In: *Anthropologie*, 2017, vol. 55, pp. 207–230.
- BÁNESZ, Ladislav. Neolitické pece z Horných Lefantoviec. In: *Archeologické rozhledy*, 1959, vol. 11, pp. 470–482, 501–502.
- BÁNESZ, Ladislav. Neolitické pece z Horných Lefantoviec. In: *Študijné Zvesti AÚ SAV*, 1962, vol. 9, pp. 21–46.
- BÁNESZ, Ladislav. Paleolitické sídliskové objekty z Barce-Svetlej III. In: *Archeologické rozhledy*, 1967, vol. 19, pp. 285–295.
- BÁNESZ, Ladislav. *Barca bei Košice - Paläolithische Fundstelle*. Bratislava: Vydavateľstvo Slovenskej akadémie vied, 1968.
- BÁNESZ, Ladislav. Praveké jamy z Barce-Svetlej III. In: *Študijné Zvesti AÚ SAV*, 1970, vol. 18, pp. 324–325.
- BÁNESZ, Ladislav – LICHARDUS, Ján. Nové nálezy lineárnej keramiky v Barci pri Košiciach. In: *Archeologické rozhledy*, 1969, vol. 21, pp. 291–300.
- BÁNFFY, Eszter. *The 6th Millennium BC Boundary in western Transdanubia and its Role in the Central European Neolithic Transition (the Szentgyörgyvölgy-Pityerdomb Settlement)*. Budapest, 2004.
- BÁNFFY, Eszter. The northern and western frontier of the Körös culture in the Danube-Tisza interfluve. In: BÁNFFY, Eszter (ed.). *The Early Neolithic in the Danube Tisza interfluve*. BAR International Series. Oxford, 2013, pp. 15–22.
- BÁNFFY, Eszter – OROSS, Krisztián. The Earliest and Earlier Phase of the LBK in Transdanubia. In: GRONENBORN, Detlef – PETRASCH, Jörg (eds.). *Die Neolithisierung Mitteleuropas. The Spread of the Neolithic to Central Europe*. RGZM – Tagungen 4. Mainz, 2010, pp. 255–272.
- BÉREŠ, Július. Záchranný výskum neolitického a včasnostredovekého sídliska v Ždani. In: *Archeologické výskumy a nálezy na Slovensku* [v roku 1995], 1997, p. 33.
- BÉREŠ, Július – NOVÁK, Martin. Záchranný výskum na polohe Košice-Galgovec. In: *Archeologické výskumy a nálezy na Slovensku* [v roku 2001], 2002, p. 35.
- BÉREŠ, Július – NOVÁK, Martin. Nález obsidiánového jadra z Košíc. In: *Archeologické výskumy a nálezy na Slovensku* [v roku 2001], 2002, p. 34.
- BLAHUTA, Ferdinand. Bukovohorské sídlisko v Kapušanoch. In: *Slovenská archeológia*, 1959, vol. 7, pp. 5–32.
- BLAHUTA, Ferdinand. Archeologický profil Šariša. In: *Nové obzory*, 1960, vol. 2, pp. 95–119.
- BUDINSKÝ-KRIČKA, Vojtech. Výskum na sídlisku s bukovohorskou kultúrou vo Šváboch, okr. Prešov. In: *Archeologické rozhledy*, 1959, vol. 11, pp. 465–470, 497–500.
- BUDINSKÝ-KRIČKA, Vojtech. Neolitické sídlisko z okruhu mladšej lineárnej keramiky v Sečovskej Polianke. In: *Archeologické výskumy a nálezy na Slovensku* [v roku 1974], 1975, pp. 32–33.
- BUDINSKÝ-KRIČKA, Vojtech. Nálezy z prieskumu na východnom Slovensku. In: *Archeologické výskumy a nálezy na Slovensku* [v roku 1976], 1977, pp. 65–81.
- CSENGERI, Piroska. Az alföldi vonaldíszes kerámia kulturája legkorábbi időszakának települése a Hernád völgyében. In: *A Herman Ottó Múzeum évkönyve*, 2003, vol. 42, pp. 41–67.
- CSENGERI, Piroska. A bükki kultúra települése Sajószentpéter, Kövecsesen (Előzetes kutatási jelentés) – Settlement of the Bükk culture at Sajószentpéter, Kövecsesen (Preliminary report). In: KISFALUDI, Júlia (ed.). *Régészeti kutatások Magyarországon 2001*. Budapest, 2003, pp. 31–46.
- CSENGERI, Piroska. Settlements of the Bükk culture from Hernád Valley, North-eastern Hungary. In: *Archeometriai Műhely*, 2010, vol. VII/4, pp. 227–237.

- CSENGERI, Piroska. Late groups of the Alföld Linear Pottery culture in north-eastern Hungary. New results of the research in Borsod-Abaúj-Zemplén County. In: *Dissertationes Archaeologicae*, 2014, vol. 3, pp. 501–517.
- CSENGERI, Piroska. A short report on the research of the Earliest Alföld Linear Pottery Culture in Hernád Valley, North-eastern Hungary. In: VALDE-NOWAK, Paweł – SOBCZYK, Krzysztof – NOWAK, Marek – ŻRAŁKA, Jarosław (eds.). *Multas Per Gentes et Multa per Saecula. Amici Magistro et Collegae suo Ioanni Christopho Kozłowski dedicant*. Kraków: Jagiellonian University, 2018, pp. 329–336.
- DOMBORÓCZKI, László. Füzesabony-Gubakút. Újkőkori falu a kr. e. VI. Évezredből. Neolithic village from the 6th millennium B. C. In: RACZKY, Pál – KOVÁCS Tibor – ANDERS, Alexandra (eds.). *Utak a múltba. Past into the Past. Rescue excavations on the M3 motorway*. Budapest, 1997, pp. 19–27.
- DOMBORÓCZKI, László. Radiocarbon data from Neolithic archaeological sites in Heves County (North-Eastern Hungary). In: *Agria*, 2003, vol. 39, pp. 5–71.
- DOMBORÓCZKI, László. A Körös-kultúra északi elterjedési határának problematikája a Tiszaszőlős-Domaháza-pusztán végzett ásatás eredményeinek fényében – The problem of the Northern extension of the Körös Culture in the light of excavation results from Tiszaszőlős-Domaháza. In: *Archeometriai Műhely*, 2005, vol. 2, no. 2, pp. 5–15.
- DOMBORÓCZKI, László. Settlement structure of the Alföld Linear Pottery Culture (ALPC) in Heves County (North-Eastern Hungary: development models and historical reconstructions on micro, meso and macro levels. In: KOZŁOWSKI, Janusz K. (ed.). *Interactions between different models of neolithization north of the Central European Agro-Ecological Barrier*. Kraków, 2009, pp. 75–127.
- DOMBORÓCZKI, László. Report on the excavation at Tiszaszőlős-Domaháza-pusztá and a new model for the spread of the Körös culture. In: KOZŁOWSKI, Janusz K. – RACZKY, Pál (eds.). *Neolithization of the Carpathian Basin: Northernmost distribution of the Starčevo/Körös culture*. Kraków; Budapest, 2010, pp. 137–176.
- DOMBORÓCZKI, László – RACZKY, Pál. Excavations at Ibrány-Nagyerdő and the northernmost distribution of the Körös culture in Hungary. In: KOZŁOWSKI, Janusz K. – RACZKY, Pál (eds.). *Neolithization of the Carpathian Basin: Northernmost distribution of the Starčevo/Körös culture*. Kraków; Budapest, 2010, pp. 191–218.
- FÜZESI, András. Tiszalök-Hajnalos: new evidences for Neolithic masks in the Carpathian Basin. In: KULCSÁR, Valéria (ed.). „Vadrózsából tündérsípot csináltam” *Tanulmányok Istvánovits Eszter 60. születésnapjára*. Nyíregyháza, 2018, pp. 49–58.
- GRADZIŃSKI, Michał – HERCMAN, Helena – NOWAK, Marek – BELLA, Pavel. Age of black coloured laminae within speleothems from Domicá cave and its significance for dating of prehistoric human settlement. In: *Geochronometria*, 2007, vol. 28, pp. 39–45.
- HÁJEK, Ladislav. Chronológia východoslovenského neolitu. In: *O chronológii pravěku Československa*. Praha, 1956, p. 13.
- HÁJEK, Ladislav. Nová skupina páskové keramiky na východním Slovensku. In: *Archeologické rozhledy*, 1957, vol. 9, pp. 3–9, 33–36.
- HÁJEK, Ladislav. Zur relativen Chronologie des Äneolithikums und der Bronzezeit in der Ostslowakei. In: *Kommission für das Äneolithikum und die ältere Bronzezeit Nitra 1958*. Bratislava, 1961, pp. 59–76.
- HAIJNALOVÁ, Eva. *Výskumná správa archeobotanická č. VS 13937/98*. Archeologický ústav SAV. Manuskript. Nitra, 1998.
- HAIJNALOVÁ, Eva. *Výskumná správa archeobotanická č. VS 13939/98*. Archeologický ústav SAV. Manuskript. Nitra, 1998.
- HAIJNALOVÁ, Eva. *Výskumná správa archeobotanická č. VS 14497/2001*. Archeologický ústav SAV. Manuskript. Nitra, 2001.
- HAIJNALOVÁ, Eva – MIHÁLYIOVÁ, Jana. Archeobotanické nálezy v roku 1998. In: *Archeologické výskumy a nálezy na Slovensku* [v roku 1998], 2000, pp. 72–78.
- HAIJNALOVÁ, Eva – MIHÁLYIOVÁ, Jana. Archeobotanické nálezy v roku 2000. In: *Archeologické výskumy a nálezy na Slovensku* [v roku 2000], 2001, pp. 77–81.

- HERTELENDI, Ede – SVINGOR, Eva – RACZKY, Pál – HORVÁTH, Ferenc – FUTO, István – BARTOSIEWICZ, László – MOLNÁR, Mihály. Radiocarbon chronology of the Neolithic and time span of tell settlements in east Hungary based on calibrated radiocarbon dates. In: KÖLTŐ, László – BARTOSIEWICZ, László (eds.). *Archaeometrical research in Hungary II*. Budapest; Kaposvár; Veszprém, 1998, pp. 61–69.
- HORVÁTH, Ferenc – HERTELENDI, Ede. Contribution to the ¹⁴C based absolute chronology of the Early and Middle Neolithic Tisza region. In: *Jósa András Múzeum Évkönyve*, 1994, vol. 36, pp. 111–132.
- HORVÁTHOVÁ, Eva. Záchraný výskum v Košiciach. In: *Archeologické výskumy a nálezy na Slovensku* [v roku 2002], 2003, pp. 55–56.
- HREHA, Rastislav. Neolitické nálezy z Košíc Červeného raka a Galgovca. In: *Otázky neolitu a eneolitu našich krajín 2004*. Nitra, 2005, pp. 135–150.
- HREHA, Rastislav – ŠIŠKA, Stanislav. *Bukovohorská kultúra na Slovensku vo svetle výskumov v Šarišských Michalanoch a Zemplýnskych Kopčanoch*. Nitra: Archeologický ústav SAV, 2015.
- JENČOVÁ, Mária. Sídliisko kultúry s východnou lineárnou keramikou v Sečovskej Polianke. In: *Východoslovenský pravek*, 1991, vol. 3, pp. 75–86.
- KACZANOWSKA, Małgorzata – KOZŁOWSKI, Janusz, K. – ŠIŠKA, Stanislav. Neolithic and Eneolithic chipped stone industries from Šarišské Michaľany, Eastern Slovakia. *Linear Pottery, Bükk and Baden Cultures*. Kraków, 1993.
- KACZANOWSKA, Małgorzata – KOZŁOWSKI, Janusz K. The Körös and the early Eastern Linear Culture in the northern part of the Carpathian basin: a view from the perspective of lithic industries. In: *Acta Terrae Septemcastrensis*, 2008, vol. 7, pp. 9–37.
- KACZANOWSKA, Małgorzata – KOZŁOWSKI, Janusz, K. – NOWAK, Marek – VIZDAL, Marián. Conclusions. In: KOZŁOWSKI, Janusz, K. – NOWAK, Marek – VIZDAL, Marián (eds.). *Early Farmers of the Eastern Slovak Lowland: The Settlement of the Eastern Linear Pottery Culture at Moravany*. Kraków, 2015, pp. 235–246.
- KALICZ, Nándor. *Méhtelek. The First Excavated Site of the Méhtelek Group of the Early Neolithic Körös Culture in the Carpathian Basin*. BAR International Series 2321. Oxford, 2011.
- KALICZ, Nándor – MAKKAY, János. Probleme des frühen Neolithikums der nördlichen Tiefebene. In: *Die aktuelle Fragen der Bandkeramik*. Székesfehérvár, 1972, pp. 77–92.
- KALICZ, Nándor – MAKKAY, János. Die Linienbandkeramik in der Grossen Ungarischen Tiefebene. *Akadémiai kiadó*, Budapest, 1977.
- KALICZ, Nándor – KOÓS, Judit. Mezőkövesd-Mocsolyás. Újkőkori telep és temetkezések a Kr. e. VI. Évezredből. Neolithic settlement and graves from the 6th Millennium B.C. In: RACZKY, Pál – KOVÁCS Tibor – ANDERS, Alexandra (eds.). *Utak a múltba. Past into the Past. Rescue excavations on the M3 motorway*. Budapest, 1997, pp. 28–33.
- KALICZ, Nándor – KOÓS, Judit. Újkőkori arcós edények a Kárpát-medence északi részéből. In: *A Herman Ottó Múzeum évkönyve*, 2000, vol. 39, pp. 15–44.
- KALICZ, Nándor – KOÓS, Judit. *Mezőkövesd-Mocsolyás. A neolitikus Szatmár-csoport (AVK I) települése és temetője a Kr. e. 6. évezred második feléből*. Miskolc: Herman Ottó Múzeum, 2014.
- KALICZ, Nándor – RACZKY, Pál. Siedlung der Körös-Kultur in Szolnok-Szanda. In: *Mitteilungen des Archäologischen Institutes der Ungarischen Akademie der Wissenschaften*, 1982, vol. 10–11, pp. 13–24.
- KAMINSKÁ, Lubomíra. Archeologický výskum v Košiciach-Barci. In: *Archeologické výskumy a nálezy na Slovensku* [v roku 1980], 1981, pp. 129–131.
- KAMINSKÁ, Lubomíra. Význam surovinovej základne pre mladopaleolitickú spoločnosť vo východokarpatskej oblasti. In: *Slovenská archeológia*, 1991, vol. 39, pp. 7–58.
- KAMINSKÁ, Lubomíra. Záchraný výskum na preložke cesty v Košiciach. In: *Archeologické výskumy a nálezy na Slovensku* [v roku 1997], 1999, pp. 93–94.
- KAMINSKÁ, Lubomíra. Záchraný výskumy v Košiciach. In: *Archeologické výskumy a nálezy na Slovensku* [v roku 2000], 2001, pp. 96–97.

- KAMINSKÁ, Lubomíra. Die Nutzung von Steinrohmaterialien im Paläolithikum der Slowakei. In: *Quartär*, 2001, vol. 51/52, pp. 81–106.
- KAMINSKÁ, Lubomíra. Sources of raw materials and their use in the Palaeolithic of Slovakia. In: MESTER, Zsolt (ed.). *The lithic raw material sources and interregional human contacts in the Northern Carpathian regions*. Kraków; Budapest, 2013, pp. 99–110.
- KAMINSKÁ, Lubomíra. *Košice-Galgovec. Osídlenie polohy v strednom neolite*. In print.
- KAMINSKÁ, Lubomíra – NOVÁK, Martin. Sídliškové nálezy bukovohorskej kultúry v polohe Košice-Červený rak. In: *Archeologické výskumy a nálezy na Slovensku* [v roku 2001], 2002, pp. 82–83.
- KAMINSKÁ, Lubomíra – KACZANOWSKA, Małgorzata – KOZŁOWSKI, Janusz K. Košice-Červený rak and the Körös/Eastern Linear Transition in the Hornád Basin (Eastern Slovakia). In: *Přehled výzkumů*, 2008, vol. 49, pp. 83–91.
- KAMINSKÁ, Lubomíra – KACZANOWSKA, Małgorzata – KOZŁOWSKI, Janusz K. Stone Industry from Košice-Galgovec and its Place in the Evolution and Differentiation of the Eastern Linear Pottery Culture. In: *Študijné Zvesti AÚ SAV*, 2016, vol. 60, pp. 5–29.
- KARABINOS, Anton – NOWAK, Marek – VIZDAL, Marián – VOLANSKÁ, Adriána. The contribution of finds for feature no. 1/12 at Ražňany (Distr. Sabinov, Slovakia) for the problem of foreign influences in the area of the Bükk Culture. In: VALDE-NOWAK, Paweł – SOBCZYK, Krzysztof – NOWAK, Marek – ŻRAŁKA, Jarosław (eds.). *Multas Per Gentes et Multa per Saecula. Amici Magistro et Collegae suo Ioanni Christopho Kozłowski dedicant*. Kraków: Jagiellonian University, 2018, pp. 337–349.
- KOZŁOWSKI, Janusz K. The lithic industry of the Eastern Linear Pottery Culture in Slovakia. In: *Slovenská archeológia*, 1989, vol. 37, pp. 377–410.
- KOZŁOWSKI, Janusz K. (ed.). *The Early Linear Pottery Culture in Eastern Slovakia*. Kraków, 1997.
- KOZŁOWSKI, Janusz, K. – NOWAK, Marek – VIZDAL, Marián (eds.). *Early farmers of the Eastern Slovak Lowland: the settlement of the Eastern Linear Pottery Culture at Moravany*. Kraków: Polska Akademia Umiejętności, 2015.
- KUTZIÁN, Ida. *A Körös-kultúra*. (Dissertationes Pannonicae, ser. II, vol. 23). Budapest, 1944.
- KUZMA, Ivan. Plastika železovskej skupiny z Mužle-Čenkova. In: *Slovenská archeológia*, 1990, vol. 38, pp. 429–252.
- LAMIOVÁ-SCHMIEDLOVÁ, Mária. Römerzeitliche Siedlungskeramik in der Südostslowakei. In: *Slovenská archeológia*, 1969, vol. 17, pp. 403–501.
- LICHARDUS, Ján. Jaskyňa Domicca najvýznamnejšie sídlisko ľudu bukovohorskej kultúry. Bratislava: Vydavateľstvo Slovenskej akadémie vied, 1968.
- LICHARDUS, Ján. *Studien zur Bükker Kultur*. (Saarbrücker Beiträge zur Altertumskunde, Band 12). Bonn: Rudolf Habelt Verlag GMBH, 1974.
- LUŠTIKOVÁ, Lucia. Záchraný výskum v Barci. In: *Archeologické výskumy a nálezy na Slovensku* [v roku 2011], 2017, p. 162.
- NAGY, Emese, Gy. – KACZANOWSKA, Małgorzata – KOZŁOWSKI, Janusz K. – MOSKAL-DEL HOYO, Magdalena – LITYŇSKA-ZAJĄC, Maria. Evolution and environment of the Eastern Linear Pottery Culture: a case study in the site of Polgár-Piócási-dűlő. In: *Acta Archaeologica Academiae Scientiarum Hungaricae*, 2014, vol. 65, pp. 217–284.
- NOVOTNÝ, Bohuslav. Slovensko v mladšej dobe kamennej. Bratislava: Slovenské vydavateľstvo krásnej literatúry, 1958.
- NOVOTNÝ, Bohuslav. Sídlisko s alföldskou lineárnou keramikou vo Všechnvátých. In: *Musaica*, 1962, vol. 13, no. 2, pp. 3–8.
- NOWAK, Marek. Absolute chronology and plant exploitation in the early Neolithic settlement at Moravany. In: KOZŁOWSKI, Janusz, K. – NOWAK, Marek – VIZDAL, Marián (eds.). *Early farmers of the Eastern Slovak Lowland: the settlement of the Eastern Linear Pottery Culture at Moravany*. Kraków: Polska Akademia Umiejętności, 2015, pp. 215–234.
- ROSS, Krisztián. Architecture of the Linearbandkeramik settlement at Balatonszárszó-Kis-erdei-dűlő in central Transdanubia. In: GHEORGHIU, Dragoș (ed.). *Neolithic and*

- Chalcolithic Archaeology in Eurasia: Building Techniques and Spatial Organisation*. BAR International Series 2097. Oxford, 2010, pp. 63–80.
- OROSS, Krisztián – BÁNFFY, Eszter. Three successive waves of Neolithisation: LBK development in Transdanubia. In: *Documenta praehistorica*, 2009, vol. 36, pp. 175–189.
- PÁSTOR, Ján. Blažice, Bohdanovce i Hranična pod Koszycami (Wykopaliska w latach 1963–1964). In: *Acta Archeologica Carpathica*, 1965, vol. 7, pp. 87–95.
- PAVÚK, Juraj. Kultúry staršieho a stredného neolitu a západnom Slovensku. In: *Slovensko v mladšej dobe kamenej*. Bratislava: Vydavateľstvo Slovenskej akadémie vied, 1970, pp. 20–64.
- PAVÚK, Juraj. Ältere Lineareramik in der Slowakei. In: *Slovenská archeológia*, 1980, vol. 28, pp. 7–87.
- PAVÚK, Juraj. Zur relativen Chronologie der älteren Lineareramik. In: *A Nyíregyháza Jósa András Múzeum Évkönyve*, 1994, vol. 36, pp. 135–149.
- PAVÚK, Juraj – FARKAS, Zdeněk. Beitrag zur Gliederung der älteren Linearbandkeramik. In: ANDERS, Alexandra – KULCSÁR, Gabriella (eds.). *Moments in Time. Papers Presented to Pál Raczky on His 60th Birthday*. Budapest: L Harmattan Kiadó, 2013, pp. 213–236.
- PIATNIČKOVÁ, Kristína. Problematic of Linear Pottery in the Upper Tisza Region. In: ŠUTEKOVÁ, Jana – PAVÚK, Peter – KALÁBKOVÁ, Paulína – KOVÁR, Branislav (eds.). *Panta Rhei. Studies on the Chronology and Cultural Development of South-Eastern and Central Europe in Earlier Prehistory Presented to Juraj Pavúk on the Occasion of his 75th Birthday*. Bratislava, 2010, pp. 323–342.
- PIATNIČKOVÁ, Kristína. Current state of research on the Bükk Culture in Slovakia (Brief outline based on excavations and surveys conducted over the past 30 years). In: *Archeometriai Műhely*, 2010, vol. 4, pp. 237–247.
- PIATNIČKOVÁ, Kristína. The Eastern Linear Pottery Culture in the Western Tisza Region in Eastern Slovakia. The Tiszadob Group as a Base of the Bükk Culture. In: VIRAG, Cristian (ed.). *Neolithic Cultural Phenomena in the Upper Tisza Basin. International Conference July 10–12, 2014, Satu Mare*. Satu Mare, 2015, pp. 161–183.
- PROŠEK, František. Mesolitická obsidiánová industrie ze stanice Barca I. In: *Archeologické rozhledy*, 1959, vol. 9, pp. 145–148, 193.
- PRÍCHYSTAL, Antonín – ŠKRDLA, Petr. Kde ležel hlavní zdroj obsidiánu v pravěku střední Evropy? In: *Slovenská archeológia*, 2014, vol. 62, pp. 215–226.
- RACZKY, Pál. Chronological Framework of the Early and Middle Neolithic in the Tisza Region. In: BÖKÖNYI, Sándor (ed.). *Neolithic of Southeastern Europe and its Near Eastern Connections*. Budapest, 1989, pp. 233–251.
- RACZKY, Pál – ANDERS, Alexandra. The internal relations of the Alföld Linear Pottery culture in Hungary and the characteristic of human representation. In: JEREM, Erzsébet – RACZKY, Pál (eds.). *Morgenrot der Kulturen: Frühe Etappen der Menschheitsgeschichte in Mittel- und Südosteuropa. Festschrift für Nándor Kalicz zum 75. Geburtstag*. Budapest: Archaeolingua, 2003, pp. 155–182.
- RACZKY, Pál. – ANDERS, Alexandra. Settlement history of the Middle Neolithic in the Polgár micro-region (The development of the Alföld Linearband Pottery in the Upper Tisza Region, Hungary). In: KOZŁOWSKI, Janusz K. (ed.). *Interactions between different models of neolithization north of the Central European Agro-Ecological Barrier*. Kraków, 2009, pp. 31–50.
- RACZKY, Pál – ANDERS, Alexandra. Neolithic enclosures in Eastern Hungary and their survival into Copper Age. In: BERTEMES, François – MELLER, Harald (eds.). *Neolithische Kreisgrabenanlagen in Europa / Neolithic Circular Enclosures in Europe. Tagungen des Landesmuseums für Vorgeschichte Halle (Saale)*, 2012, vol. 8, pp. 271–309.
- RACZKY, Pál – SÜMEGI, Pál – BARTOSZIEWICZ, László – GÁL, Erika – KACZANOWSKA, Małgorzata – KOZŁOWSKI, Janusz K. – ANDERS, Alexandra. Ecological barrier versus mental marginal zone? Problems of the northernmost Körös Culture settlements in the Great Hungarian Plain. In: GRONENBORN, Detlef – PETRASCH, Jörg (eds.). *Die*

- Neolithisierung Mitteleuropas. The Spread of the Neolithic to Central Europe.* RGZM – Tagungen 4. Mainz, 2010, pp. 147–173.
- STADLER, Peter – DRAXLER, Susanne – FRIESINGER, Herwig – KUTSCHERA, Walter – PRILLER, Alfred – ROM, Werner, STEIER, Peter – WILD, Eva M. *Status of the Austrian Science Fund Project P12253-PHY: Absolute Chronology for Early Civilisations in Austria and Central Europe using ¹⁴C Dating with Accelerator Mass Spectrometry.* Manuskript. Vienna, 2000.
- STROBEL, Michael. Ein Beitrag zur Gliederung der östlichen Linienbandkeramik Versuch einern Merkmalanalyse. In: *Saarbrücker Studien und Materialien zur Altertumskunde*, 1997, vol. 4, no. 5, pp. 9–98.
- ŠÍŠKA, Stanislav. Abdeckung von Siedlungen und einem Gräberfeld aus der jüngeren Steinzeit in Kopčany. In: *Archeologické rozhledy*, 1974, vol. 26, pp. 3–15, 101–104.
- ŠÍŠKA, Stanislav. Sídliisko z mladšej doby kamennej v Prešove-Šarišských Lúkach. In: *Slovenská archeológia*, 1976, vol. 24, pp. 83–117.
- ŠÍŠKA, Stanislav. Die Bükker Kultur in der Ostslowakischen Tiefebene. In: *Slovenská archeológia*, 1979, vol. 27, pp. 245–292.
- ŠÍŠKA, Stanislav. Neolitické a halštatsko-laténske sídliisko v Čečejovciach. In: *Archeologické výskumy a nálezy na Slovensku* [v roku 1979], 1980, pp. 204–207.
- ŠÍŠKA, Stanislav. Grabung auf der neolithischen und äneolithischen Siedlung in Šarišské Michalany. In: *Slovenská archeológia*, 1986, vol. 34, pp. 439–454.
- ŠÍŠKA, Stanislav. *Kultúra s východnou lineárnu keramikou na Slovensku.* VEDA: Bratislava 1989.
- ŠÍŠKA, Stanislav. Keramika a datovanie neolitickej dielne v Kašove. In: *Východoslovenský pravek*, 1991, vol. 3, pp. 69–74.
- ŠÍŠKA, Stanislav. *Dokument o spoločnosti mladšej doby kamennej (Šarišské Michalany).* VEDA: Bratislava, 1995.
- ŠÍŠKA, Stanislav. Architektúra neolitickej osady v Šarišských Michalanoch. In: *Slovenská archeológia*, 1998, vol. 46, pp. 187–204.
- ŠÍŠKA, Stanislav. Plastika bukovohorskej kultúry zo Šarišských Michalian (severovýchodné Slovensko). In: *Památky archeologické – Supplementum.* Vol. 13. Praha, 2000, pp. 376–388.
- VIZDAL, Jaroslav. *Zemplín v mladšej dobe kamennej.* Východoslovenské vydavateľstvo: Košice, 1973.
- VIZDAL, Marián. Pottery finds. In: KOZŁOWSKI, Janusz K. (ed.). *The Early Linear Pottery Culture in Eastern Slovakia.* Kraków, 1997, pp. 43–141.
- WHITTLE, Alasdair – ANDERS, Alexandra – BENTLEY, R. Alexander – BICKLE, Penny – CRAMP, Lucy – DOMBORÓCZKI, László – FIBIGER, Linda – HAMILTON, Julie – HEDGES, Robert – KALICZ, Nándor – KOVÁCS, Zsófia E. – MARTON, Tibor – OROSS, Krisztián – PAP, Ildikó – RACZKY, Pál. 3. Hungary. In: BICKLE, Penny – WHITTLE, Alasdair (eds.). *The first farmers of central Europe. Diversity in LBK lifeways.* Oxford, 2013, pp. 49–100.

Figures

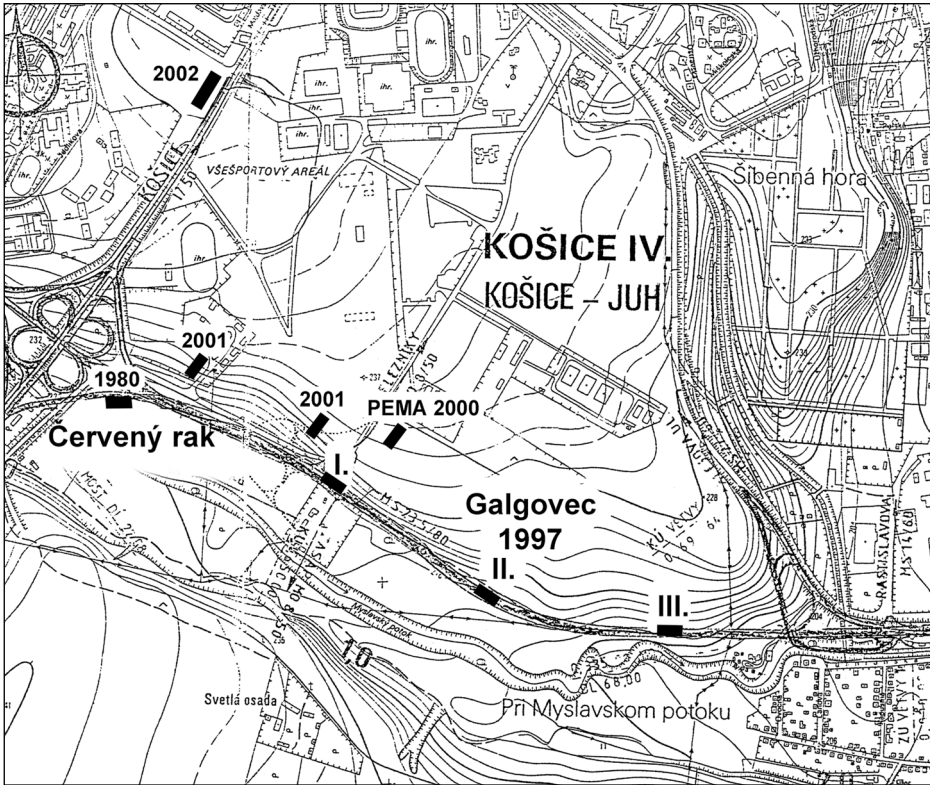


Figure 1: Map of the southern part of Košice with the years of excavations on the terraces of the Myslavský potok stream

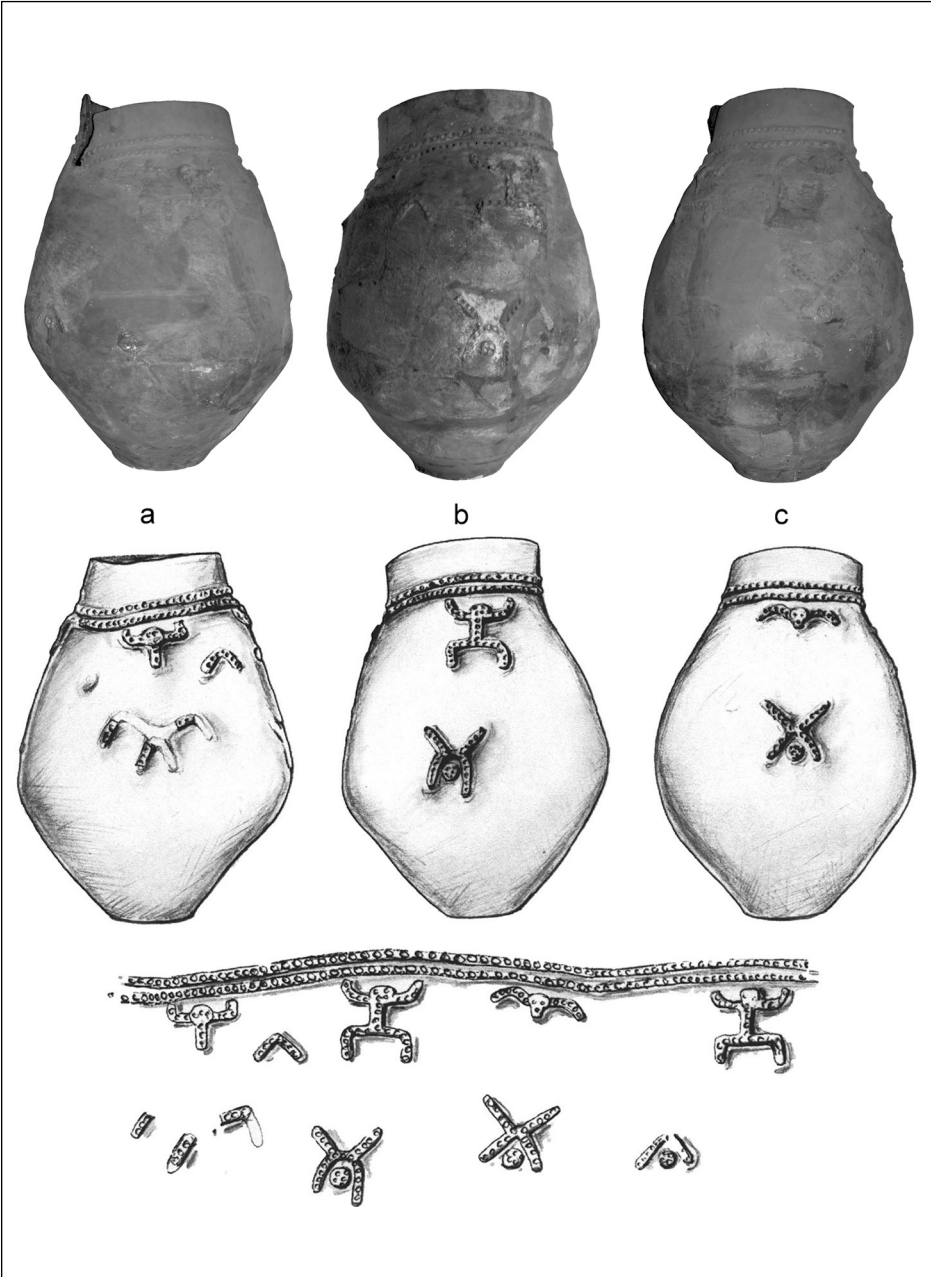


Figure 2: Košice-Červený rak. Storage jar with anthropomorphic and zoomorphic motifs, Proto-Linear stage (after KAMINSKÁ – KACZANOWSKA – KOZŁOWSKI, *Košice-Červený rak*, and NAGY et al. *Evolution and environment*.)

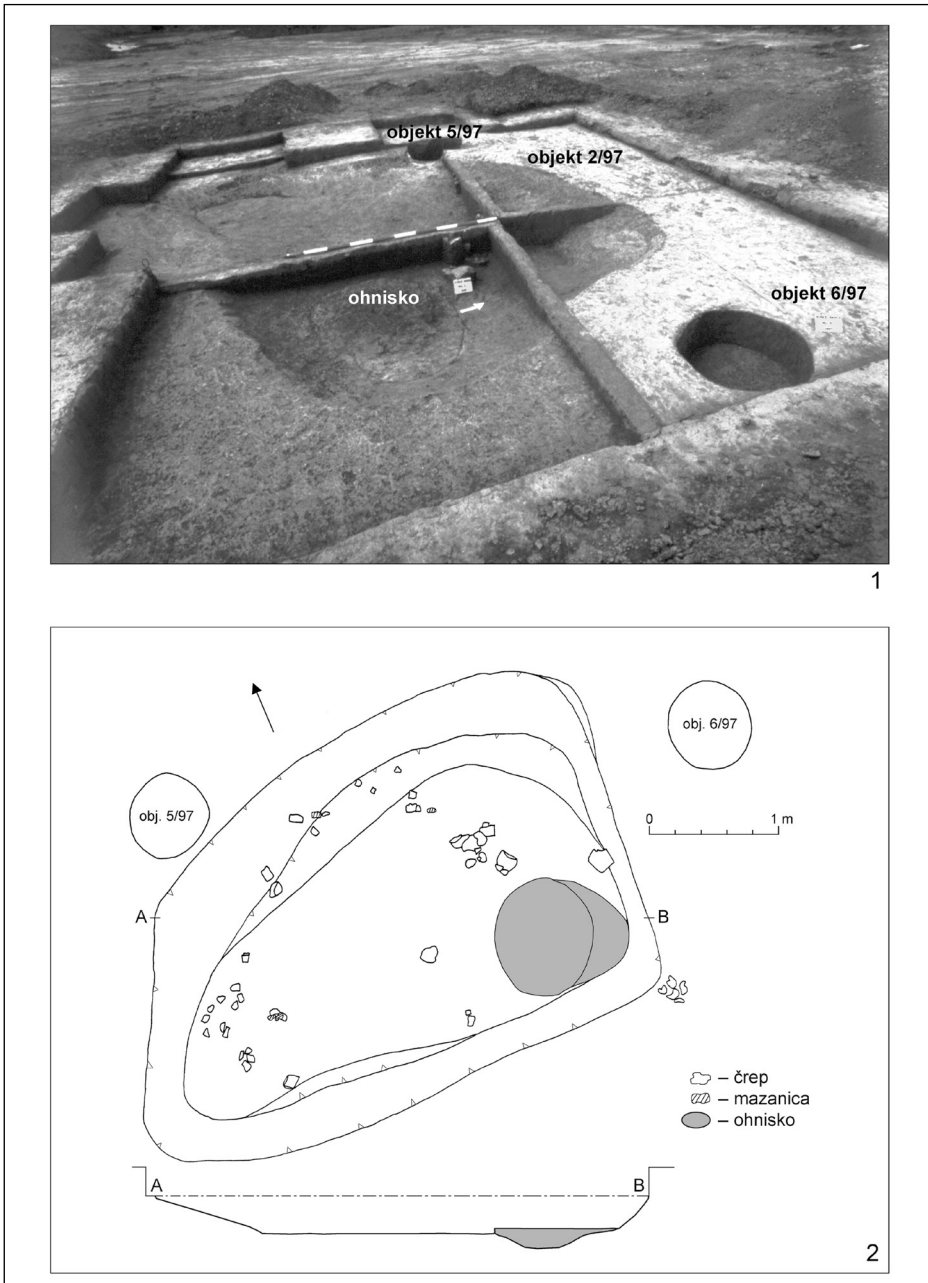


Figure 3: Košice-Galgovec III, feature 2/97, Tiszadob group. 1 – photo of the feature with a hearth and features 5/97 and 6/97 nearby; 2 – groundplan and profile of the feature

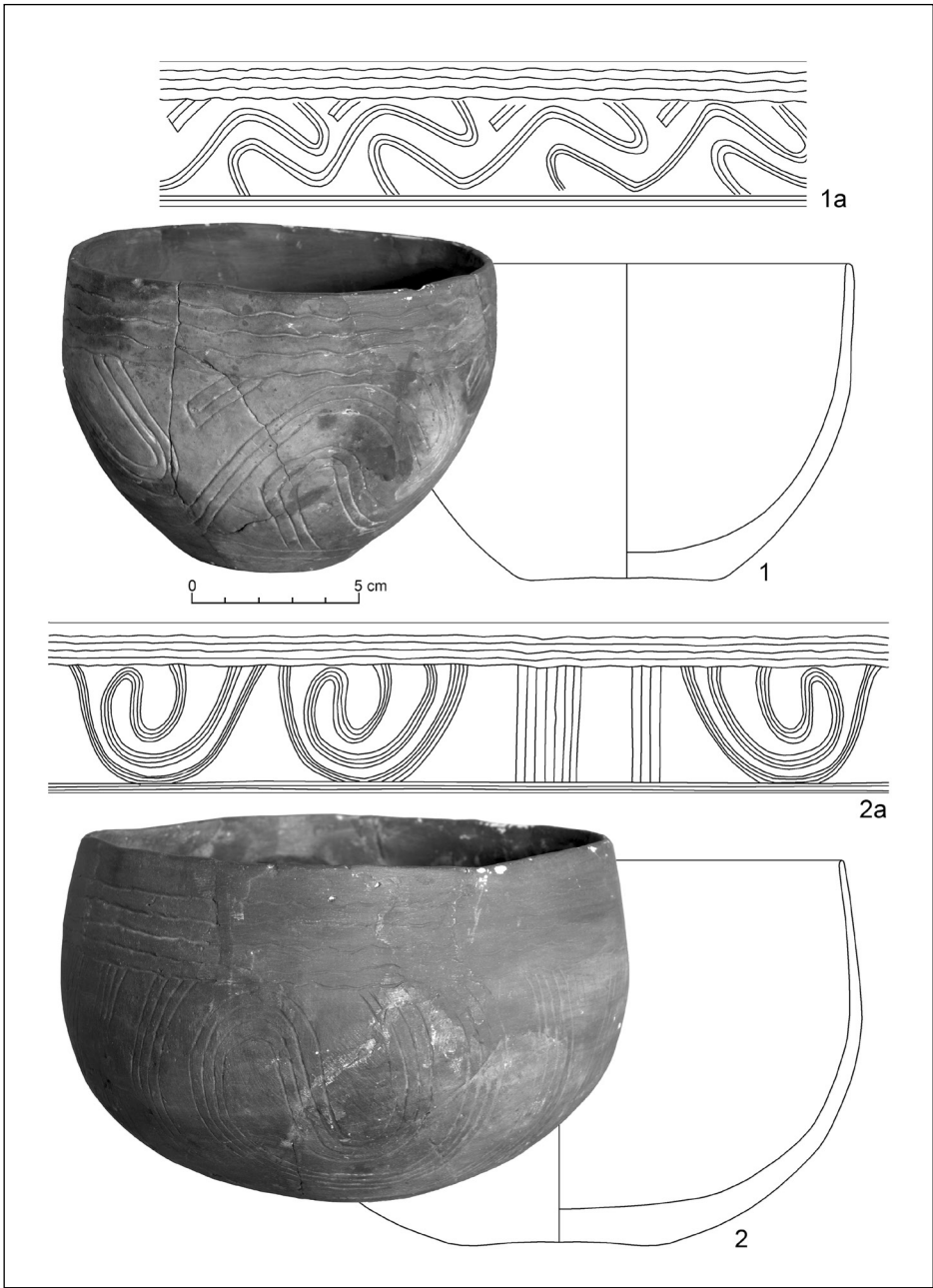


Figure 4: Košice-Galgovec III, feature 9/97, Tiszadob group. 1, 2 – rounded bowls with engraved decoration

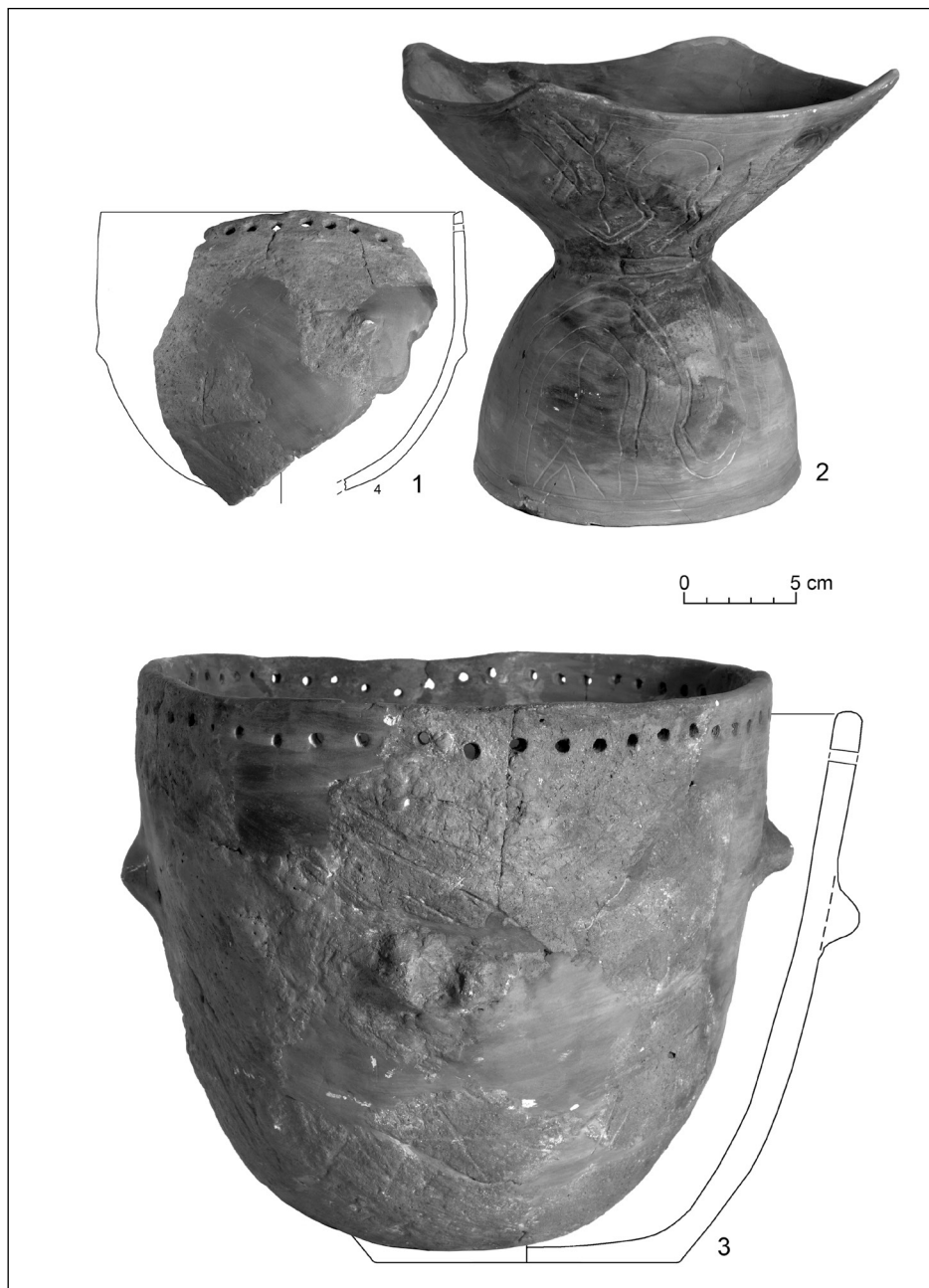


Figure 5: Košice-Galgovec III, feature 9/97, Tiszadob group. 1 – fragment of a bowl; 2 – pedestal bowl with engraved decoration; 3 – restored storage jar

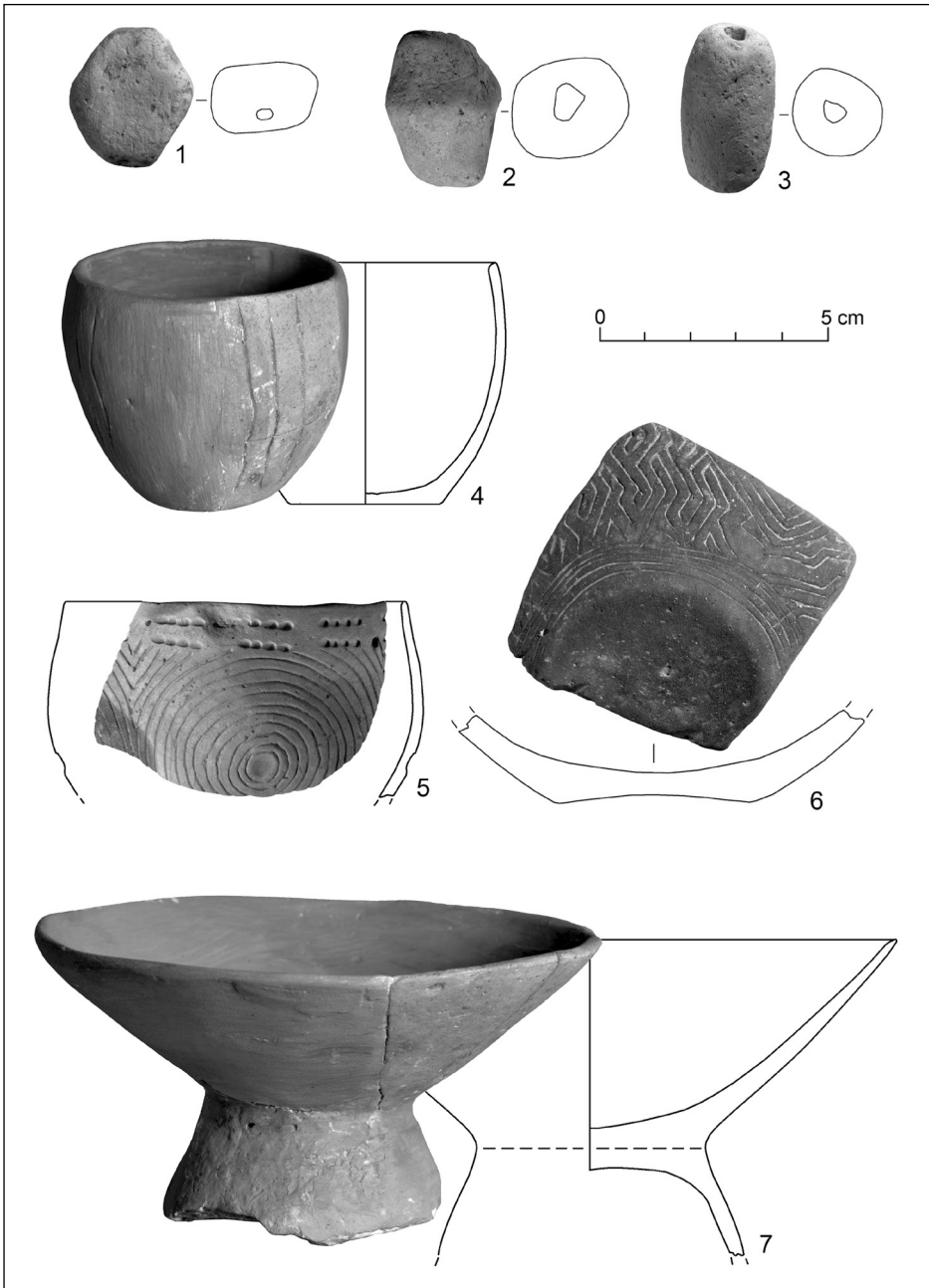


Figure 6: Košice-Galgovec III, feature 9/97, Tiszadob group. 1, 3 – clay pearls; 4 – cup; 5 – fragment of a bowl with engraved concentric circles; 6 – fragment of a bowl decorated with engraved meanders; 7 – small pedestalled bowl

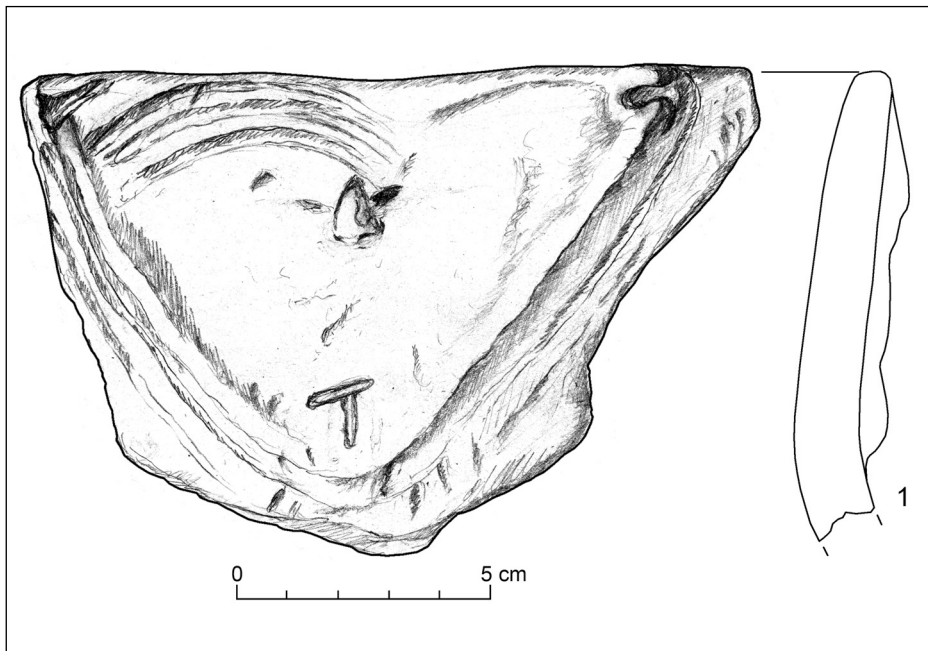


Figure 7: Košice-Galgovec III, feature 9/97, Tiszadob group. Sherd from the neck of a vase-shaped vessel with a depiction of a human face

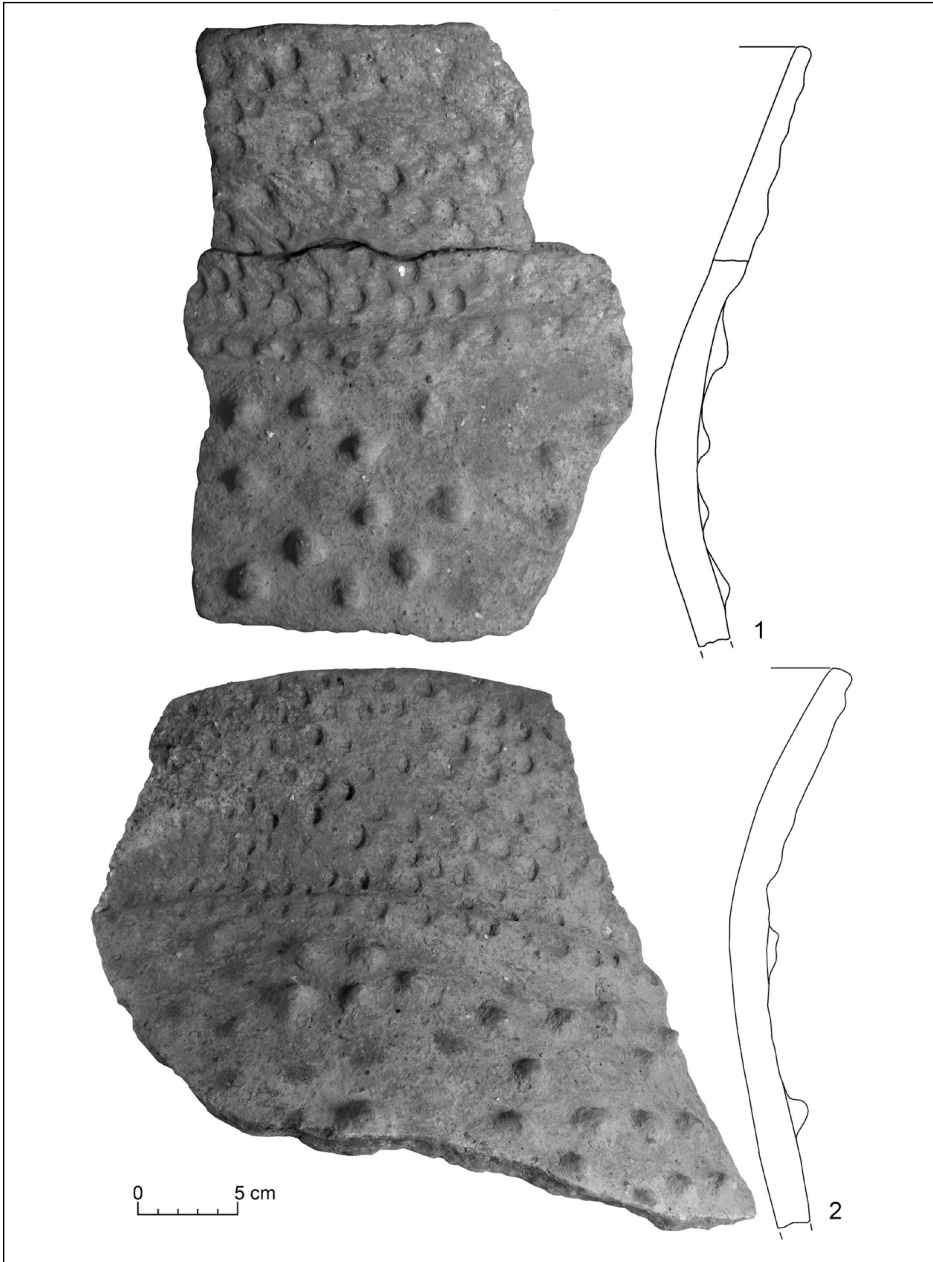


Figure 8: Košice-Galgovec I, feature 8/2000, Tiszadob-Bükk transitional stage. 1, 2 – sherds from storage jars with conical-shaped necks decorated with dimples, dimpled plastic tapes and barbotine

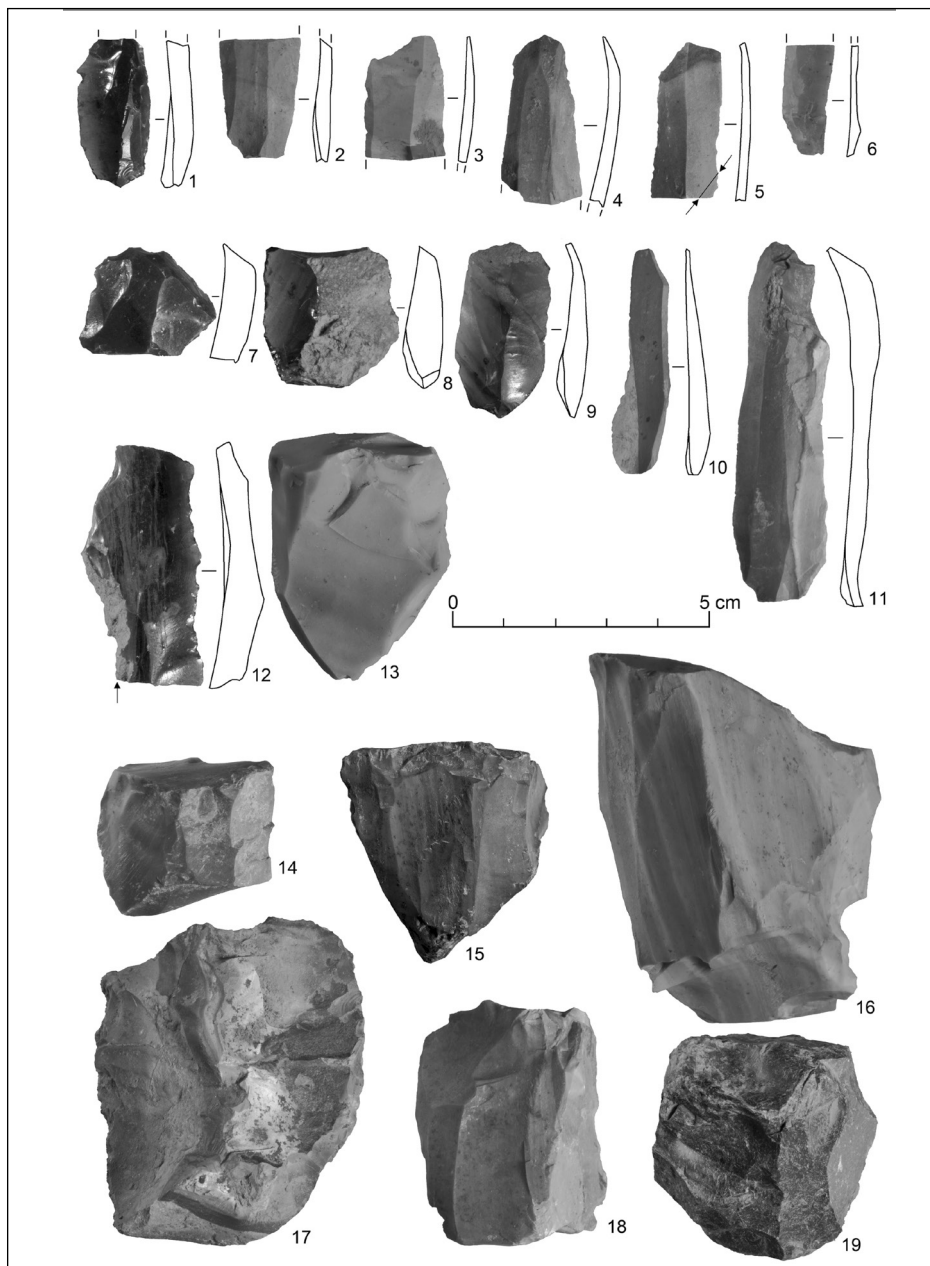


Figure 9: Košice-Galgovec III, feature 9/97, Tiszadob group. Chipped lithic industry. 1 – retouched blade, 2–4, 6, 8, 9, 11 – blades, 5 – sickle blade, 7 – end-scrapers, 12 – burin, 17 – side-scraper, 13–16, 18, 19 – cores. Raw material: 1, 7–9 – obsidian, 2–5, 10, 11, 14–19 – limnosilicite of the Banské type, 6, 13 – limnosilicite

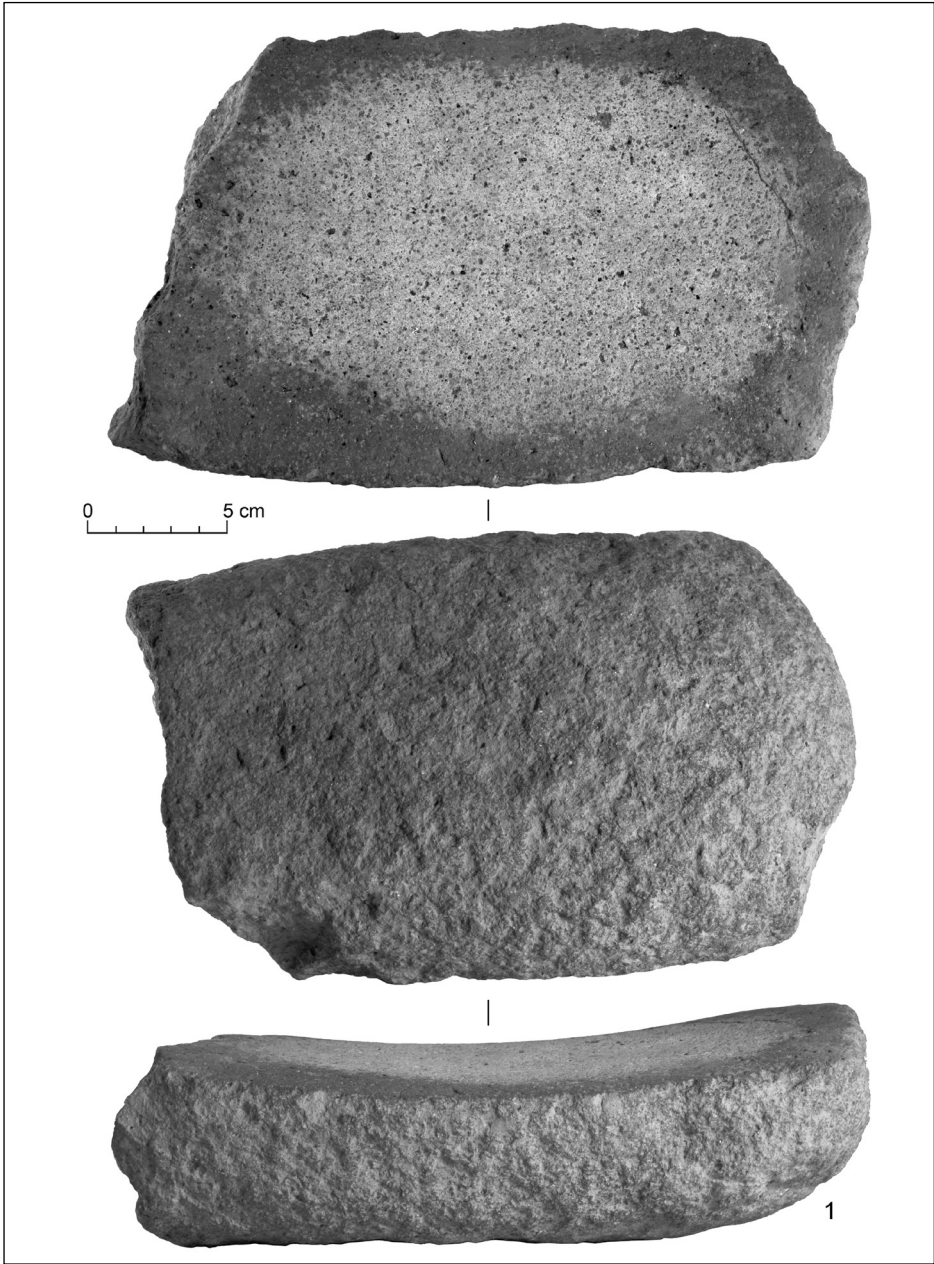


Figure 10: Košice-Galgovec III, feature 9/97, Tiszadob group. Lower grinding stone – granite

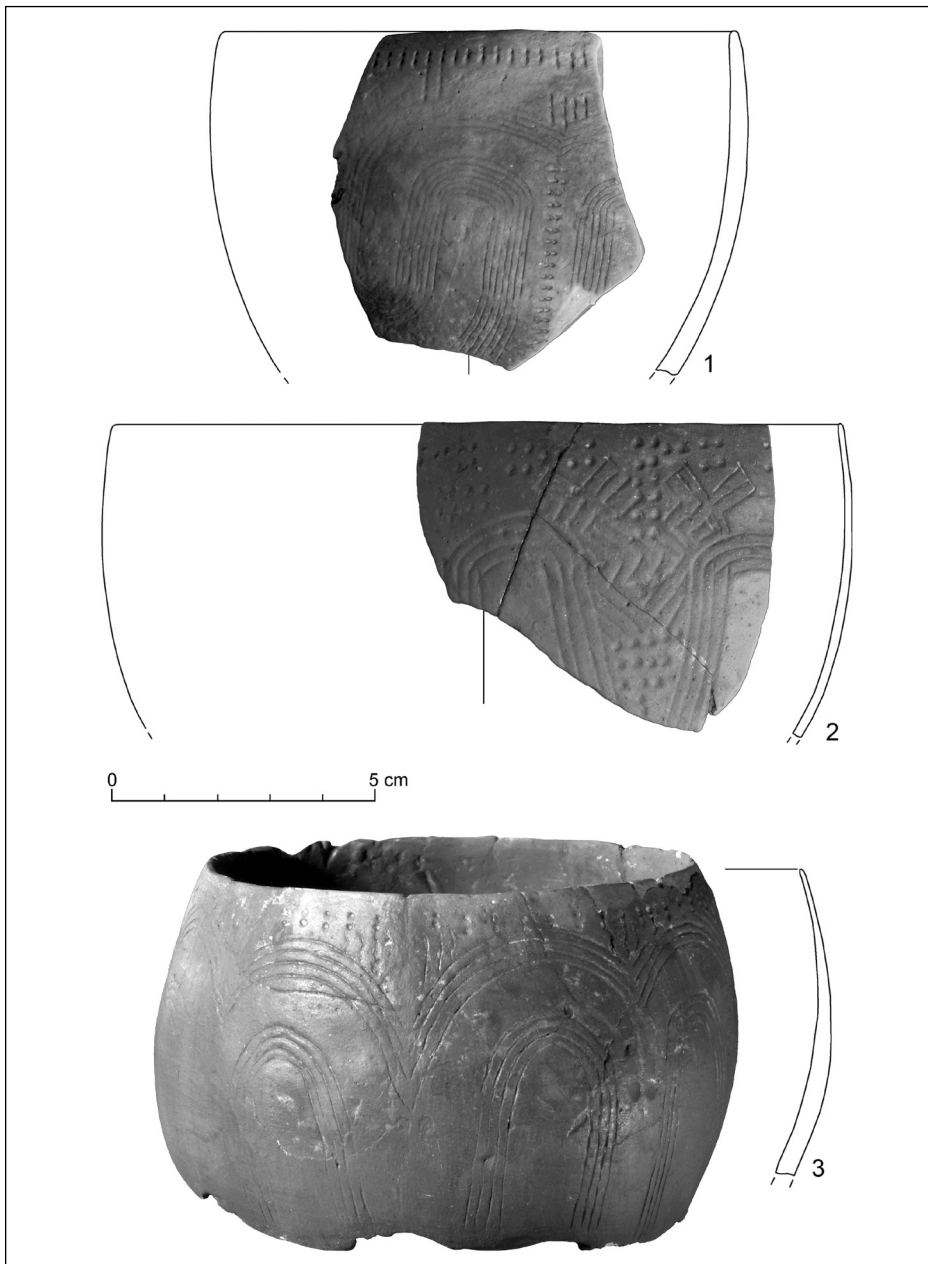


Figure 11: Košice-Galgovec I, feature 10/2000, Bükk culture. 1–3 – decorated hemispherical bowls