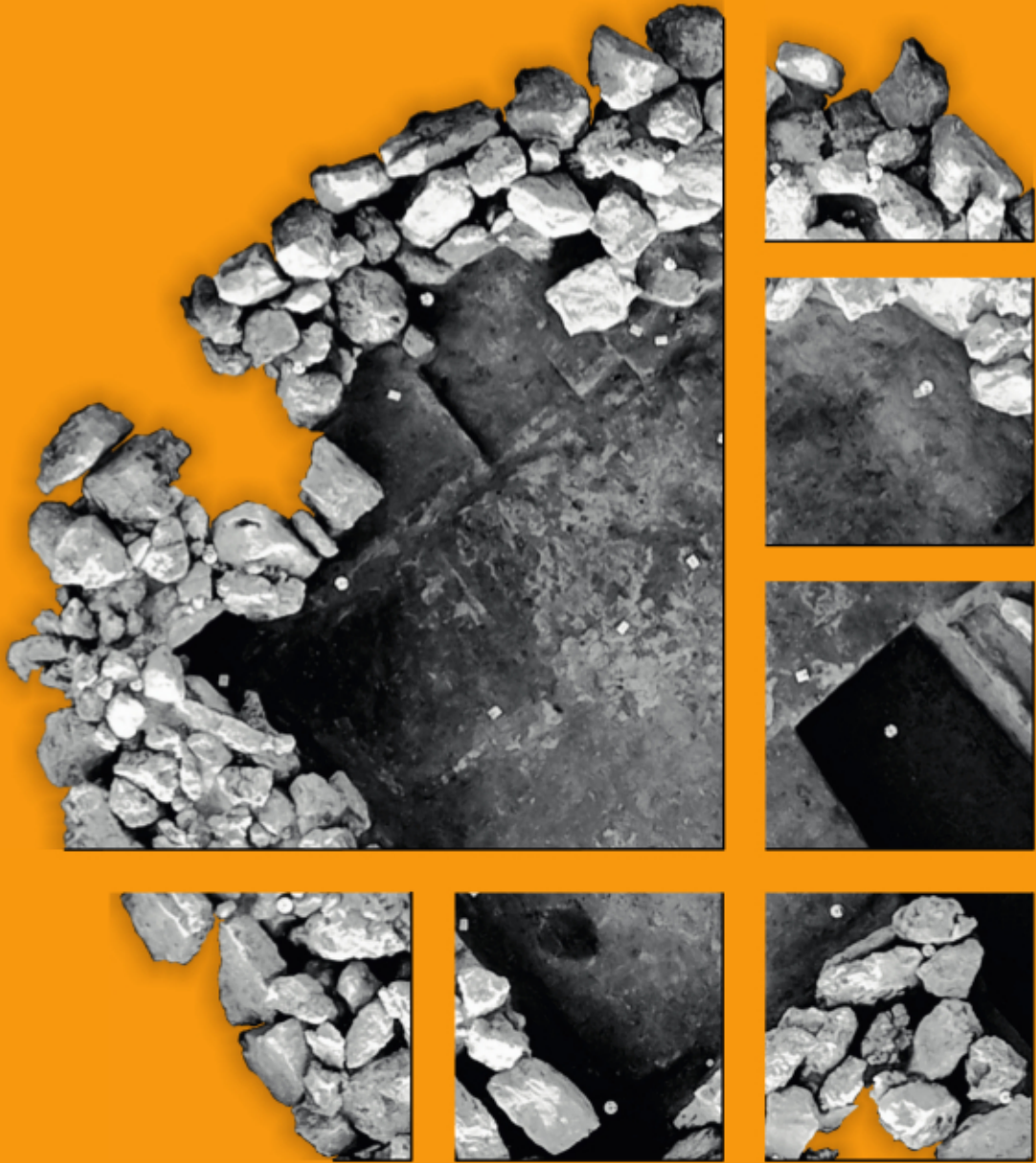


DISSERTATIONES ARCHAEOLOGICAE

ex Instituto Archaeologico Universitatis de Rolando Eötvös nominatae



Ser. 3. No. 4. | 2016

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Ser. 3. No. 4.



Budapest 2016

Dissertationes Archaeologicae ex Instituto Archaeologico
Universitatis de Rolando Eötvös nominatae
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Budapest 2016

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The settling of the Alföld Linear Pottery Culture in Szabolcs-Szatmár-Bereg county

Microregional researches in the area of Mezőség in Nyírség

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Abstract

Abstract of PhD thesis submitted in 2016 to the Archaeology Doctoral Programme, Doctoral School of History, Eötvös Loránd University, Budapest under the supervision of Pál Raczky.

The basis of the research

The main goal of the dissertation is the complex analysis of the Middle Neolithic period in the western part of Szabolcs-Szatmár county – known in the literature as the „nyíri Mezőség” region.¹ This region with a full extent of 50×25 km is complex in both geographical and archaeological terms. The reason for that lies in its transitional nature: it is situated on the border of the Upper and Middle Tisza Region and has good connections to the Nyírség and the foothills of the North Hungarian Range. The western part of the landscape was formed by the Tisza River, whose meanders also define the landscape nowadays. The middle and eastern part is covered by sandy loess, which is marked by sand-hills and saline lakes formed by wind. Thanks to this duality this region represents a color patch in the mosaiclike world of the Great Hungarian Plain.

The main research questions of this area were outlined by find assemblages from the 1960's. The sites in the vicinity of Tiszavasvári published by Nándor Kalicz and János Makkay were the basis of the so-called Tiszadob group within the Alföld Linear Pottery Culture (ALPC). In the late 1980's the region was again in the focus of the scientific attention, and, in her PhD-thesis, Katalin Kurucz summarised and analysed the material of the Tiszadob group.²

Determining the time frame of the Tiszadob group, it was associated with the Bükk culture by its relations. Hungarian researchers assumed a genetic relationship between the two groups, and thus the Tiszadob group was defined as the antecedent of the Bükk culture according to the published chronological tables.³ The Slovakian researchers has not deduced the Bükk culture from the Tiszadob group but from the so-called Gömör LPC, so in this chronological system Bükk and Tiszadob were partly contemporaneous.⁴ Traditionally the groups of the

1 KURUCZ 1989.

2 KALICZ – MAKKAY 1977; KURUCZ 1989.

3 KALICZ – MAKKAY 1977; CSENGERI 2013.

4 LICHARDUS 1974.

ALPC were associated with the late phase of the culture (ALPC3-4).⁵ Based on finds and absolute chronological data from the southern part of the Great Hungarian Plain Horváth Ferenc suggested an earlier date (ALPC2) for these groups including Tiszadob.⁶

Another main subject of the scientific dispute was the coherence of the groups defined by their typical ceramics. These groups were visualized both spatially and temporally as almost fully isolated, delimited phenomena.⁷ With the increasing number of finds more and more “mixed” assemblages were revealed, which represented ceramics from various cultural groups. During the analysis of Kompolt-Kistér Eszter Bánffy delineated the coexistence of different ethnic groups. In connection with the geographical location of mixed assemblages she emphasized the relevance of the exchange network.⁸

New assemblages, the results of several investigations in the neighbouring regions (in Hajdú-Bihar, Borsod-Abaúj-Zemplén, and Heves counties), as well as new methods of the international and Hungarian archaeology all made it necessary to re-evaluate the archaeological assemblages in the „nyíri Mezőség” region. New developments in theoretical archaeology made it possible to understand statistical analyses and to build a more detailed picture.

The analysis of the Middle Neolithic in Szabolcs-Szatmár-Bereg county was performed from three points of view, using three types of datasets and three different methods:

1. Ceramic assemblages from excavations were investigated by statistical analyses (correspondence analysis and seriation). Ceramic decoration was evaluated by style analysis. A hypothetical ceramic inventory was reconstructed based on formal characteristics.
2. The analysis of the intrasite settlement structure was based on features from excavated sites in accordance with ceramic analysis.
3. Known archaeological sites and data from a newer field survey were used to analyse the settlement network. Four microregions were investigated in this project with the size of 50 squarekilometer each. Not only the structure but the temporal changes of the settlement network could be drawn from the available data.

The analysed assemblages

Ten excavated assemblages were introduced and analysed using similar point of views: Kántorjánosi – Homoki-dűlő, Komoró – Bodony, Polgár – Kenderföld, Tiszalök – Hajnalos, Tiszalök – Kisfás-tanya, Tiszadob – Sziget, Tiszavasvári – Deákalmi-dűlő, Tiszavasvári – Keresztfal, Tiszavasvári – Köztemető, Tiszavasvári – Paptelkehát (*Fig. 1*). Difficulties arising from differences in time, size and methods of excavations (*Table 1*) determined the analyses. Evaluation based on archaeological feature level became a common ground of research. The sites that were chosen to study are located in two geological regions, the Nyírség and the Mezőség, and were compared to the results of analyses in the Polgár region and in the Hortobágy. In the discussion I compared the results of the statistics to the observations of the settlement structure. If the opportunity was given, I tried to model the reconstruction of the inner structures of the settlement.

5 KALICZ – MAKKAY 1977; RACZKY 1989.

6 HORVÁTH 1994.

7 KALICZ – MAKKAY 1977; RACZKY 1989.

8 BÁNFFY 1999, 35–36, 88.

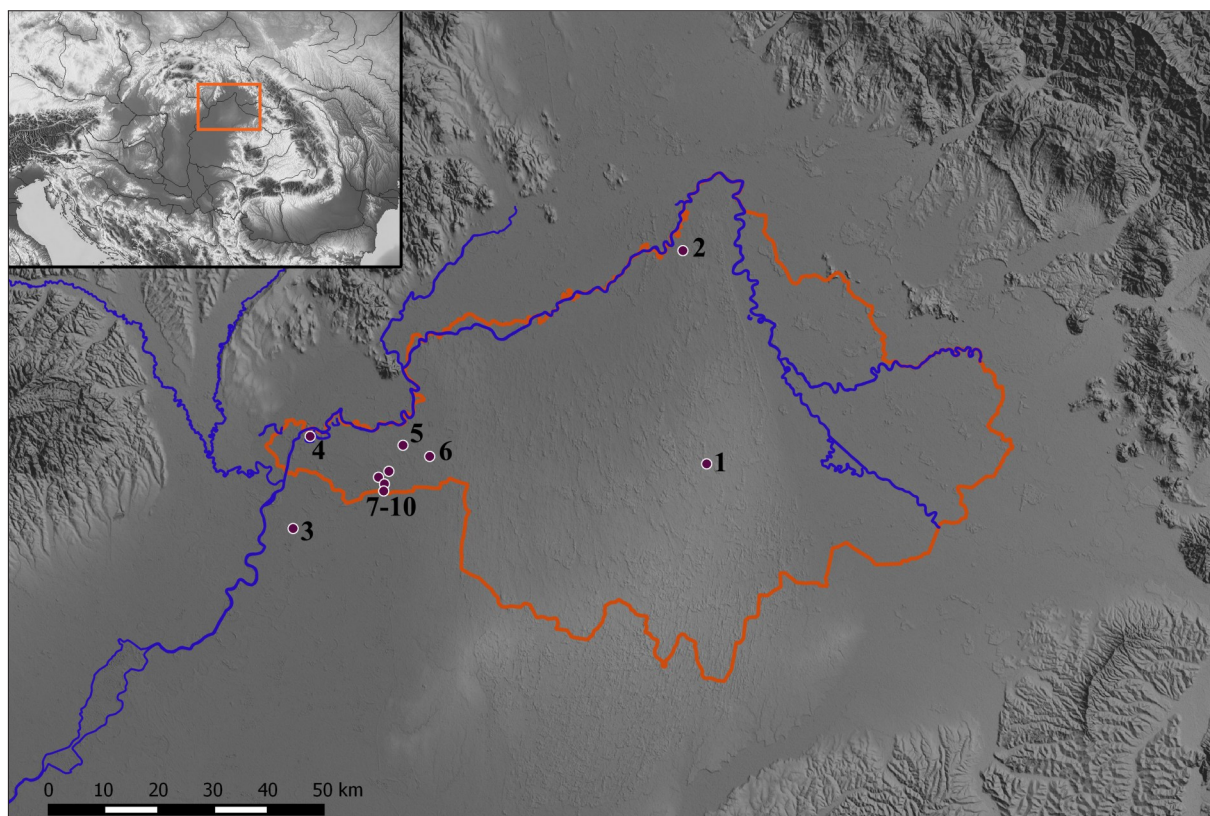


Fig. 1. Research area of dissertation in North-eastern Hungary, including Szabolcs-Szatmár-Bereg county (orange line) and excavated assemblages: 1. Kántorjánosi-Homoki-dűlő, 2. Komoró-Bodony, 3. Polgár-Kenderföld, 4. Tiszadob-Sziget, 5. Tiszalök-Hajnalos, 6. Tiszalök-Kisfás-tanya, 7. Tiszavasvári-Deákhalmi-dűlő, 8. Tiszavasvári-Keresztfal, 9. Tiszavasvári-Köztemető, 10. Tiszavasvári-Paptelekhát.

Site	Year	Researcher	Publication	Area (m ²)	Features	Section in analysis	Ceramic (pc)
Kántorjánosi-Homoki-dűlő	2010	Á. Szabó, G. Szenthe	FÜZESI 2012, ORAVECZ 2012	40.000	140	79	3.267
Komoró-Bodony	2010-2011	Cs. K. Kiss		27.400	56	56	3.858
Polgár-Kenderföld	1999-2000	J. Dani, G. Szabó	HAJDÚ 2007	5.800	144	167	9.897
Tiszadob-Sziget	1964, 1983-1988	A. Gombás, E. Istvánovits	KURUCZ 1989	5.500	18	40	734
Tiszalök-Hajnalos	1985-1989	G. Lőrinczy, K. Kurucz	KURUCZ 1989	286	6	2	2.694
Tiszalök-Kisfás-tanya	1964	A. Gombás	KALICZ – MAKKAY 1977, KURUCZ 1989			7	281
Tiszavasvári-Deákhalmi-dűlő	1991-1992	E. Istvánovits	KURUCZ 1989	530	40	63	1.711
Tiszavasvári-Keresztfal	1962-1964	J. Makkay, N. Kalicz, A. Gombás	KALICZ – MAKKAY 1977, KURUCZ 1989	cca 100	10	44	4.021
Tiszavasvári-Köztemető	1983-1984	G. Lőrinczy, K. Kurucz	KURUCZ 1989	228	2	29	1.962
Tiszavasvári-Paptelekhát	1956	J. Makkay	KALICZ – MAKKAY 1977	8.600	37	86	1.374

Table 1. Main data of excavations in analysed sites

Statistical analyses

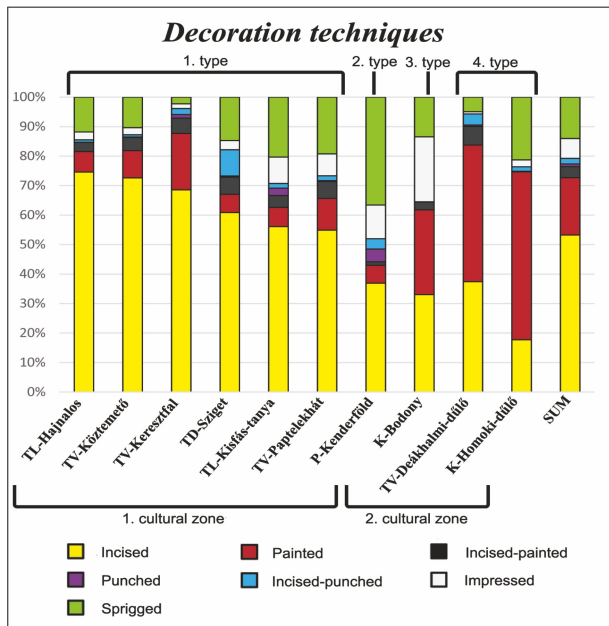


Fig. 2. Descriptive statistic plot of decorative techniques appeared in analyzed assemblages. Particular sites establish 4 types and 2 cultural zone.

incised, painted, incised-painted, punched, incised-punched, impressed, sprigged) projected the results of complex analyzes in advance. Four types can be differentiated among the assemblages:

- **Type 1** (sites in nyíri Mezőség) is characterized by dominance of incised ceramic with a few painted finds.
- **Type 2** (Polgár-Kenderföld) is partially similar to type 1, but with more sprigged finds.
- In the assemblage of **type 3** (Komoró-Bodony) incised, painted and impressed ceramics are even.
- **Type 4** (Tiszavasvári-Deákhalmi-dűlő, Kántorjánosi-Homoki-dűlő) is characterized by a high proportion of painted pottery.

Two cultural zones¹⁰ were outlined: the first (type 1 and 2) used incised techniques, the second (type 3 and 4) used painted techniques. The results are correlated with regional context rather than temporal ones; however the differences visible on the diagram refer partially to changes over time. A research of the internal dynamics of archaeological sites needs feature-based analyzes.

Among the multivariable statistics I performed Correspondence Analysis. It is useful in analysing great amount of data; the inner structures of the database can be shown and interpreted. Because of the variability of the assemblages I performed a whole series of CA either on groups or all of the variables. In categories of material, form, surface treatment, decoration technique, pattern, and additional elements 89 variables were recorded.

⁹ STROBEL 1997.

¹⁰ RACZKY – ANDERS 2003.

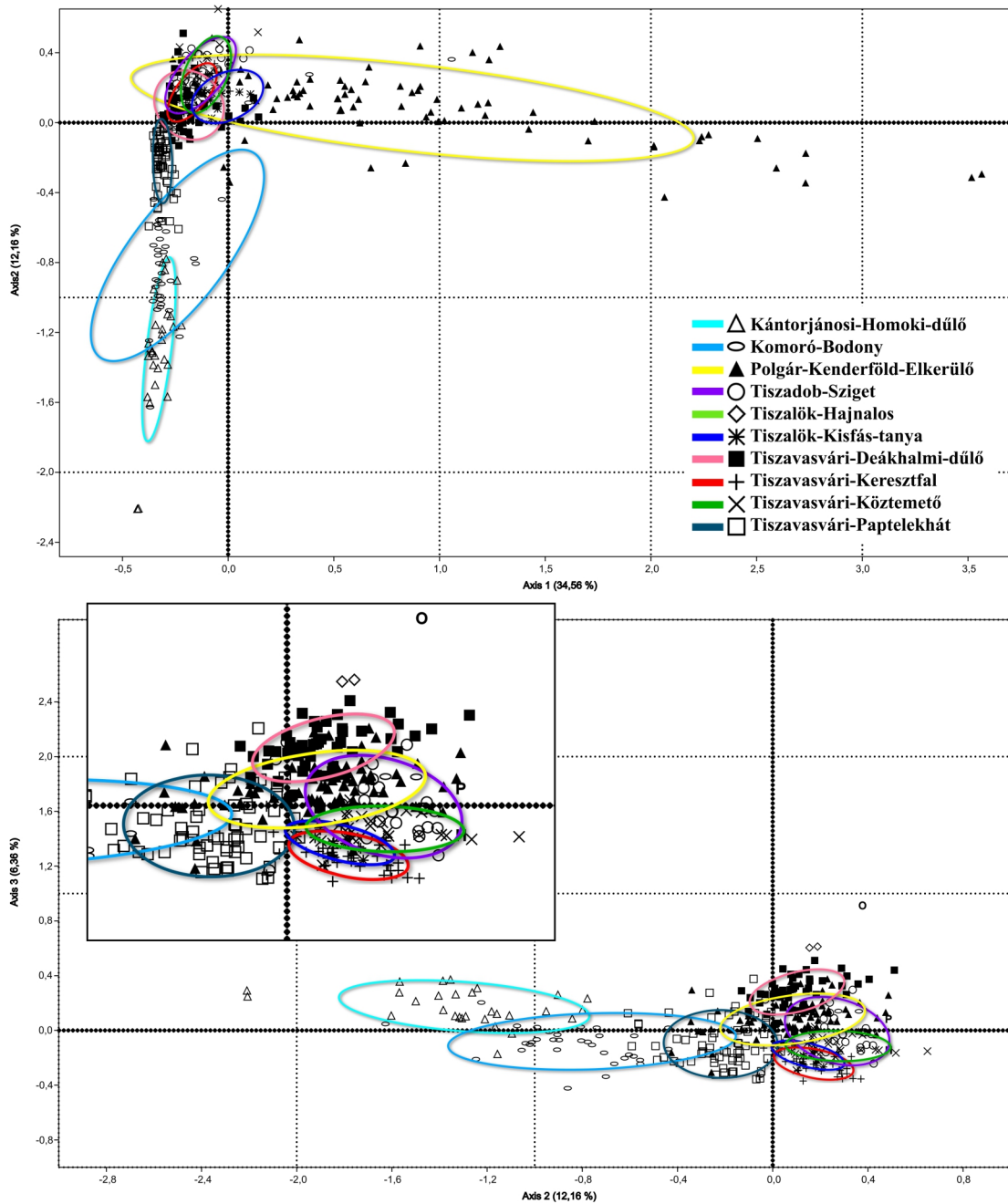


Fig. 3. Multivariable statistic (correspondence analyses) plot show regional and chronological differences. A – axis 1 and 2, B – axis 2-3 (with enlarged central part), circles means 68% confidence interval.

Both chronological and regional differences could be detected between the sites. The dimension of time appeared by analysing the variables of decoration, while the regional ones showed up studying the whole database (Fig. 3). Based on pottery I could distinguish three regions which are geographical ones as well (Nyírség, Mezőség and Hortobágy). Assemblages of the Hortobágy region (Polgár-Kenderföld) were scattered along the horizontal axis. High level of dispersion was caused by signals of the Szakálhát and Bükk style: incised lines with unsmoothed edge, punched and incised-punched decoration techniques, wide incised belts, scratched rims,

elbows and columnar handles, ribs in orderly pattern. Assemblages of the painted cultural zone (Komoró-Bodony, Kántorjánosi-Homoki-dűlő) were organized along the vertical axis. Assemblage of Komoró-Bodony are characterized by square-mouthed vessels and wide black painted lines. The Kántorjánosi assemblage showed pedestal bowls and Esztár style (black-on-red) painted vessels in high proportion. Assemblages of nyíri Mezőség grouped along the 3rd axis. On an enlarged image (*Fig. 3*) slight differences can be seen inside the group. Single sites are closely located to each other with large overlap. The classical ALPC sites (Tiszalök-Kisfás-tanya, Tiszavasvári-Keresztfal, Tiszavasvári-Paptelekhát) are in the negative zone, the late ALPC sites (Tiszalök-Hajnalos, Tiszavasvári-Deákalmi-dűlő) are in the positive zone. Low level of dispersion was caused by the powerful presence of the ALPC pottery tradition.

Comparing one region to another, a different tradition of pottery making and pottery decorating can be detected, which could be the result of different traditions, and a different network of relations based on their geographical location. Besides the chronology, an important result is the possibility to study the local tradition. The pottery characteristics of preceding periods was still used by the new generations, although in regionally different proportions, and in some cases within a modified context.

The analysis of the sites excavated near Tiszavasvári and Tiszalök-Hajnalos provided opportunity to study the inner periodisation of the Tiszadob group. In the earlier phase (ALPC3) the effect of late ALPC is stronger (*Fig. 4*). The late ALPC style appears not only solely, but mixed with the Tiszadob style. Good examples are the cases in which the Tiszadob style wavy lines appear in late ALPC patterns (running wavy lines with connected horizontal straight lines). The typical assemblage of the late Tiszadob style (ALPC3–4) is Tiszalök-Hajnalos. The application of unique closed motives, typical spacefilled patterns shows the complete form of the style (*Fig. 4*).

I was able to identify two occupational phases at both Komoró-Bodony and Kántorjánosi-Homoki-dűlő sites situated in the Nyírség region. Among the ALPC2 period finds at Komoró the early elements are strongly represented (sharply defined rim, single incised lines, impressed decoration), its closest parallels can be found at Sonkád and Zalužice. Among the finds of ALPC3 period painted Esztár and incised Bükk pottery appears. I distinguished two periods within the Esztár group finds at Kántorjánosi. In the early (ALPC3) period the simple black and the red-based black line painting coexists. Both groups are characterised by patterns built up by the same type of lines. The bands constructed of different lines appear in the late (ALPC 3-4) period together with a significant existence of Bükk (A-B horizon) pottery (*Fig. 5*).

There is a long evolution at the Polgár-Kenderföd site (ALPC 1-4). No early ALPC shards were found in the analyzed assemblages, but some were discovered in the eastern part of the site excavated in 1995.¹¹ Six groups were identified during the combined evaluation of the variables and cases (*Fig. 7*). These results correspond to the three chronological phases of ALPC (ALPC2–4). An improving differentiation can be seen among the ALPC2 and 3 finds. The first phase is characterized by single linear patterns, black repainted incised lines, and monochrome black painting. The second phase can be attributed to incised patterns of 2–4 lines, incised patterns with black painted background, and black-on-red painting.

11 NAGY 1998, 81–83.

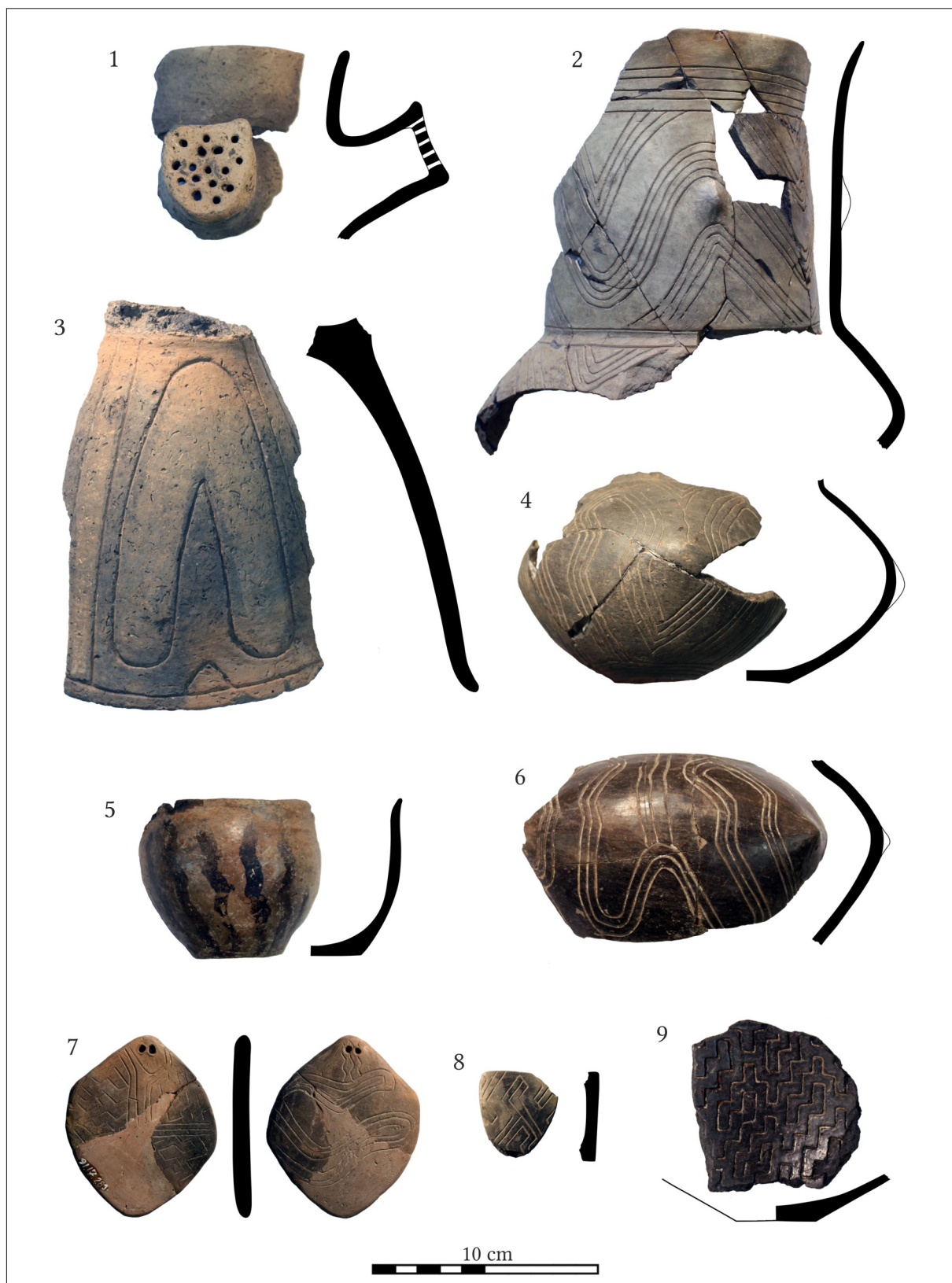


Fig. 4. Decorated vessels and objects from Tiszalök-Hajnalos.

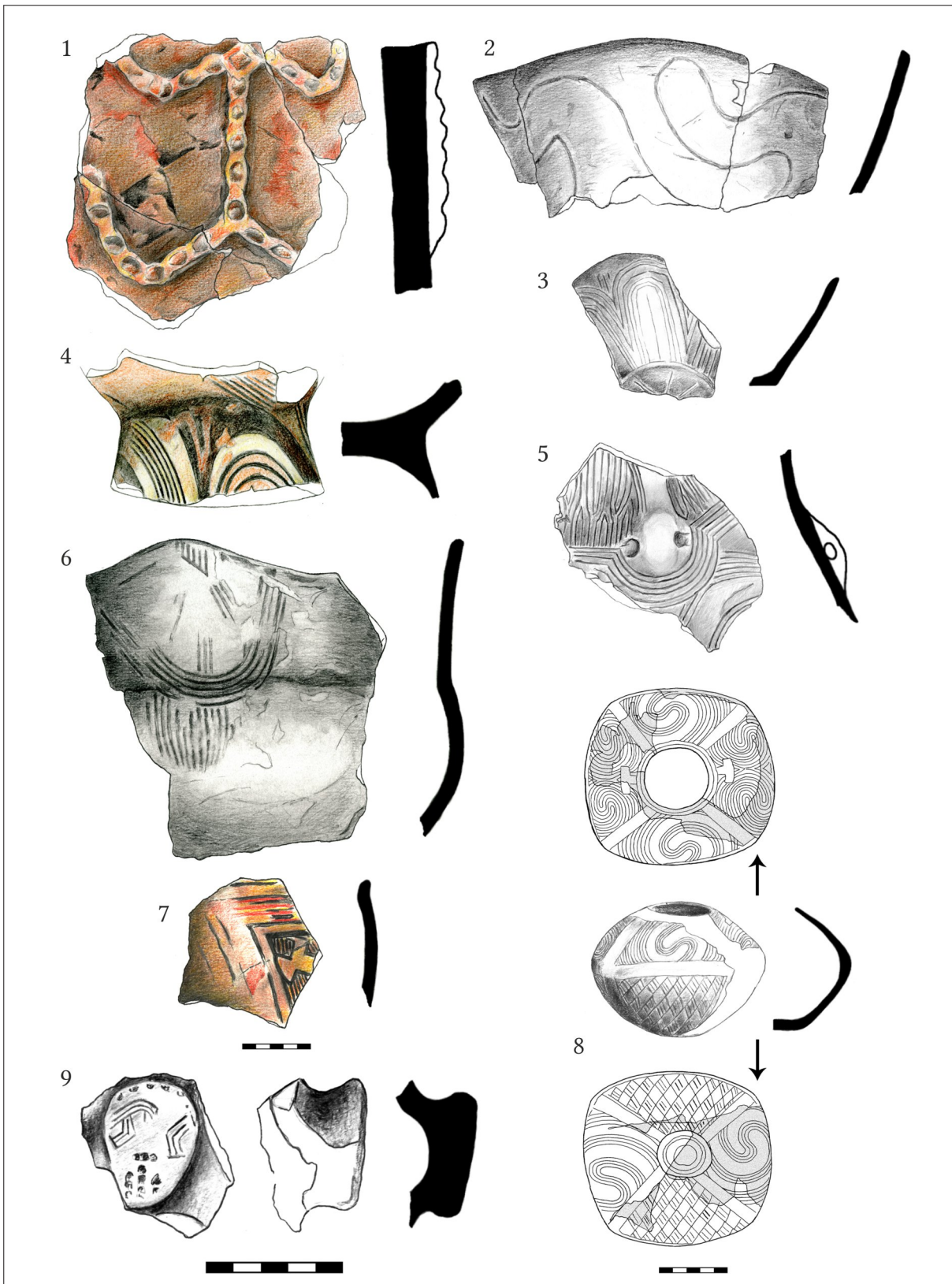


Fig. 5. Decorated vessels from Kántorjánosi-Homoki-dűlő.

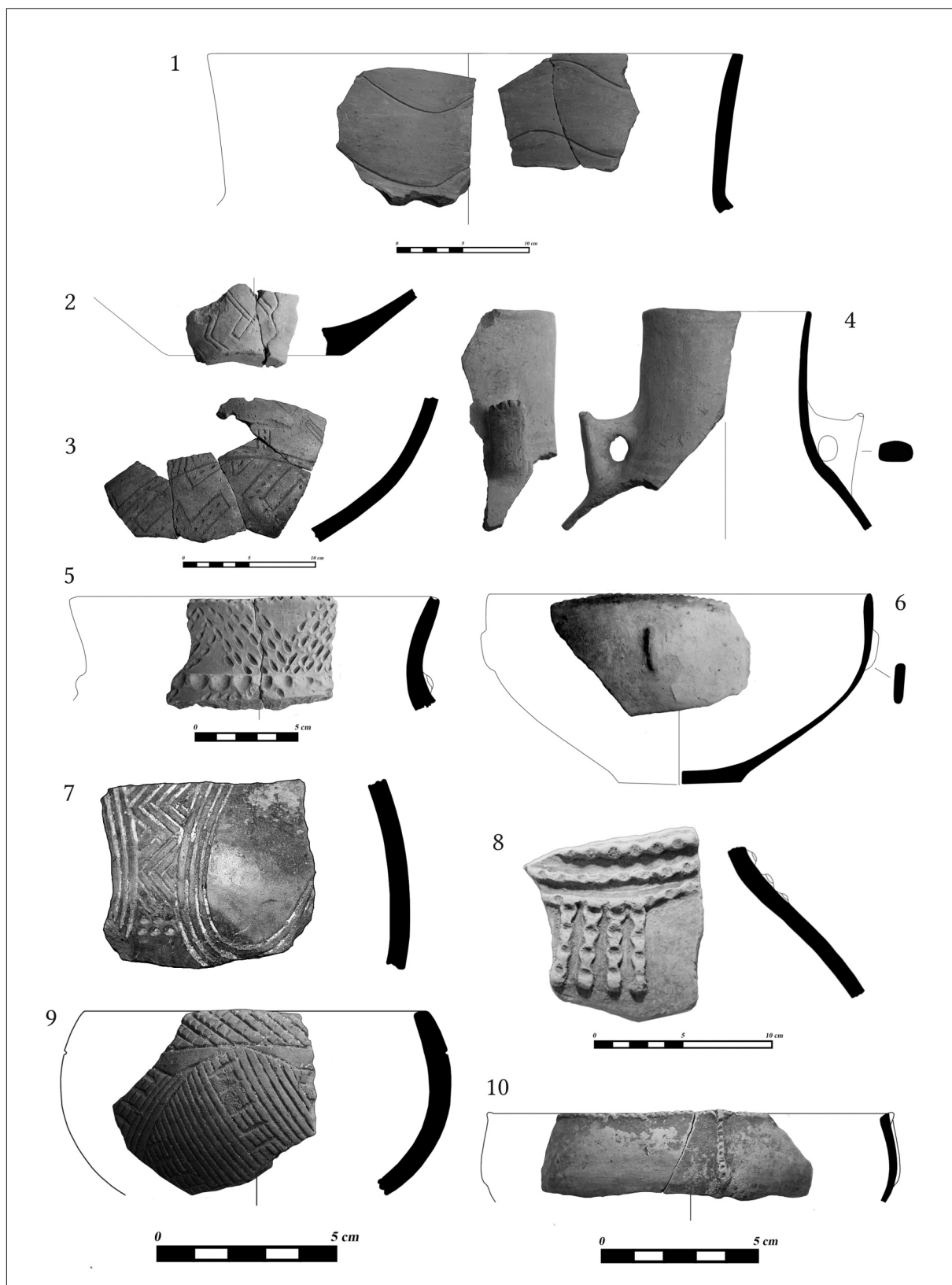


Fig. 6. Decorated vessels from Polgár-Kenderföld.

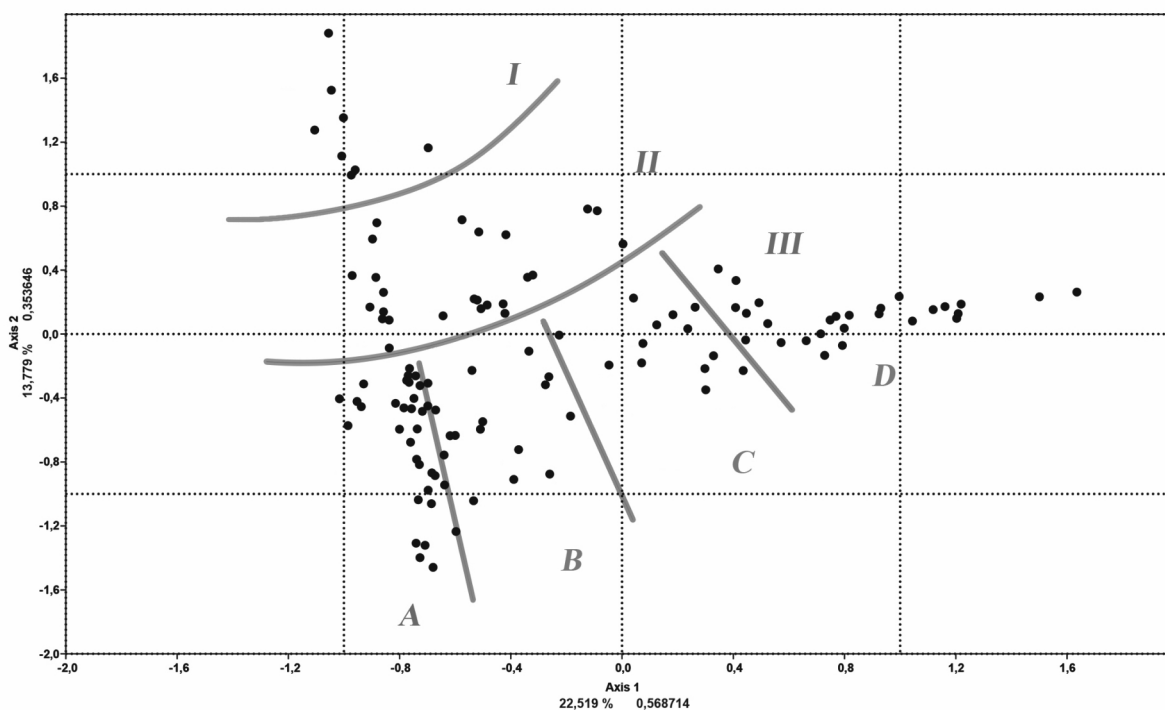


Fig. 7. Correspondence analyses of ceramic material from Polgár-Kenderföld. Identified groups: I – early period (ALPC2), II – middle period (ALPC3), III – late period (ALPC4), A – undecorated fine ceramic, B – incised and painted ceramic (late ALPC, Tiszadob, Esztár), C – incised-punched ceramic (Bükk, Szakálhát), D – undecorated rough ceramic.

In the latest phase (ALPC4) there are clearly different pottery groups, namely the coarse ware of the Szakálhát group (formerly Szilmeg group), the late Bükk, the Tiszadob-Esztár and a nondecorated fine ware (Szakálhát-Bükk) group (Fig. 6). The pottery styles reflect the wide and intensive communication of the community.

In some cases I performed seriation, which was not totally successful in the analysis of settlement finds unlike in building a relative chronology at cemeteries. Comparing the results of the seriation and CA we can draw consequences on the general character of the pottery making. The seriation performed on the whole database was unsuccessful; however, the CA ordered the data along three axes, sorted by sites. The seriation performed on the regions were successful in some cases. The analysis of the Mezőség region remained without results. The results on the Nyírség region is not undoubtedly but acceptable, and the Polgár-Kenderföld site provided strong evidences. The reasons can be seen in the different dynamics of developments, the different grades of traditionality. An important observation is the survival of elements that had been thought as chronological marks earlier.

Stylistic analysis

The third way to explore pottery was the stylistic analysis. I studied the patterns that could be reconstructed. I paid specific attention to the technique, the system of motives and the main motif of the pattern.¹²

12 SEBÓK 2009.

I subsumed the reconstructed patterns of the studied material into a sort of genetic sequence: space-filling patterns (from Early Neolithic tradition), enclosed patterns and motives ordered in pattern. Among the more complicated incised and painted patterns the basis of the division was the structure of pattern and the main motif. I tried to draw the expansion of single motives in time and space concerning the studied material and the data in the literature. A complex picture evolved.

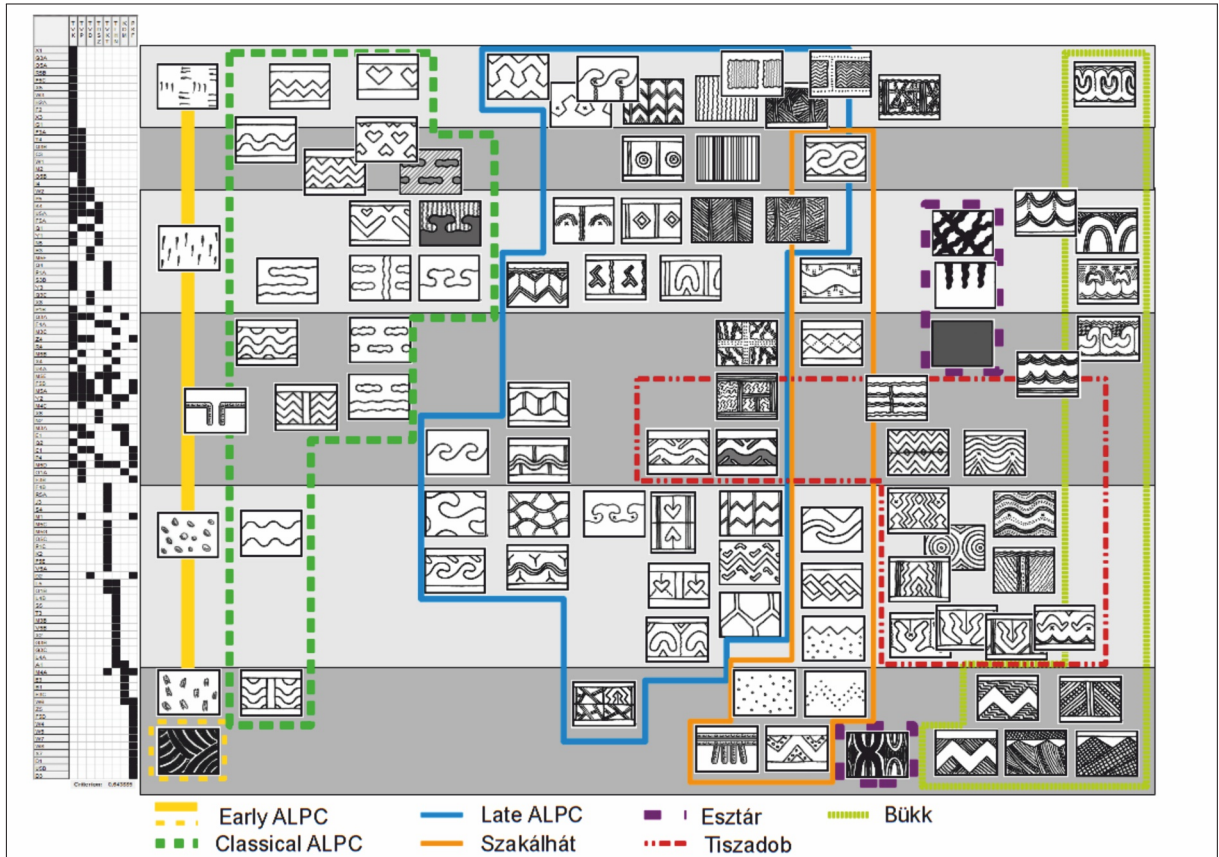


Fig. 8. Reconstructed patterns appeared in analyzed assemblages, constructed in spatial-temporal system. Vertical – spatial order, horizontal – temporal order, stylistic groups emphasized by colour lines.

Reconstructed patterns of the analyzed assemblages were synthesized by seriation (Fig. 8 left side). They were situated on the figure by the seriation and the logical-genetic range. From top to bottom the patterns were arranged by the archaeological sites, from left to right by the chronological sequence. The patterns typical for phases (early, classical, late ALPC) and groups (Szakálhát, Esztár, Tiszadob, Bükk) are aimed to sort if it is possible. According to the logic of seriation the patterns are getting younger from the top left to the bottom right corner. This trend is valid only generally: the row starting with early ALPC patterns consists of short incised lines, and ends with late Bükk patterns. However, the patterns typical for particular styles are scattered much more than expected.

Based on the stylistic analysis it became obvious that terms used as chronological markers (early, classical, late APLC) represent more time span than they would suggest. Instead of phase and group I propose the application of the word 'style'. The adaptation of style gives a wider opportunity in interpretation and utilization. It gives a chance to apply the general trends (that appear in the literature), and does not cause a direct opposition with the exceptions at the

same time. It was particularly important to use the expression 'style' in case of the early ALPC elements because no feature or assemblage had occurred that could be dated to this period.

In the third stage of style analysis I focused on the co-appearance of different styles. A common form is the mixture of styles, and a rare type is the incorporation (hybridization). The contents of assemblages show a dual process in the development of the pottery decoration, its image depends on the local tradition on the one hand, and on the balance of external elements due to regional relations on the other hand. I emphasised two examples of incorporation of styles (*Fig. 9*). The first example is an Esztár style vessel from Polgár-Kenderföld. The black-on-red painted pattern builds up from arches (Bükk stlye) mirrored on the carination. The decorative cell bellow the rim is uncommon in the Esztár style. The second vessel is from Domica cave.¹³ The incised pattern consists of a running spiral and arcades (Szakálhát style). The pattern bellow the rim and the conjoining decorative triangles (Bükk style) are filled with punched stairs motif. The incorporation of pottery features provides an opportunity of a new synthesis, which became relevant in the ALPC 4 period when there might have been a strong relation between the groups/styles of Szakálhát, Bükk and Esztár.

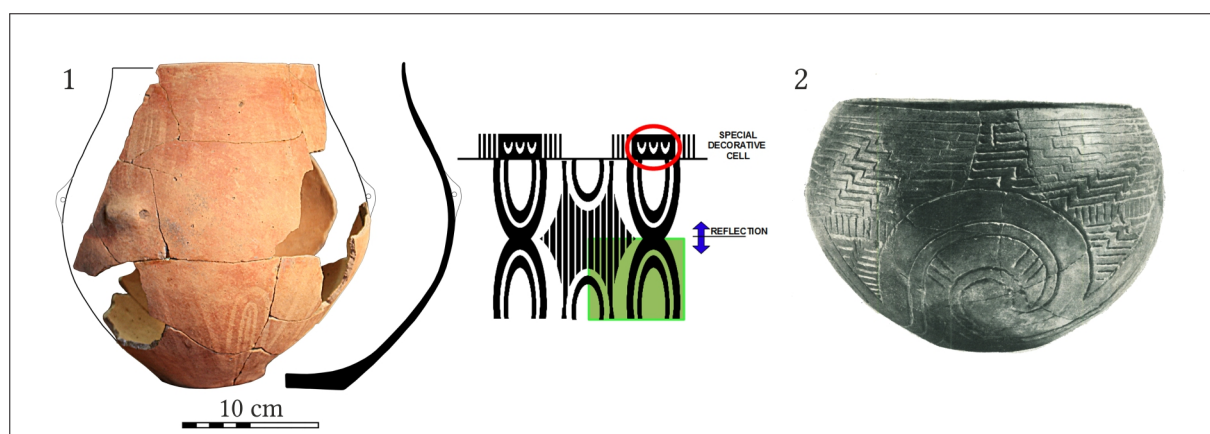


Fig. 9. Esztrár style vessel with Bükk patterns from Polgár-Kenderföld and reconstruotion of pattern (1). Szakálhát-Bükk style vessel from Domica cave (2, after Točik 1970).

The internal dynamics of the development of pottery shows a more complex picture than it had been earlier assumed by the models describing the spatial and chronological development of the culture. The spread and the use of the styles delineated by the regular appearance of certain pottery features cannot be restricted to only one period or cultural group. Its strong emergence in the analysed region is due to its transitional nature. Interaction zones appear in several regions both within the territory of ALPC and in its periphery. Their analysis can add more information on the core areas as well.

The reconstruction of the ceramic inventory

A general tendency that was observed is the constant growth of the used repertoire of decoration, on which I gained information by the theoretical reconstruotion of the ceramic inventory. I tried to analyse the pottery in its original functional context of use. Comparing the hypothetical ceramic inventories I wanted to show the changes in Neolithic pottery.

13 Točik 1970, Taf. XXXI. 1.

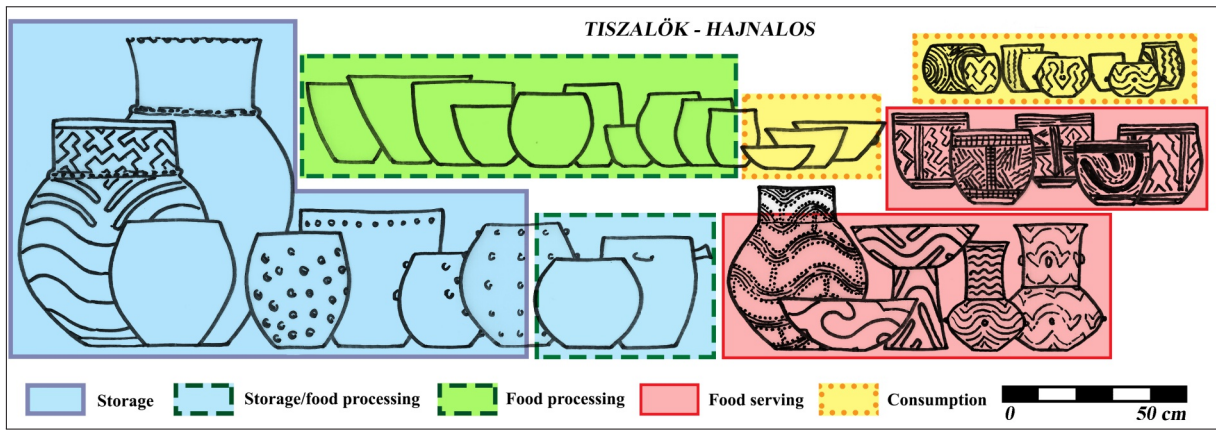


Fig. 10. Tiszalök-Hajnalos – a sample for reconstruction of ceramic inventory. Vessels ordered in functional groups are schematic types, but their form, size and decoration are characteristic for assemblage.

Only a limited number of shape marks were identifiable because of the very fragmented material. The position of the rim, the neck pieces, the angle between the neck and the shoulder, the line of the belly and the pedestal pieces provided information. The proportion of the pot shapes were defined by distinguishing the closed and open types, and the latter was subdivided into necked and pedestalled categories. I continued the reconstruction based on the different shapes and the reconstructable pots. By depicting the decoration of the single artifacts I tried to keep the proportion of the decoration in the whole material. Another basis of the reconstruction is the functional groups (storage, food processing, food serving, and consumption). The definition of the function was based upon the size, quality, decoration and additional formal elements (Fig. 10).

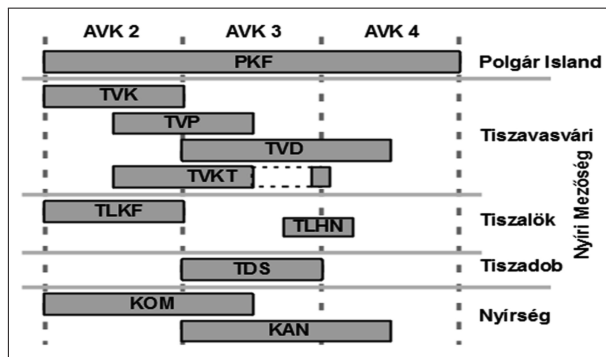


Fig. 11. Relative chronology of settlements based on statistical and stilistical analyses (KAN – Kántorjánosi-Homoki-dűlő, KOM – Komoró-Bodony, PKF – Polgár-Kenderföld, TDS – Tiszadob-Sziget, TLHN – Tiszalök-Hajnalos, TLKF – Tiszalök-Kisfás-tanya, TVD – Tiszavasvári-Deákhalmi-dűlő, TVK – Tiszavasvári-Keresztfal, TVKT – Tiszavasvári-Köztemető, TVP – Tiszavasvári-Paptelekhát).

I tried to show the chronological change of pottery shapes by comparing the reconstructed inventories to each other. For this purpose the relative chronology based on ceramic analyses was used (Fig. 11). Two tendencies can be isolated during the transformation of Middle Neolithic ceramic inventory and pottery: on one hand the expansion of the formal spectrum, and on the other hand the diversification and flourishing of decoration (Fig. 12). Besides the archaical character and the intense permanency of the houseware, there is a clear variability of the dishes and fine ware. The appearance of the new elements on the pots related to food serving and consumption suggests the role of representation at feastings.

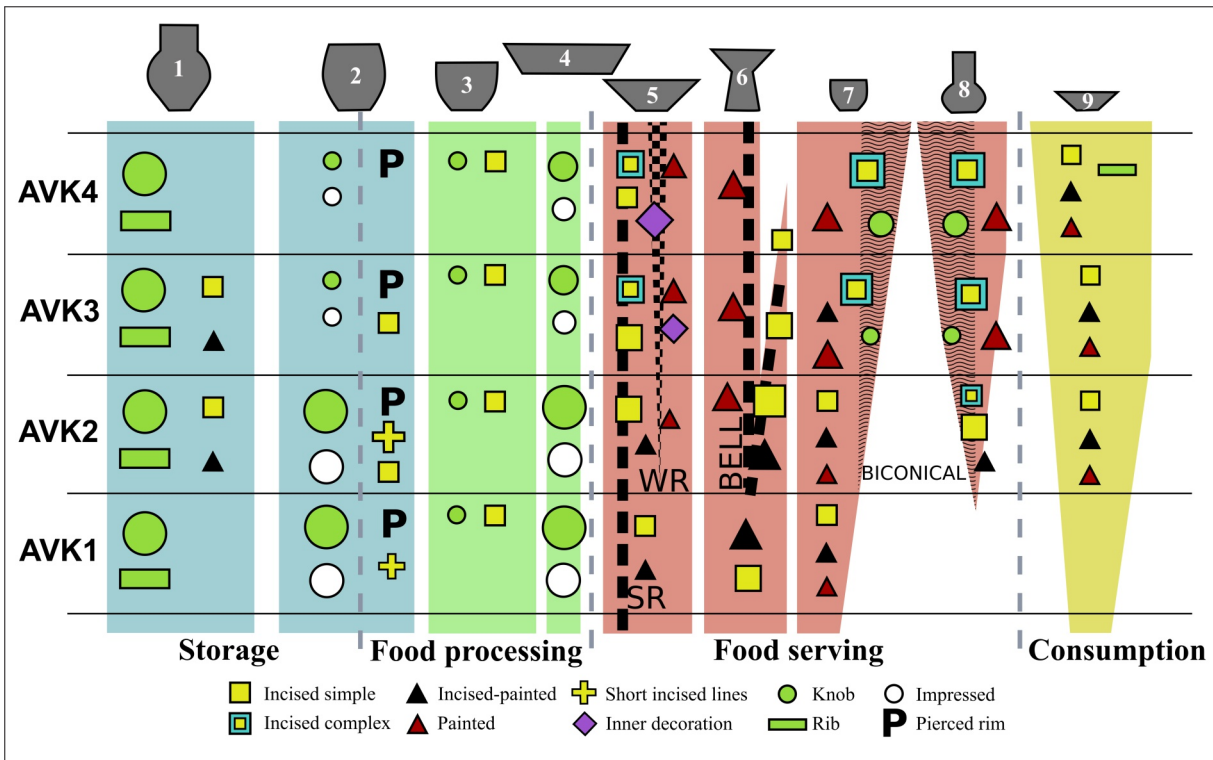


Fig. 12. Formal and decorative changes of ALPC ceramic inventory based on analysed assemblages. Vessel types: 1 – amphora, 2 – pot with inverted rim, 3 – pot, 4 – large flat plate, 5 – bowl, 6 – pedestal bowl, 7 – mug, 8 – jar, 9 – plate. Formal elements: WR – wavy-shaped rim, SR – square-shaped rim, BELL – bell-shaped pedestal, BICONICAL – biconical body.

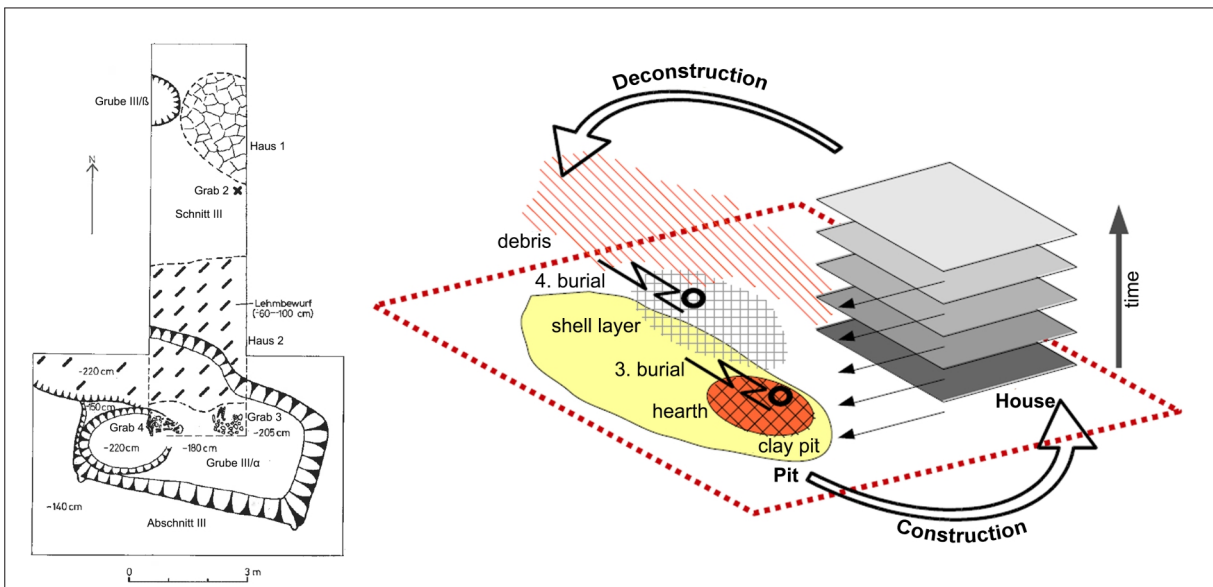


Fig. 13. Settlement structure of Tiszavasvári-Keresztfal. A – plan of excavation (after KALICZ – MAKKAY 1977); B – reconstruction of excavated features.

Analysis of settlement patterns

I tried to make conclusions on settlement patterns by analysing the features of excavated sites. The primary resource was the type and the spatial position of the features. Nevertheless I paid attention to the results of pottery analysis, especially to chronological classification. The analysis performed on every settlement provided different results due to the diverse opportunities.

There was only a limited possibility to analyse certain features at small-scale excavations. In case of Tiszavasvári-Keresztfal the large quantity of finds published by János Makkay and Nándor Kalicz from pit III/α was sufficient.¹⁴ A micro-story could be outlined – from the exploitation of clay to the final refilling with daub – based on the stratification. Its use as a working pit and as a place of burying the deceased show strong relations with the building excavated nearby (Fig. 13).

I attempted to reconstruct households (Tiszavasvári-Paptelekhát, Tiszavasvári-Deákhalmi-dűlő, Tiszadob-Sziget) or occasionally settlement structures (Polgár-Kenderföld, Komoró-Bodony, Kántorjánosi-Homoki-dűlő). I had an opportunity to analyse the household as a unit of settlement based on spatial location of features and ceramic. I tried to identify household units well known from ALPC-LBK settlements including a building, clay and storage pits, graves and other features (for example ovens, wells, working pits). However, only models can be created by data originating from small excavated areas.

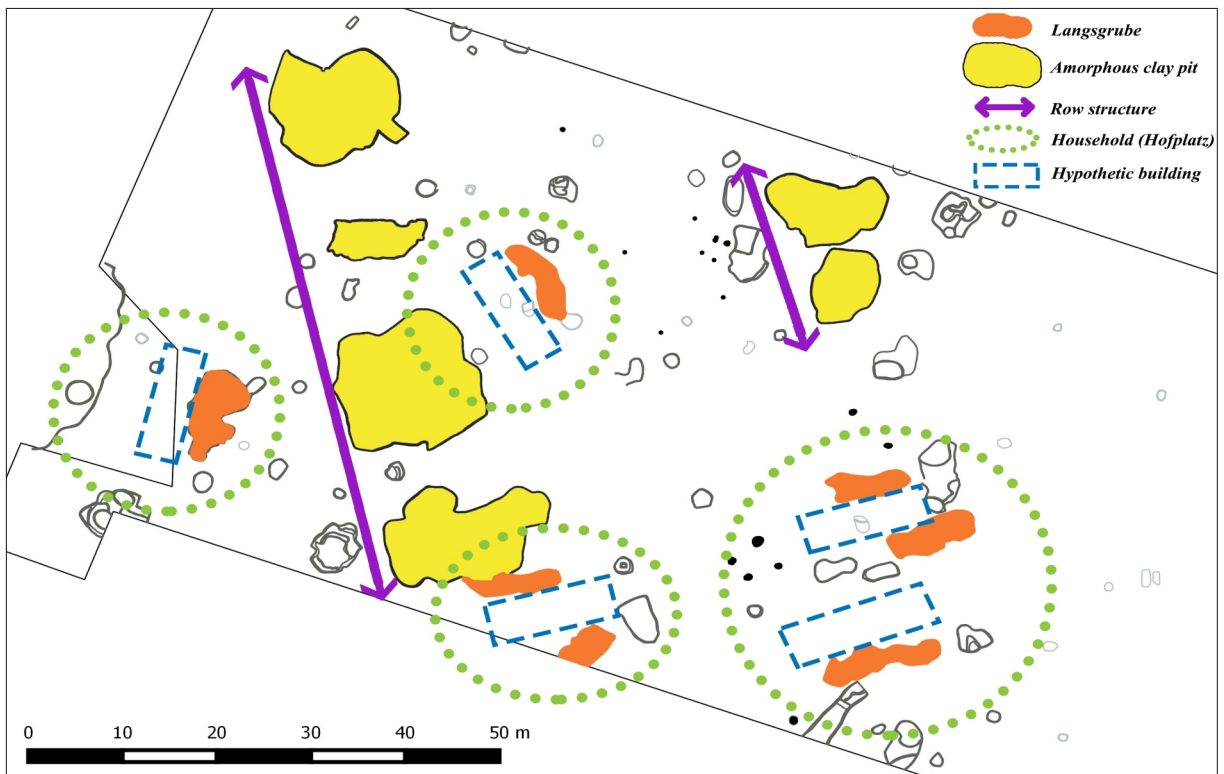


Fig. 14. Chronological changed settlement structure of Komoró-Bodony based on different type of clay pits. Early settlement shows dispersed image and consists of yards and small housegroups. Late settlement shows serial arrangement.

14 KALICZ – MAKKAY 1977.

The comparison of the reconstructed settlement structures gave an opportunity to study the development of households in the Middle Neolithic. Despite the intense similarity a certain degree of change could be traced regarding the commonly used settlement features and activity zones. The wells excavated at Kántorjánosi-Homoki-dűlő and Polgár-Kenderföld were in the focus in the life of these communities. At Kántorjánosi the well was placed in the center of the settlement unit, and in the case of Polgár, similar wells might have belonged to household communities due to their position.¹⁵ Their importance is proven by the ritual depositions. In these cases we can reconstruct a certain range of activities, thus we can presume a ritual that was controlled by the community.

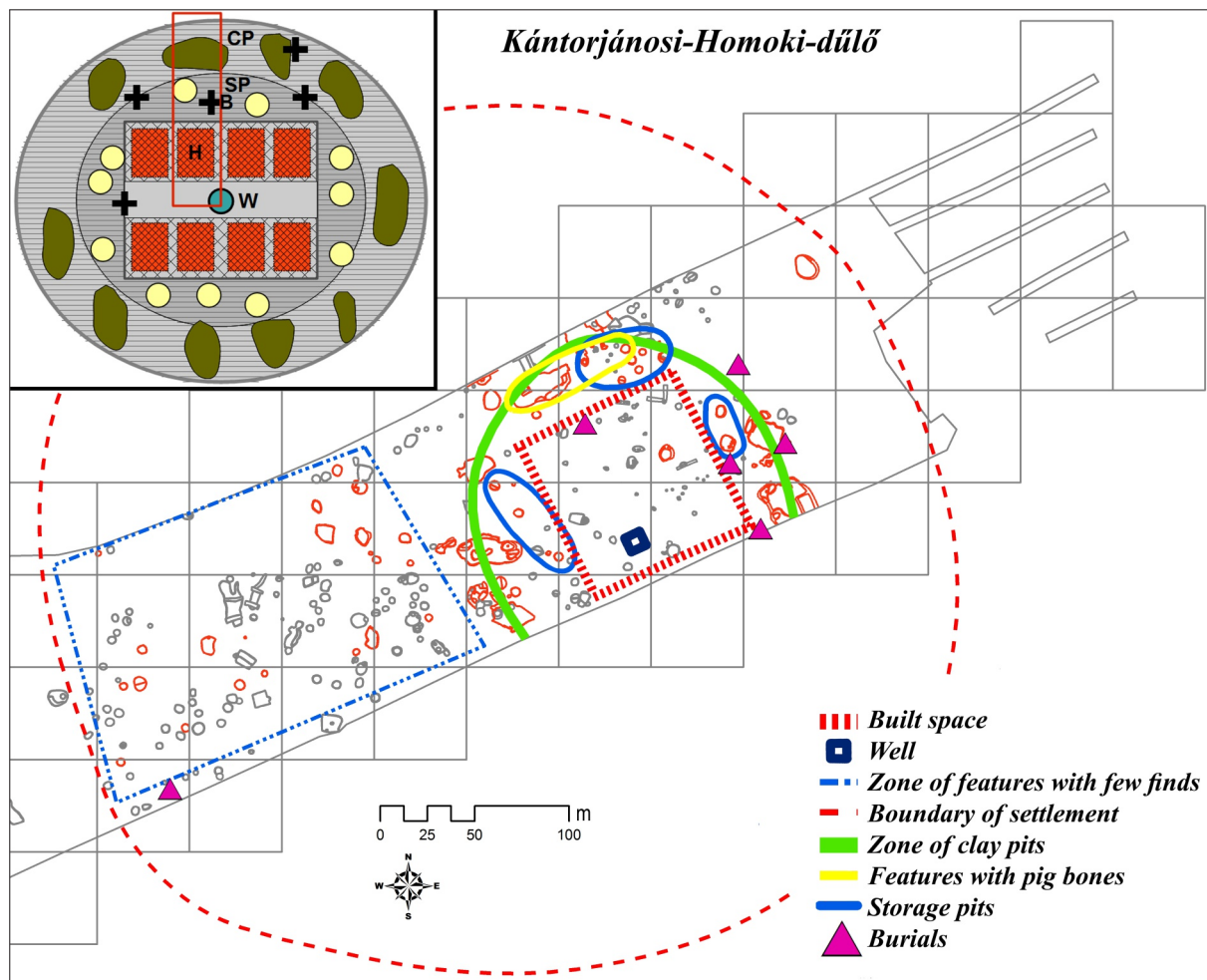


Fig. 15. Central organized settlement structure of Kántorjánosi-Homoki-dűlő. A – model (W – well, H – hypothetical house, B – grave, SP – storage pit, CP – clay pit), B – excavated features.

At Komoró-Bodony no signs have been found which could be reconstructed as buildings. Determining factors of the settlement structure are clay pits of different sizes and shapes. Two types were differentiated: on the one hand the long type (*Langsgrube*), and on the other hand the amorphous type (Fig. 14). Based on the two types, two different settlement systems can be reconstructed. The *Langsgrubes* represent earlier settlement period according to the ceramic; they are located alone, far from each other or in small groups. We can identify

15 HAJDÚ 2007.

a settlement structure consisting of yards and housegroups corresponding with the Central European models (*Hofplatzmodell*, *Hausgruppenstruktur*).¹⁶ The amorphous clay pits showing sequential arrangement represent the late settlement period (*Zeilensiedlung*).¹⁷ The change of settlement structure confirm the diversity emphasized by Eva Lenneis.¹⁸

At Kántorjános-Homoki-dűlő I have identified a concentric settlement system (Fig. 15). In the middle there was a well around which postholes were scattered in a 1500 m² area. The buildings were in this built space,¹⁹ probably in two rows. Storage pits were located around the houses, and clay pits were in a wider zone. The graves - with the exception of two - were found in the eastern periphery of the settlement. The concentric structure is similar to Eva Lenneis' housegroup model,²⁰ its organization shows relationship with the inner structure of Southeast European tells.²¹ Predecessors of the characteristic settlement type of the Late Neolithic had started in the Szakálhát group (ALPC4).²² We have no evidence of settlement continuity in Esztár-Herpály region as it is documented in the Szakálhát-Tisza region. However, we can consider the closed organized settlement structure as the predecessor of tells.

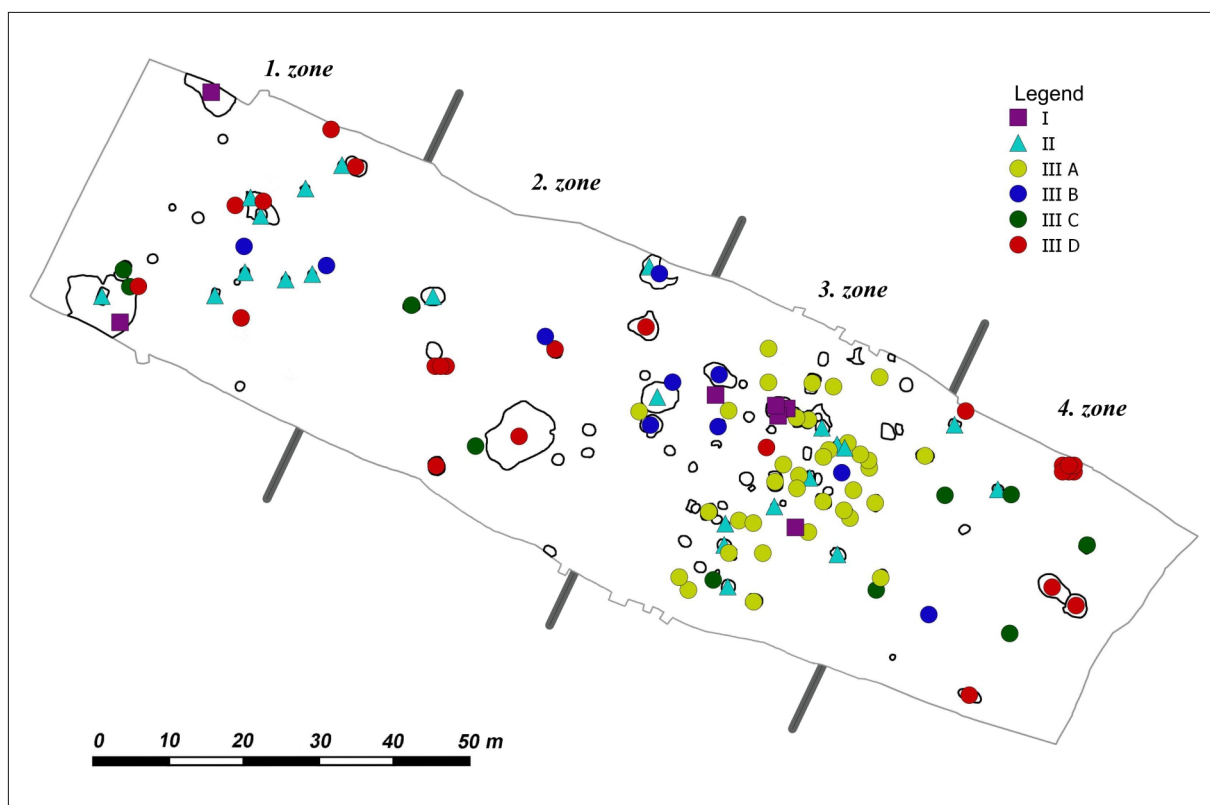


Fig. 16. Spatial distribution of ceramic groups in Polgár-Kenderföld. 1-4 zone: separated by spatial location of features. I-III and A-D: ceramic groups (interpretation see on Fig. 7).

16 BOELICKE 1982, 18–19. Abb. 3; CLASSEN 2009, 97; ZIMMERMANN 2012, 17; LENNEIS 2012, 51.

17 DOMBORÓCZKI 2001; RÜCK 2009, 30–31, fig. 9, tab. 1.

18 LENNEIS 2012, 51; MODDERMANN 1988.

19 CHAPMAN 1989, 34.

20 LENNEIS 2012, 51.

21 CHAPMAN 1989, fig. 8, 13; RACZKY – ANDERS 2008, 41, fig. 2.

22 KOREK 1987, 49–50; RACZKY 1987, 78; RACZKY 1995, 77.

At Polgár-Kenderföld the results of the ceramic analyses had more significance than at other sites. Spatial location of features encircled four zones (*Fig. 16*). Three of them show similar structure, but in zone 3 there are more Middle Neolithic features especially small and mid-size storage pits. We have few data on the inner structure of the households. The chronological sequence of features allows us to analyse the temporal changes of the settlement structure. In the early phase (ALPC2) there were two separated settlement units (zones 1 and 3). In the ALPC3 period units were increasing, but they were still separated. Based on the spatial location of ceramic groups, we can reconstruct three households with different pottery traditions in the late period. In the first and second zone late ALPC, Tiszadob and Esztár style were overrepresented, in the fourth zone the proportion of Szakálhát and Bükk ceramics were higher. Features in the third zone mainly contained undecorated fine and rough ceramic. Based on the spatial location of the features and the „neutral” quality of ceramic we can reconstruct a commonly used storage zone. This phenomenon refers to the appearance of a higher cooperation among the households in the late period (ALPC4).

The settlements analyzed in the dissertation are stations of a general structural development, which means the change of the ALPC yard (*Hofplatz*). The commonly used features and activity zones are evidences of the increasing cooperation of households. The organized, sequential and concentric settlement structure system that appeared in the Middle Neolithic points toward the hierarchical structure of the Late Neolithic.²³

Results of field survey

A systematic survey of 17,9 km² has been performed in four areas, each approximately 50 km² large, related to the excavated sites (*Fig. 17*). The selection of microregions was driven by the territory of excavated sites and regions with different geographical conditions.

The method used in field survey was supported by GIS. Data recording was realized in cells of various sizes in order to make the field work more effective. However, it caused more difficulties later, during the elaboration. Even so there were positive outgrowths regarding the delineation of single periods. We identified 88 Neolithic settlements on 69 sites.

The delineation of settlements at sites of large extension on areas that are exceedingly eligible for settling was problematic. In some exceptional cases the archaeological features could cover more than a square kilometre (149 ha maximum), at the same time more than one Neolithic settlements could be located within this large area. To get rid of this problem we applied a double register, the primary database was the archaeological sites, and secondly the settlements of different periods were separated within. The separation was also necessary in cases where only one settlement per period was located at a site, because the size of the settlement must not coincide with the whole site. (For these observations the changing grid provided several positive results).

The analysis of settlement network

I grouped and evaluated the settlements by size and intensity. In cases when precise dating was possible I took chronological continuity into consideration. The isorhythmic correlation analysis

23 CHAPMAN 1994, 80–81; MAKKAY 1982, 128–129.

performed on the Middle Neolithic sites showed an even distribution between categories. On this basis we can reconstruct a naturally developing network. The hierarchy and differentiation of Late Neolithic settlement system could be shown the same way: the three focuses are the exceptionally large and intensive central, the medium and the small, sporadic satellite settlements.

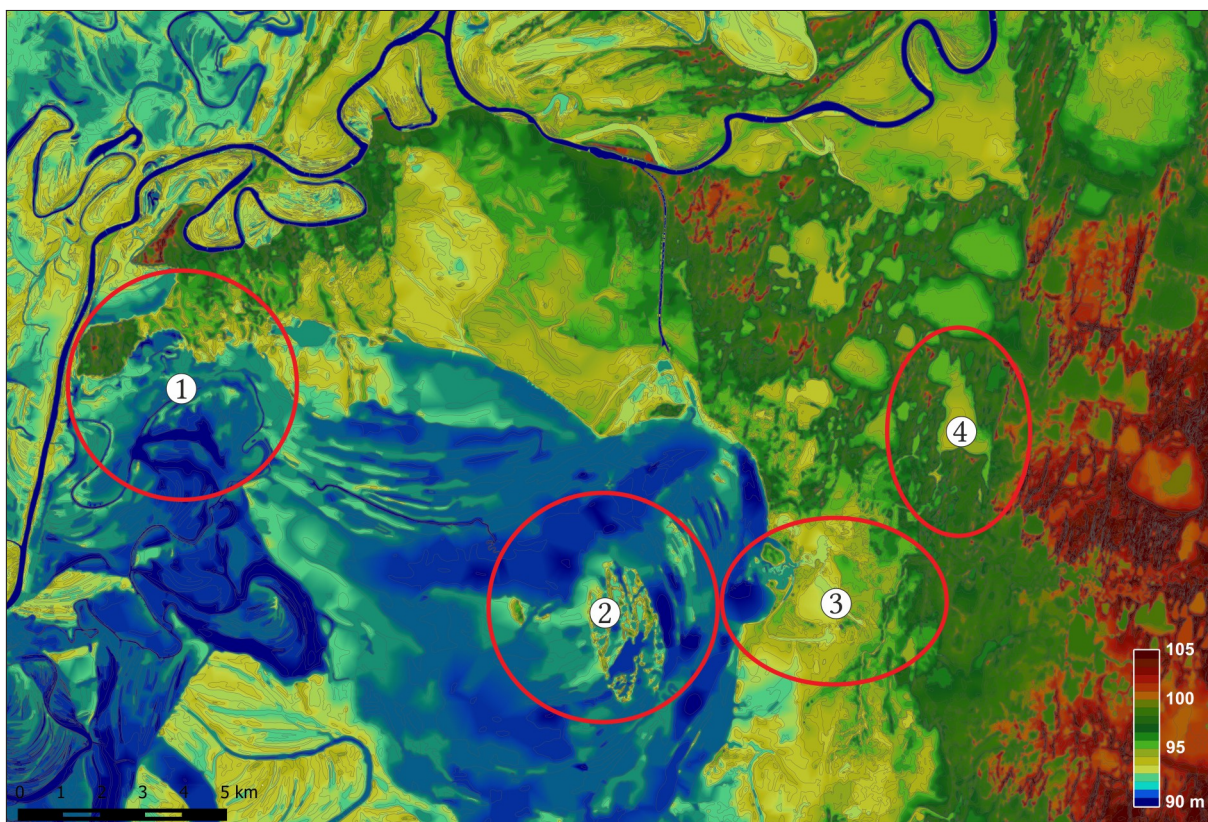


Fig. 17. Research areas of microregional field survey in nyíri Mezőség: 1 – Tiszadob-Tiszagyulaháza region, 2 – Tiszavasvári-Józsefháza region, 3 – Tiszavasvári-Tedej region, 4 – Tiszavasvári-Fejérszik region.

I analysed the changes of the Middle Neolithic settlement system and its relation to the Late Neolithic system using the results of previous fieldwalkings at Polgár Island and at Folyás-Tiszacsege area (Fig. 18A).²⁴ The delineation of settlement focuses (*Siedlungskammer*) was supported by the so-called large central settlements that were in use for a long time. Satellite settlements of various numbers and sizes were established through time around centres that had developed from pioneer settlements.²⁵ Apart from nyíri Mezőség a coherent settlement network evolved along the Tisza River in the early ALPC period (ALPC1). Many of these early settlements have been eliminated. We can interpret three settlements as central places based on their size and temporal continuity (ALPC1-4): Tiszacsege-Cserepes, Polgár-Ferenci-hát, Polgár-Kenderföld. The geographical proximity of the latter two settlements suggests a partly dependent relationship between them or a territorial division within Polgár Island. No similar settlements are known from nyíri Mezőség. A higher concentration of settlement network was detected in the territory of Tiszavasvári-Keresztfal, -Paptelekhát and -Deákalmi-dűlő sites and the territory of Tiszadob-Poklos.

24 FÜZESI 2009., RACZKY – ANDERS 2009. I used data from the PhD dissertation being prepared by Gábor Mesterházy.

25 CHAPMAN 2008; DOMBORÓCZKI 2009; LÜNING 1991.

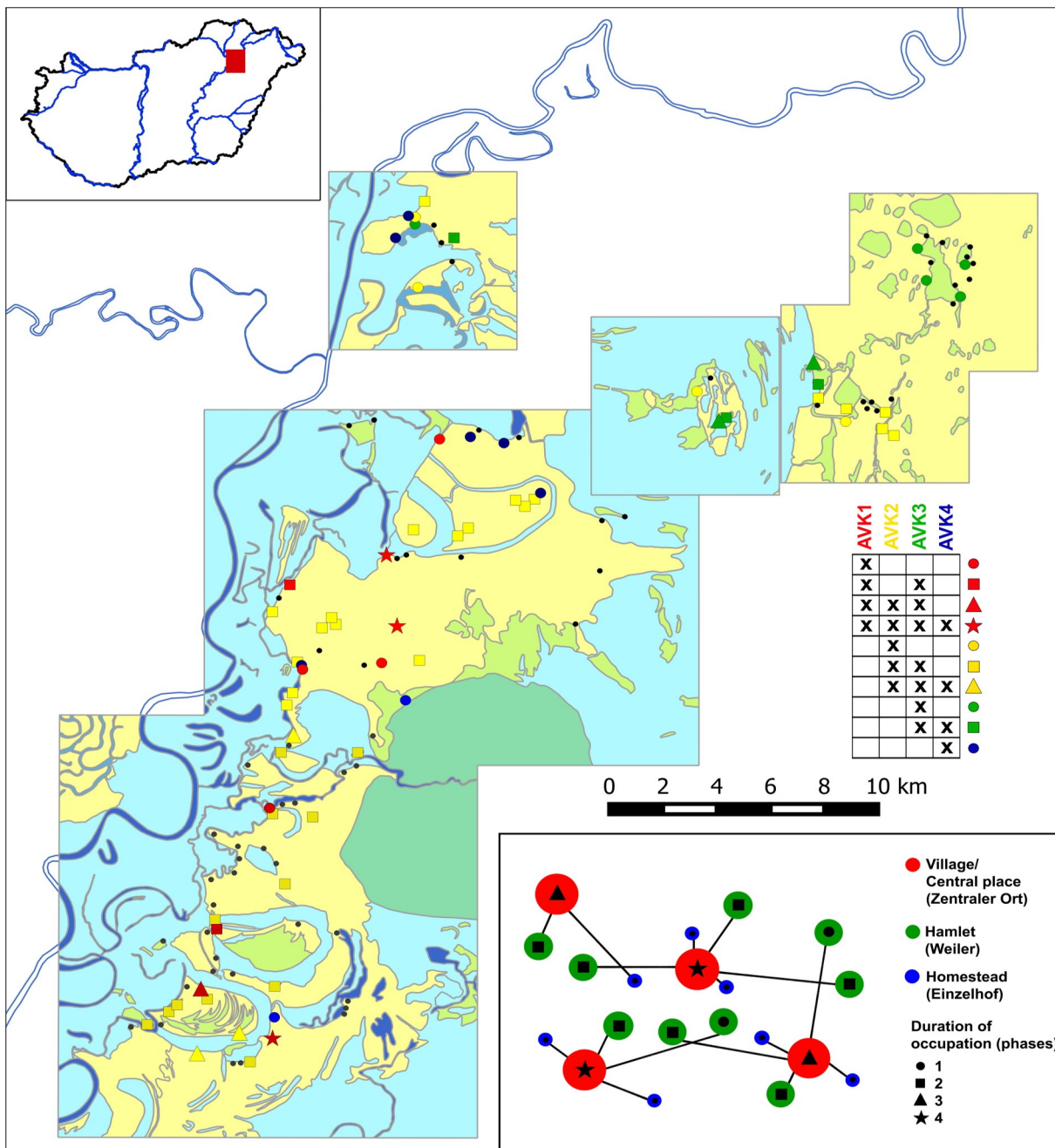


Fig. 18. Analyses of middle neolithic settlement network in territory of nyíri Mezőség and Hortobágy. A – Middle neolithic settlements classified by creation time and temporal continuity (square – research areas: microregions in nyíri Mezőség, Polgár Island, Folyás-Tiszacsege area). B – Model of LPC settlement network (after CLASSEN 2005. Abb. 13).

Central places grew out from pioneer settlements and created satellites of different sizes in their surroundings through time. The model for Middle Neolithic settlement network (Fig. 18B)²⁶ is applicable in general terms, but in details the settlement clusters show great diversity. There are main differences regarding the number of early settlements, the presence of the late period, and the continuity to the Late Neolithic. The created network was the most appropriate in respect of regional properties and communal arrangements.²⁷

26 CLASSEN 2005, Abb. 13; DOMBORÓCZKI 2009.

27 LÜNING 2012, Abb. 2; PAVLŮ 1982, 193, Abb. 1, Tab. 1.

Multilayered changes

At the end of the dissertation I attempted to put the results of analyses to different levels and the recognised phenomenon into a common framework. The comparison of changes on both mental and physical level gave a good opportunity.

During the analyses of pottery and ceramic decoration we can recognize two parallel processes: adherence to tradition and increasing of regional differences. Two processes appeared jointly, but in different proportions and ways. Tradition and respect for ancestors was a Neolithic behavior appearing in different levels of everyday life. Graves within settlements, cult of skulls, custom of burying the dead inside houses, temporal continuity of settlements, and foundation of tells are equally expressions of this behavior. Tradition expressed through pottery making appeared in different quantity at particular sites. A powerful tradition was specific of assemblages of Komoró-Bodony and sites that surrounded Tiszavasvári. At other sites pottery characterized by antecedent periods is limited to the forms and decoration of domestic pottery. At the same time new, mostly extrinsic characteristics appeared on decorative ceramics used for consumption.

Styles evolved in the late ALPC period (Tiszadob, Bükk, Szakálhát, Esztár) created particular decorative techniques, patterns and forms gradually becoming more and more different from earlier tradition. Stylistic analyses and reconstruction of the pottery inventory highlighted that typical forms connected to particular styles had typical functions. The most typical form of the Tiszadob style is a jar with high neck and short biconical body.²⁸ The Bükk style appears in small closed forms (cup).²⁹ Esztár style has typical forms similar to Bükk style with distinctly decorated pedestal bowls.³⁰ Szakálhát style is primarily connected to vessels with inverted rim. Assemblages with special composition were formed in so-called interaction zones. Their composition reflects their spatial location and cultural connections. Particular styles appeared side by side, often complementing each other. Beside the mixture of elements some shards show evidence for the incorporation of styles.

The differentiation of a mental sphere could be detected in changes of pattern structures. Although this process was not linear, we can see a certain transformation based on the comparison of early and late ALPC decoration. Changes in pattern structures coincide with the specialisation of decorative techniques and motives. Unique design elements appeared in an increasingly differentiated space on the body of the vessels. The most characteristic decorative panel of the late ALPC ceramic was a triangle decoration.³¹ The style reflects the inner structure and mental sphere of the creator's community.³² Complex pattern structures appearing in the second half of the Middle Neolithic can be obviously seen as the mental imprint of the social differentiation.

Household as socio-economic unit did not change in structure during the period. However, isolated household units gradually transformed into cooperative communities. Commonly used features (clay pits, wells) and activity zones are the evidences of a slow process. The appearance

28 PIATNIČKOVÁ 2015, 169–170.

29 LICHARDUS 1974, Abb. 21.

30 GOLDMAN – SZÉNÁSZKY 1994, 226–227.

31 LICHARDUS 1974, Abb. 4–6; CSENGERI 2001, V. tab. a.

32 ARNOLD 2010.

of these phenomena in the physical sphere derives from the mental sphere completed with community rites, for example the deposition rite connected to wells in Polgár-Kenderföld.

Transformations of the settlement network are the most detectable changes in the Middle Neolithic. Stages of development model made by László Domboróczki are:

1. creation of pioneer settlements
2. increasing in size
3. creation of surrounding satellite sites³³

The three type of settlements identified in LPC settlements (single household, hamlet, village/central place)³⁴ can be hardly identified by data gained through field survey. Analyses of size and intensity of settlements show an undifferentiated, naturally developed network. Position in network (central or dependent) was defined jointly by temporal continuity and size, as Domboróczki's model suggests. According to our data a dynamically changing settlement network can be imagined, the gradual transformation of which led to a differentiated Late Neolithic settlement network.

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33 DOMBORÓCZKI 2009.

34 CLASSEN 2005.

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