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**The Middle Neolithic settlement structure of the site at
Balatonszárszó–Kis-erdei-dűlő in a Central European context**

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I. GOALS OF THE DISSERTATION

The appearance of the Central European *Linearbandkeramik* culture (Central European LBK) is virtually synonymous with the Neolithisation of Central Europe. The western half of the Carpathian Basin played a prominent role in this process because the cradle of the LBK can be sought in this region. Although the culture's Hungarian distribution is an integral part of the Central European LBK settlement territory, Hungarian research traditionally used – and often still uses – the label Transdanubian Linear Pottery culture (TLP) in publications presenting the culture's sites and finds.

Several hundred LBK sites were known in Transdanubia and in the adjacent areas on the left Danube bank by the late 1980s. Our knowledge of the culture's settlements and their layout was predominantly based on finds collected during field surveys and on the assemblages brought to light during small-scale excavations. As a result, there was little in the way of evidence from Hungary for the presence of the timber-framed buildings of the type reconstructed from the several thousand house plans uncovered in other regions of the LBK distribution, and virtually nothing was known about the layout of the LBK settlements in Hungary.

The large-scale excavations conducted during the two decades between 1990 and 2010 have furnished invaluable new data that have fundamentally altered our picture of LBK settlements and their architecture. One of the dissertation's goals was a critical review of the evidence on LBK architecture based on the currently available publications.

Several technical terms used in the German, English and French archaeological literature are not employed by Hungarian researchers or are used in a slightly different sense than in the original. The terminology used in Hungarian LBK studies thus had to be thoroughly revised and a special nomenclature had to be created that, on the one hand, would conform to the technical terms used in international studies for characterising

the LBK and, on the other, would be suitable for a concise description of the LBK phenomena and processes in Hungary.

The perhaps most important goal of the dissertation was the detailed analysis of the architecture and layout of the Neolithic settlement investigated by the author as part of his fieldwork. While writing the dissertation, it became clear that the conclusions drawn from the assessment of the Balatonszárszó settlement would have to be complemented by the data from other, yet unpublished sites. The detailed analysis of LBK architecture and settlement structure in the culture's Hungarian distribution, and in the areas south of Lake Balaton in particular, was based on this body of evidence. In addition to describing the characteristic traits noted in Hungary and in the westerly regions of the Carpathian Basin, I also sought an answer to the question of to what extent the phenomena and customs identified in this region conformed to or diverged from the observations made in other areas of the LBK distribution. My ultimate reason for writing this dissertation was to offer a new perspective on the Hungarian LBK in the context of the Central European LBK, as well as on its cultural connections.

II. RESEARCH METHODS AND SOURCE MATERIAL

During my work, I could hardly neglect the fact that LBK studies in other Central European countries can look back on over one hundred years of research and, therefore, the modern analysis of LBK settlements and their buildings has preceded Hungarian studies in this field by many decades. The main reason for this is that the remarkable discoveries made during the excavation of LBK settlements across Europe have led to the creation of far more sophisticated interpretative frameworks than permitted by the archaeological investigations conducted in Hungary.

I thus had recourse to the wide array of the findings of European research. The elaborate architectural typology that is continuously refined as new discoveries are

made and the reconstructions inspired by observations made in the field are the perhaps most spectacular advances in this respect. I adopted a critical approach when using the models describing the development of LBK settlements constructed by successive generations of scholars. Knowing that these models integrated a whole range of complex analytical procedures, I examined each element separately.

As mentioned in the above, one abundant category of source material was the body information published in the archaeological literature, despite the fact that the archaeological record for Hungary was often too vague and too general to be used in the planned analysis. In this phase of my analysis, I could best rely on the publications reporting sites in northern Transdanubia and south-western Slovakia. The latter region is of particular significance because the northernmost settlements in the LBK distribution of the Carpathian Basin were found here.

The archaeological features uncovered at the Balatonszárszó–Kis-erdei-dűlő site were examined from many different perspectives. I made good use of the preliminary assessment of the ceramic finds. The typological analysis, seriation and correspondence analysis of the pottery provided the foundation on which the chronological sequence of the site's occupation is based. The archaeological features and assemblages of other contemporaneous sites were examined in order to gain comparative material for the evaluation of the Balatonszárszó settlement. The LBK settlement at Balatonszemes–Szemesi-berek on the southern shore of Lake Balaton provided valuable new insights, as did the architecture and layout of the settlement at Tolna–Mözs in southern Transdanubia. In addition to these two settlement sites lying south of Lake Balaton, my analysis also included a few smaller settlement sections such as the one investigated at Kóny–Proletár-dűlő II in the Little Hungarian Plain.

III. THE NEOLITHIC SETTLEMENTS AT BALATONSZÁRSZÓ–KIS-ERDEI-DŰLŐ AND TOLNA–MÖZS

Balatonszárszó–Kis-erdei-dűlő

An extensive settlement of the Central European LBK was investigated on the outskirts of Balatonszárszó between 2000 and 2006. The excavations were conducted by a team of experts specialising in the Neolithic, led by Károly Belényesy and the present author. The remains of the prehistoric settlement covered some ten hectares on a plateau open toward the north.

The most sensational result of the investigations conducted at this site was the discovery of the culture's timber-framed buildings whose remains had survived in an expressly good state of preservation owing to various fortunate circumstances. We uncovered forty-eight house plans (Category A) during the excavations. The location of an additional eleven house plans (Category B) could subsequently be determined from various features. The surviving architectural elements included post-holes, the three longitudinal rows of post-holes inside the building and, occasionally, the post-holes of the upright timbers reinforcing the long walls. The length of the buildings ranged between 8.6 m and 25 m, their width between 6 m and 7.5 m, reflecting a much smaller variation. The long walls were flanked by loam pits (*Längsgrube*, longpits) running parallel to the walls.

All the major types of the Central European LBK houses with one, two or three rooms could be identified among the excavated buildings. The proportion of single-roomed houses was surprisingly high compared to other regions in the culture's distribution; these accounted for over one-half of the buildings that could be assigned to one or another category. We also found evidence for an architectural feature that has only recently been identified on other LBK sites in Central Europe, namely the potential

for enlarging existing buildings subsequently, which has been invoked as an explanation for the emerge of multi-roomed houses. At the same time, other structural elements such as bedding trenches and the cross-rows of double post-holes in the south-eastern part of the building, interpreted as supporting a raised floor, were entirely lacking from the Neolithic architecture at Balatonszárszó, even though these elements are typical for LBK houses in other regions.

Forty-three burials were discovered among the houses. The graves included male, female and child burials alike. The graves all contained inhumation burials. The deceased were usually interred in a crouched position in the upper section of the settlement's pits. Some burials were contemporaneous with the houses among which they lay, while others represented interments in a settlement section that was no longer occupied at the time of the burial. Several differences could be noted between the burials of the early and late LBK period. With the exception of one grave, the early LBK burials were all crouched on the left side with an east to west orientation. In contrast, a greater diversity can be noted among the late LBK burials, regarding both body position and orientation. While the dominance of interment on the left side continued into the late LBK period, there was a greater diversity in orientation, with the deceased aligned in one of three main directions (north to south, north-east to south-west and south to north). Grave goods were recovered from seven graves, all of which were male or child burials.

The settlement was founded during the Bicske-Bíňa/Bény phase of the early LBK period. It was occupied during the succeeding Milanovce/Nyitranagyker phase and its occupation was continuous during the ensuing late LBK period. The Balatonszárszó settlement lies in an area, which during the later phases of the late LBK was a transitional zone between the Zseliz distribution in the north and the region characterised by pottery in the Keszthely style in the south, as shown by presence of both ceramic styles among the finds recovered from the period's archaeological

features. The available radiocarbon dates indicate that the settlement can be roughly dated between 5350–5000/4950 cal BC.

The first settlement at Balatonszárszó, founded during the early LBK period, was a small hamlet made up of contemporaneous buildings erected at considerable distances from one another. This small hamlet was transformed radically at the onset of the late LBK period, when it grew into a large, more densely built up settlement with the houses standing much closer to one another. The buildings of the late LBK period in the southern part of the excavated area were often adjacent to one another.

Five phases could be distinguished in the settlement's occupation based on the typological assessment of the ceramic assemblage. A gradual shift in the settlement's occupation could be demonstrated on the macro level. During the early LBK period (Phases 1 and 2), occupation gradually shifted southward in the hamlet established in the north-eastern part of the excavated area. The earliest houses of the late LBK period (Phase 3, early Keszthely) were erected in the eastern part of the southern settlement section, and the site's occupation extended across the entire plateau by Phase 4 (Keszthely). Only six buildings could be assigned to Phase 5 (Keszthely-Zseliz), and it seems likely that the other buildings of this occupation phase lay beyond the investigated area.

The meso level is represented by the house clusters made up of two to six buildings. Because the existence of farmsteads and wards (here used in the same sense as for the LBK settlements in the Rhine region) could not be demonstrated at Balatonszárszó, I decided to use the label "house clusters" in order to preserve the flexibility of the proposed settlement history models and to eliminate any bias. The structures belonging to one cluster were usually aligned in the same direction along an imaginary, roughly east to west line. The buildings in one cluster could generally be assigned to the same occupation phase; only in rare instances did a house plan at the edge of the cluster date to the successive phase.

The assessment of the ceramic finds is still in progress and thus the settlement history model proposed here is tentative at best and does not incorporate finer details. It is nonetheless clear that the lifecycle of individual clusters differs substantially from the ward model of the Rhine region. Curiously, many similarities can be noted with the model set up for the Schwanfeld settlement dating from the early LBK period, according to which new buildings were erected beside already existing ones and were aligned in the same direction. Several alternative techniques were employed during the enlargement: some house clusters grew laterally, while in others, the later constructions were erected on the two sides of the earliest building.

One important point that needs to be emphasized is that even though the archaeological record supports the contention that each adult generation raised new houses roughly every twenty-five years, there is nothing to indicate that each and every house built a generation earlier had been abandoned. Evidence for the longer use-life of the houses has been furnished by archaeological experiments that have shown that the massive timber structures could have survived for as long as one hundred years. A use-life of fifty years thus seems a reasonable and acceptable estimate, and it also enables the incorporation of the subsequent life of those households into the model from which young adults had moved out into new buildings. Another element of the ward model was also rejected, namely that only one building in each house cluster was occupied at any one time, although this does not necessarily imply the emergence of a settlement made up of house rows. The simultaneous existence of households using conservative and more “new-fangled” utilitarian artefacts also seems likely and thus the buildings that are assigned to successive occupation phases on the strength of the ceramic typology of their finds may well have been occupied at the same time, especially during the transition from one phase to the next.

Tolna–Mözs

The investigated section of the Neolithic settlement at Tolna–Mözs in the Tolna Sárköz region fell into the planned track of the M6 Motorway, with the excavated features scattered across a 700 m by 60–70 m large area. The remains of forty-seven buildings were identified in the three excavated locations. The archaeological features indicating the presence of former buildings survived in a much poorer condition than at Balatonszárszó. Complete rows of post-holes were but rarely preserved or not at all in many cases. It could nonetheless be established that the settlement's buildings were the typical timber-framed houses flanked by longpits of the type current across the entire Central European LBK distribution from the very start of the site's occupation.

The three settlement sections were occupied successively, although some overlaps could be noted in their use-life. The ceramic finds indicated that the southern settlement section was the earliest. In addition to pottery recalling the late phase of the Starčevo culture, the finds reflected the obvious influence of the Vinča culture, while vessels bearing classical incised patterns played a subordinate role. The southern settlement section represented an earlier phase within the early LBK period, while the middle settlement section yielded a homogenous assemblage from the early LBK period. The northern settlement section could be assigned to the latest occupation horizon in the investigated area, whose buildings illustrated the transition between the early and the late LBK, roughly corresponding to Phases 1–3 at Balatonszárszó.

Similarly to the late LBK settlement section at Balatonszárszó, the buildings formed house clusters with the house plans arranged into rows from the site's earliest occupation onward. A more accurate occupation sequence could be reconstructed for the northern settlement section where the growth of the house clusters followed the pattern noted at Balatonszárszó. Each house cluster was generally made up of buildings

from the same phase; however, if a cluster included buildings from successive phases, the buildings of the later phase were generally located at the edge of the house cluster.

IV. THE CENTRAL EUROPEAN LBK DISTRIBUTION IN THE WESTERLY REGIONS OF THE CARPATHIAN BASIN

The westerly regions of Hungary, and the areas marking the northern fringes of the Starčevo distribution in particular, played a crucial role in the formative LBK period and in the culture's emergence. Southern Transdanubia played an equally important part during the Bicske-Bíňa/Bény phase of the early LBK period because this region demonstrably received cultural impacts from the Vinča culture. These impacts were rapidly diffused to Central Europe along the Danube Valley and are generally regarded as one of the reasons for the culture's rapid spread. In the late LBK period, however, the region south of Lake Balaton became a periphery, at least from a Central European perspective.

At the time of writing, the more or less securely identifiable remains of post-framed LBK houses had been discovered on fifty sites. The number of currently known house plans is around three hundred. The genuine question is not whether the LBK communities in Hungary had lived in timber-framed houses, but whether the structural elements of the LBK houses uncovered in Hungary conform to the architectural traditions in other regions of the Central European LBK distribution or whether they differ from the LBK norms documented elsewhere. Good comparative material is available from the late LBK period. It would appear that the architectural features of the LBK buildings known from south-western Slovakia and northern Transdanubia are wholly identical with the architectural traditions in the easterly regions of Central Europe. In contrast, several traditional elements are either entirely lacking or extremely infrequent in the region south of Lake Balaton during the late LBK period.

The layout of the LBK settlements in northern and southern Transdanubia differs substantially from the ward model based on evidence from sites in the Rhine region, usually regarded as the general LBK settlement type made up of houses often built partially or wholly over earlier structures. At the same time, the Transdanubian settlements share numerous similarities with early LBK sites in Germany, characterised by identically aligned houses spaced well apart and arranged into rows. This layout can be regarded as a legacy of the Starčevo and Körös cultures marking the Early Neolithic in southern Hungary, which was also widespread during the early LBK across the culture's entire distribution. Substantial changes in the greater part of Central Europe, and thus in south-western Slovakia as well, can be noted from the Flomborn period onward. However, the currently known Hungarian settlements preserved the earlier pattern of settlement layout until the very end of the Central European LBK sequence.

South-western Slovakia is bound to the more westerly LBK regions by many strands, one of these being the presence of separate, formal cemeteries. In Hungary, only settlement burials are known at present.

One important finding is that the various elements of the material culture and practices analysed here all have strong links with traditions of the earliest Neolithic communities of the Carpathian Basin. While regional traditions and customs can undoubtedly be assumed across the LBK distribution in the Carpathian Basin, it would appear that the generally accepted practices were not consistently applied even within a particular region. Each community could freely chose the practices best suited to its needs from the rich inventory of shared traditions and customs.

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