POLGÁR-BOSNYÁKDOMB, A LATE NEOLITHIC TELL-LIKE SETTLEMENT ON POLGÁR ISLAND (NE HUNGARY). PRELIMINARY RESULTS OF THE INVESTIGATIONS

PÁL RACZKY, ALEXANDRA ANDERS

Abstract. In this study, we summarise the preliminary results of thirty years of investigations at the Polgár-Bosnyákdomb site. The significance of the site located on the one-time bank of the Tisza River is that it lies no more than 5 km away from the well-known Polgár-Csőszhalom settlement complex. One of our goals was to investigate the relation between the settlements in the Polgár Island micro-region and to identify the similarities and differences between them. It is quite obvious that with its estimated 70 hectares large extent, Polgár-Csőszhalom was a dominant settlement complex in this landscape during the earlier fifth millennium, while the Bosnyákdomb settlement, represented an entirely different scale with its 8 hectares and had a different role during this period. The AMS dates provide convincing evidence that the two settlements had been occupied simultaneously during one period of their lives. Despite their spatial proximity and chronological contemporaneity, the two settlements had a differing structural layout. Although both had a prominent stratified settlement mound that was separated from the single-layer settlement part by a ditch, the system of the ditches, their structure and, presumably, their social use differed substantially. This would suggest that each community constructed its settlement and architectural structures according to different spatial rules in the different locations of Polgár Island. Despite the spatial differences, we could identify traces of similar community events on the settlement mounds at Bosnyákdomb and Csőszhalom such as the recurring practice of house burning. Despite the smaller excavated areas, we identified wholly different mortuary practices at Bosnyákdomb, diverging fundamentally from the funerary rites practiced at Csőszhalom. The bones of the deceased were secondarily deposited into the ditch of the central mound. The various cultural features discussed in the above indicate that the community responses of the groups settling and living in the Polgár area during the Late Neolithic to the environmental challenges of the land around them were embodied by a set of distinctive cultural behaviours. Nevertheless, certain elements in the colourful diversity of material features and their different levels outline the structure of a micro-regional network with Csőszhalom in its centre in the Upper Tisza region.

Keywords: Neolithic, tell-like and horizontal settlement complex, enclosure system, ^14^C dating, Polgár Island, Great Hungarian Plain

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INTRODUCTION

When we began the new investigations at Polgár-Csőszhalom in 1989, one particular question we sought to answer was the European cultural context and socio-economic role of the Csőszhalom settlement mound, the northernmost representative of the Balkanic Neolithic tells in the Tisza region (Bognár-Kutzián 1966: 268–270; Makkay 1982: 64; Kalicz, Raczky 1987a: 17; Meier-Arendt 1991: 82–83). The tell and the palisaded enclosure embodied a synthesis of the Neolithic community structures of Central Europe and South-East Europe in the Upper Tisza region (Raczky et al. 1994). The salvage excavations preceding the construction of the M3 Motorway provided incontestable evidence that there was an extensive horizontal settlement around the Csőszhalom tell encircled by an enclosure, whose joint area was estimated as 28 hectares according to the preliminary surveys (Raczky et al. 1997). A roughly 3.5 hectares large area and some 79–80 houses of the horizontal settlement were excavated between 1995 and 2004. It became clear that the tell was not used as a residential area by the Csőszhalom community in the strict sense of the word, but as a setting for community and ritual activities, suggesting a duality in the Late Neolithic settlement’s spatiality as well as a colourful diversity in one-time interactions, a blend of horizontal and vertical relations on several levels (Raczky et al. 1997).

The widening research perspective led to inquiries on the broader and narrower palaeoenvironmental embeddedness in a micro-regional context. In this respect, we followed Andrew Sherratt’s lead, who in his archaeological studies on the Dévaványa area introduced a refreshingly new approach in Hungary (Sherratt 1982). A similar European scale characterised John Chapman’s research agenda on settlement history (Chapman 1989). The interdisciplinary surveys in the Gyomaendrőd micro-region on the Hungarian Plain conducted by the research team of the Archaeological Institute of the Hungarian Academy of Sciences represented a similar, by now home-grown research model (Bökényi 1992). The first comprehensive overview on “prehistoric man and his environment” regarding the Polgár-Csőszhalom site was prepared in this spirit (Sümegi et al. in Raczky et al. 2002: 838–840 and Fig. 1), and strove to present the Csőszhalom settlement in its broader geographic setting.

The Upper Tisza Project, an Anglo-Hungarian collaborative research project launched in 1990, conducted intensive topographic surveys across the area of the so-called Polgár Block; the flood-free area around Csőszhalom was treated as a natural ecologic unit (Chapman 1994, Fig. 2). The Late Neolithic tell settlement at Bosnyákdomb, lying south of Csőszhalom (Fig. 1), was more closely investigated during this research project (the site was earlier mistakenly dated to the Bronze Age – Kalicz 1968: 127) and its extent was assumed to have been 130 m by 60 m based on the surface scatter of pottery (Chapman 1994, 81). Following the survey, the discovery of nine Late Neolithic single-layer settlements aside from the two tells was described in the preliminary reports (Chapman 1994, Fig. 5), which painted a broad, many-hued canvas of Late Neolithic settlement patterns in the Polgár area and their palaeoenvironmental setting. The surveys conducted by the
English researchers suggested that the Bosnyákdomb settlement, discovered during the survey of 1992, had been a contemporaneous neighbour of Csőszhalom, lying in the northern part of Polgár Island. The Bosnyákdomb settlement itself lay on the southern edge of Polgár Island, by the one-time Tisza floodplain (modern Király
Fig. 2. Polgár-Bosnyákdomb. 1 – Magnetic map of the central tell-like part of the settlement complex enclosed by a ditch (Tanagra Kft.) with the locations of the Trenches (I, III, V, VII–IX); 2 – The burned layer of the house debris with the remains of vessel; 3 – Vessels found in the burnt house; 4 – The V-shaped cross section of the ditch enclosing the tell-like settlement in the Trench I; 5 – Cross section of the pit in Trench VII; 6 – Posthole in Trench VII (1–4: after RACZKY, ANDERS 2009a)
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Stream) (CHAPMAN 1997: 153, Fig. 13.6b). It was only a matter of time before the broader area of this flattish settlement mound was archaeologically investigated and a magnetometer survey was conducted in order to gain an idea of the site’s morphology and its relation to Csőszhalom in 2001.

A similar regional research project was conducted in the southern part of the Hungarian Plain by the joint American-Hungarian Körös Regional Archaeological Project (KRAP) from 1998, in the course of which the pattern of the settlement clusters around the Late Neolithic tells could be reconstructed over a roughly 2000 km² large area, confirming János Makkay’s hypothesis proposed in 1982 (MAKKAY 1982; PARKINSON 2002, 2006). This reconstruction also enabled certain conclusions on the period’s economic and social relationships (PARKINSON, GYUCHA 2007). The advances briefly reviewed here – without any pretence at completeness – raised important new points which inspired us to reformulate our own research agenda, namely to focus on the micro-regional scale and to employ a diachronic approach in our investigation of the Polgár-Csőszhalom settlement.

The systematic geomorphological survey of the roughly 66–67 km² large, loess-covered, flood-free area of Polgár Island (SÜMEGI et al. 2005) offered an excellent background, as did the reconstruction of the distinctive ecologic traits of this natural habitat during the Late Neolithic. One important contribution to our work was the reconstruction of the internal dynamics of the complex hydrological conditions of the Tisza in the Polgár Island area (TIMÁR et al. 2005).

Simultaneously, the various imprints of human impacts were studied at Sarlóhát, lying north of Polgár Island, based on the data gathered during the Upper Tisza project (MAGYARI et al. 2012), whereby the possible cultural and other relations of the Csőszhalom tell were geographically extended. The pollen record provided conclusive evidence for extensive landscape alterations in consequence of enhanced pasturing and mixed farming in the Late Neolithic.

András Füzesi’s MA thesis focusing on the Neolithic settlement history of the Tiszacsege area lying south of Polgár Island based on the field surveys conducted between 2002 and 2004 marked another major research advance (FÜZEȘI 2009). An MA thesis (L. HAJDÚ 2014) and a PhD dissertation (KOVÁCS 2013) also chose as their subject the patterns in the distribution of Late Neolithic sites in the Upper Tisza region, their geographic and environmental conditions, and their contacts. Gábor Márkus undertook the integration of the topographic data of the environment of Polgár Island into a single database and the collation of the data with the information contained in earlier historical maps (such as the First and Second Military Ordnance Surveys of the Austrian Empire). During this work, he noted a mound, currently covered with a gallery forest, that lay in the southern part of Polgár Island, south of Bosnyákdomb, appearing on an old map. As it turned out during its inspection, this mound, known as Polgár-Kigyós-domb, was another tell, whose lower Late Neolithic occupation levels were overlain by Early and Middle Bronze Age layers (RACZKY et al. 2014, Fig. 3: Site 28). The discovery of this new tell meant that three tell settlements had been occupied simultaneously during the Late Neolithic on the flood-free areas of Polgár Island as part of a community network.
Fig. 3. Polgár-Bosnyákdomb. 1 – Detail of the cross section of Trench V (East side); 2 – The burned layer of house 2 (Feature 18)
Gábor Mesterházy’s PhD dissertation, currently in progress, represents an entirely new dimension in the topographic research of the Polgár area: a complex GIS-based analysis based on the archaeological data from prehistory to the Middle Ages, offering a longer chronological perspective (Institute of Archaeological Sciences, Eötvös Loránd University, 2012–2016 PhD programme).

Magdalena Moskal-del Hoyo’s reconstruction of the palaeoecological conditions of Polgár Island from the evidence provided by the wood charcoal remains is another promising avenue of research (Moskal-del Hoyo 2013; see Moskal-del Hoyo, Lityńska-Zając 2016). The assessment of the macrobotanical remains from Polgár-Csőszhalom and Polgár-Bosnyákdomb shed new light on the relation of these Neolithic communities to their environment and the dynamics of this relation. This research initiative involved an exploration of various dimensions of the human-environmental interaction in the Polgár area along the same lines as in the southerly part of the Hungarian Plain, using similarly novel techniques (Gulyás, Sümegi 2011; Salisbury et al. 2013). In sum, there has been a pronounced paradigm shift in archaeological interpretative frameworks regarding the Late Neolithic of the Tisza region, as a result of which the reconstruction of the lives of prehistoric social groups is set in the context of the interaction with the socio-ecological system. It has been persuasively shown that the relationship between the biophysical setting and social aggregates is essentially a complex, constantly shifting adaptive system. In archaeological case studies, one approach to exploring this relationship is the dynamic model known as “adaptive cycle” or “panarchy” after Holling (Holling & Gunderson 2002; Widlok et al. 2012; Zimmermann 2012; Gronenborn et al. 2013). These new advances have outlined new research frameworks for the study of Late Neolithic Polgár Island and for the archaeological assessment of its settlements (during their approximate life span between 5000 and 4500/4400 cal BC).

RESEARCH HISTORY IN THE LAST FIFTEEN YEARS

2001: Field surveys and magnetometric survey

The field surveys were followed by a magnetometric survey in 2001 that focused on the mound and its immediate environment within the study area. The results of these investigations indicated that the entire settlement was located along a former branch of the Tisza River and that it extended over an elongated area of about 96,000 m² on the bank of a stream called Király-ér (Fig. 1.2). The small mound was marked by an accumulation of no more than 1.3–1.5 m, measuring almost 150 m in diameter. In addition, the magnetic survey clearly showed traces of an oval ditch system around the settlement mound, forming an enclosure of 7400 m². Moreover, magnetic survey data also indicated burnt settlement features of regular shapes, lying quite tightly next to each other within the enclosure. In addition, sporadic scatters of burnt features were
also identified in the surrounding horizontal settlement (Fig. 2). The simultaneous intensive collections of pottery sherds suggested that the settlement had been most densely populated during the Late Neolithic (i.e. between 5000 and 4600/4500 cal BC). Soil borings at Bosnyákdomb identified a habitation layer within the enclosure that was approximately 150 cm thick. In this sense, the Bosnyákdomb site may indeed be considered a tell-like settlement (Raczky, Anders 2009a).

2007–2008: Excavations on the tell-like settlement and the ditch

Research at Polgár-Bosnyákdomb continued in 2007 with the more precise archaeological identification of features beneath the surface. Magnetic anomalies outlined an oblong feature in the centre of the enclosed mound where an excavation trench measuring 11 m by 6 m was opened (Trench V). At an average depth of 40 cm, the scattered debris originating from a ca. 8 m by 5 m house with slightly trapezoidal ground plan became clearly visible (Fig. 2.2). This feature had been disturbed at several points by deep ploughing and various later intrusions. A heavily burnt external oven with a rounded square ground plan was discovered in the house’s south-western corner. The firing plates of two hearths lying close to each other were discovered in the building’s southern section. The level of the more-or-less burnt floor surface could also be identified beneath the debris. The timber structure of the house excavated at Bosnyákdomb was made up of posts measuring 15–20 cm in diameter, dug only 25–35 cm below the floor surface. At the same time, 20–25 cm thick robust walls were built around this wooden structure. The wattle and daub house uncovered at Bosnyákdomb is smaller than the houses excavated on the central mound and external settlement of Csőszhalom, whose average length was 8–15 m, while their width varied between 4 and 7 m (Raczky et al. 2007: 25, 48). The wooden structure of the building also differed from the Csőszhalom houses, which had been supported by thicker timbers dug into far greater depths. These observations suggested that a lighter version of the Late Neolithic wattle and daub house, possibly designated for a shorter life span, was discovered at the Bosnyákdomb site. The palaeoecological analyses on Polgár Island have demonstrated that the intense land use of the Middle and Late Neolithic led to the retreat of extensive forested areas by the period’s end. The riverine oak woodlands that provided the timber necessary for house constructions were supplanted by cultivated crops and various steppean plant associations (Sümegi et al. 2005: 156–158), leading to a scarcity of timber and, simultaneously, to a more frugal use of timber that became one of the period’s hallmarks. The size and the timber structure of the building uncovered at Bosnyákdomb can best be likened to House 15 uncovered at Vésztő-Bikeri, dated to the onset of the Tiszapolgár culture (Gyucha et al. 2006: 10–14, Figs 4–15). These architectural traits reflect an increasing mobility during the transition from the Late Neolithic to the Early Copper Age and a less intense occupation of settlements, a point already made in earlier comprehensive studies on the period’s settlement history (Parkinson 2006: 123–156; Parkinson, Gyucha 2007: 49–68).
Eleven *in situ* vessels were found (Fig. 2.3). Rough clay fragments from a square-shaped clay storage vessel whose lower part was plastered on twigs were also recovered. The fragment of a perforated antler axe was probably also part of the ancient household. Even without an in-depth analysis of the forms and decorative motifs of the vessels found in the Bosnyákdomb house, it is clear that their best parallels can be found among the Late Neolithic assemblages from Hódmézövásárhely-Gorzsa and Berettyóújfalu-Herpály (Raczky, Anders 2009a). We sieved the entire fill of the house and its environs,
as a result of which we were able to recover an extraordinarily rich and varied assemblage of lithic implements that was analysed by Janusz K. Kozłowski and Małgorzata Kaczanowska (Kozłowski, Kaczanowska 2009; Kaczanowska, Kozłowski 2015).

The north-eastern corner of another building was uncovered underneath this house, which covered a 6 m by 2 m large area at a depth of 60 cm in the trench’s south-east part (Fig. 3.2). The ca. 10–15 cm thick debris layer yielded two intact vessels and the fragments of two other large vessels (Figs 4, 5). The vessels had been subjected to intense heat because one of the deep bowls had been strongly deformed by the high temperature (Fig. 4.2).
The 4 m by 6 m south-western section of the 11 m by 6 m trench opened at Bosnyákdomb was excavated down to the virgin soil in 2008. We found a 50–60 cm thick Late Neolithic occupation layer under this house; several Late Neolithic pits had been dug into this layer and the prehistoric humus layer (Fig. 3.1, Fig. 6). One of these seems to have had a special ritual function (Feature 50), suggested, among others, by finds of an incomplete human skeleton and a vessel decorated with human figures in relief. Even though sporadic Middle Neolithic features such as pits and a grave were found at the bottom of this tell-like settlement, these structures were not organic predecessors of the Late Neolithic occupation layers. The entire layer sequence of the trench, including the uppermost humus layer, was 140–150 cm thick, which corresponds to the result of the earlier corings.
In 2007, two test trenches (Trench I: 2 m by 10 m, Trench III: 2 m by 12 m) were opened in the northern and southern sections of the oval ditch identified on the geomagnetic survey maps in order to clarify the precise location and stratigraphic details of the enclosure (Fig. 2.4). Both trenches indicated the presence of a 240 m deep ditch with a V-shaped cross-section that was most likely dug at the time the settlement was established. The lower section of the ditch’s fill suggested a single earth-moving operation (backfilling), while the upper section was infilled continuously as shown by the inwashed and homogenised humus layer. At the same time, on the testimony of the Late Neolithic finds recovered from it, the fill of the lower section occurred at the end of this phase (Raczky, Anders 2009a).

We opened two other 1 m by 1 m soundings in 2007 (Trenches IV and VI) in the area enclosed by the ditch in order to investigate the burnt buildings appearing on the magnetograms and to clarify the layer sequence. We reached the virgin soil at a depth of 150 cm in Trench IV and at a depth of 230 cm in Trench VI. Similarly to the central trenches, we found burnt debris and levels indicating strongly burnt floors or the burnt firing plate of ovens in the soundings.

2010: Excavation on the horizontal settlement

In 2010, we opened Trench VII measuring 2 m by 10 m on the horizontal settlement, east of the settlement section enclosed by the ditch, in a location where the magnetometer survey indicated a major anomaly. Underneath the humus layer – which yielded considerably fewer finds that the corresponding layer in the inner areas – we found a Roman-period Sarmatian pit (3rd–4th century AD) and a Late Neolithic pit and post-hole (Fig. 2.5, Fig 7). The deepest point of the large Late Neolithic pit lay at a depth of 160 cm. The “biography” of the pit could be reconstructed from its section: it stood empty for some time after it had been dug, and then its slow infilling began, indicated by the levels mixed with mussels, charcoal and burnt daub, which were followed by a homogenous red burnt layer rich in burnt daub fragments, suggesting that the debris of an edifice that had caught fire near the pit had been dumped into it. The Neolithic pit’s active life came to an end: the levels overlying this burnt layer reflect humus formation interrupted by intrusions from later periods (Bronze Age, Sarmatian period and Migration period). The presence of a building beside the pit was indicated not only by the burnt daub fragments, but also by a roughly 150 cm long and 110 cm deep post-hole in the pit’s wall (Fig. 2.6). Judging from its north-west to south-east alignment, the post of a timber-framed building’s north-eastern corner had apparently been dug into the pit. We have excavated a great many houses with a similar structure on the horizontal settlement of nearby Csőszhalom (Raczky et al. 2007: 26, 27).

2011: Excavation of the southern part of the ditch system

In 2011, we opened a 5 m by 12 m trench (Trench VIII) to investigate the south-eastern part of the ditch system and a 1.5 m by 3 m trench (Trench IX) adjoining it because the magnetometer survey suggested that the line of the ditch was interrupted
Fig. 7. Polgár-Bosnyákdomb. Selected decorated vessel types from the pit in Trench VII (Feature 55). 1–7 – Tisza style vessel fragments, 8 – Tisza style vessel fragment with incised decoration and white incrustion, 9 – Vinča type vessel fragment with channelled decoration.
by what had perhaps been an entrance. In addition to uncovering various prehistoric features, we reached the level of the ditch at a depth of 80 cm (Fig. 8). At this point, its width was 240–330 cm, which then narrowed to 140–150 cm at its floor. The wall narrowed step-wise, its depth ranged between 80 and 130 cm. As it turned out, the ditch was uninterrupted and continued without a break. The lack of an anomaly on the magnetogram perhaps simply meant that there was less burnt debris in its fill along this section. We recovered typical Late Neolithic pottery from the ditch’s fill and unrelated human bone fragments. We found a small shallow pit dug into the ditch’s floor, which yielded human skull fragments, pottery and burnt daub. The southern part of the ditch was flanked by 1 m wide and 2 m long shallow basin-like depressions.

METHODS

During our research, we always strove to explore the site with many different and preferably non-invasive techniques, and to extract as much information as possible from the excavated areas. In order to achieve these goals, the initial field survey was followed by a magnetometer survey and we opened our trenches and soundings in the locations of the greatest anomalies. We cleared the trenches manually from the uppermost humus layer in 1 m by 1m or 2 m by 2 m squares, proceeding 20 cm downward
at a time. The removed earth was dry-sieved through a 1.5 cm by 1.5 cm mesh. Owing to this meticulous – and rather time-consuming – procedure, we were able to retrieve a previously unimaginable amount of tiny animal bones and lithic tools, and we also recorded the exact position of various artefact types and their distribution within and outside a particular feature, offering a better understanding of archaeological taphonomy, assemblage formation and infilling processes.

We also collected archaeobotanical samples (see Moskal-del Hoyo, Lityńska-Zając 2016), we submitted samples taken from human and animal bones for radiocarbon measurements, and we also gathered micromorphological samples from the ditch’s southern side, whose assessment is currently in progress.

THE SETTLEMENT’S CHRONOLOGY

Relative chronology

Given its excellent location, the site was repeatedly occupied in various archaeological periods during the past millennia, as can be clearly seen in the section of Trench V (Fig. 3.1). The site’s first occupation is represented by a few pits and a burial of the Alföld Linearbandkeramik. The pottery sherds represent the same typical mixture of Bükk-Esztár-Szakálhát stylistic elements as could be observed at Polgár-Ferenci hát, a site dating from the same period (Raczky, Anders 2009b: 40–43).

On the testimony of the field surveys and the layer sequences noted in the excavated trenches, the site’s most intense occupation can be dated to the earlier fifth millennium, to the Late Neolithic. The period’s settlement features – pits, post-holes, ovens and buildings – were in part dug into the virgin soil and in part into each other, and the 80 cm thick occupation layer forming the tell-like settlement’s body accumulated at this time. The pit section and post-hole uncovered on the horizontal settlement can also be associated with this period, characterised by Csőszhalom-type thin-walled vessels decorated with yellow and red pastose painting (Fig. 6) and pottery ornamented with incised textile patterns of the later Tisza phase (Fig. 7). These features and pottery styles enable the synchronisation of this occupation phase with Polgár-Csőszhalom (Raczky et al. 2002: 841–843).

Another building and the construction of the ditch can perhaps be dated to the final phase of the Late Neolithic, characterised, among others, by the appearance of pointed, perforated knobs on pottery (Raczky, Anders 2009a). In our first study presenting the interim results of the excavations at Polgár-Bosnyákdomb, we believed that these features and this ceramic ware could be linked to the so-called proto-Tiszapolgár period. Since then we have realised that the use of this label is erroneous and misleading for several reasons. Although the transitional proto-Tiszapolgár period had originally been defined on the basis of the knobbled ware in the Late Neolithic Layer 5 at Berettyóújfalu–Herpály, this date was in essence generalised for the entire Tisza region (Kalicz, Raczky 1984, 1986).
1987b), meaning that a homogeneous and unilinear trajectory was presumed regarding the emergence of the Tiszapolgár culture across this broad area. The main methodological problem was that the ceramic ornamentation labelled the proto-Tiszapolgár style did not appear simultaneously in time and space. The main emphasis was on the transition between the Tisza–Herpály–Csőszhalom and the Tiszapolgár cultures, that is, the temporal aspect played a decisive role. However, the many different ways and local scales at which transformations took place in the Tisza–Herpály–Csőszhalom cultural environment were not studied with appropriate emphasis. Csőszhalom and Bosnyákdomb, two neighbouring tells on Polgár Island, offer an excellent example of this bias: while the Bosnyákdomb site was dated to the proto-Tiszapolgár period on stylistic grounds (Raczky, Anders 2009a), the material from the neighbouring Csőszhalom tell, which was radiocarbon dated to the very same period, showed no trace of the Tiszapolgár ceramic style with applied decoration (Raczky et al. 2007: 64). This should in itself warrant the discardment of the term “proto-Tiszapolgár” from future archaeological usage, not least because it reflects a reductionist point of view (Raczky et al. 2014: 331–332). Ferenc Horváth reached a similar conclusion (Horváth 2014), and the American-Hungarian KRAP team too changed its terminology for the period in question (see the chronological charts in Parkinson 2006, Fig. 4.4, and Parkinson et al. 2010, Fig. 3).

Absolute chronology

We have a total of seven AMS dates for the Bosnyákdomb settlement, two made on single animal bones, four on human bones and two on plant remains (Fig. 9, Table 1). The measurements were made in the Vienna Environmental Research Accelerator (VERA) and the Poznań Radiocarbon Laboratory (Poz). The results were calibrated with the OxCal v4.2.4 programme (Bronk Ramsey 2009) and the IntCal13 calibration curve (Reimer et al. 2013). We have two dates for the northern section of the ditch (Trench I; 1: 4615–4500 cal BC, 2: 4580–4460 cal BC), and three for its southern section (Trench VIII; 3: 4525–4405 cal BC, 4: 4545–4465 cal BC, 5: 4585–4465 cal BC). The date for one of the Late Neolithic pits containing a vessel painted in the Csőszhalom style (Feature 36) in Trench V falls into the same period (6: 4555–4460 cal BC), as does the one for the pit dug into the floor of the ditch in Trench VIII (7: 4545–4460 cal BC). It is noteworthy that the human and plant remains (sample 4 and 7) gave a roughly similar date.

Most of our dates are for samples collected from the ditch. We uncovered roughly two equal portions of the oval ditch identified by the magnetometer survey, one along its northern, the other along its southern section (Trenches I and III), and we have five dates for the two. Given that the fill of the two excavated portions was homogeneous, we believe that the backfilling had been the result of a single deliberate activity.

Fig. 9. Polgár-Bosnyákdomb. 1: Schematic map of the settlement with the $^{14}$C sampling spots, 2: Sequence calibration of the AMS radiocarbon dates from the enclosure, 3: Sequence calibration of the AMS radiocarbon dates from settlement
In our model, we ordered the five dates into a single sequence: this model suggested that the infilling of the ditch and the cessation of its use-life as a ditch had begun around 4570–4500 cal BC (68% probability) and had ended around 4525–4455 cal BC (68% probability) (Fig. 9.2). This interpretation is not contradicted by our observation that there were differences between the find material recovered from the two sections: while there were hardly any human remains among the pottery and animal bones from the northern section, the southern section yielded some seventy human bone fragments, suggesting that the infilling/deposition processes of this ditch section had involved other types of activities. However, despite these differences, the archaeological record does not indicate substantial chronological differences between the two excavated sections.

We only have indirect evidence for the date of the ditch’s construction. Two interpretations can be proposed for the date for the pit dug into the ditch’s floor. The first, that there is no relation whatsoever between the two features, and that the pit and the ditch had been dug independently of each other on two separate occasions. The second, which seems more plausible to us, is that the pit with its unusual contents of human remains, charcoal and daub was somehow related to the construction of the ditch. Whichever the case, it must be borne in mind that the two events or activities had taken place at roughly the same time since the two samples (nos 6 and 7) gave more or less identical dates.

In our next model, we ordered the seven available dates into a single sequence, which yielded a date of 4555–4510 cal BC (68% probability) for the beginning of the occupation of the Polgár-Bosnyákdomb settlement and a date of 4525–4470 cal BC (68% probability) for its abandonment (Fig. 9.3). A comparison with the dates for Polgár-Csőszhalom clearly indicates the contemporaneity of the two in the last phase of the settlement’s occupation (Raczky et al. 2015: 43–45).

<table>
<thead>
<tr>
<th>Sample</th>
<th>Lab.-No.</th>
<th>Radiocarbon age (BP)</th>
<th>±</th>
<th>Calibrated date (1σ)</th>
<th>Sample material</th>
<th>Feature</th>
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<td>40</td>
<td>4580–4460</td>
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<td>4/103</td>
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<td>4545–4465</td>
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<td>63/884</td>
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<td>35</td>
<td>4555–4460</td>
<td>Cornus sp.</td>
<td>36/455</td>
<td>pit</td>
</tr>
<tr>
<td>7.</td>
<td>Poz-47454</td>
<td>5680</td>
<td>35</td>
<td>4545–4460</td>
<td>human bone</td>
<td>75/935</td>
<td>pit</td>
</tr>
</tbody>
</table>
CONCLUSION

Previous archaeological and ecological research on various local areas of Polgár Island resulted in a comprehensive synthesis that set the Late Neolithic settlements at Polgár-Csőszhalom and Polgár-Bosnyákdomb in the broader context of social changes and landscape dynamics. Viewed from this perspective, it is quite obvious that with its newly estimated 65.8 hectares extent (Füzesi et al. 2016), Polgár-Csőszhalom was a dominant settlement complex in this landscape during the earlier fifth millennium, while the Bosnyákdomb settlement, lying no more than 5 km away, represented an entirely different scale with its 6 hectares and had a different role during this period. The AMS dates provide convincing evidence that the two settlements had been occupied simultaneously during one period of their lives.

Despite their spatial proximity and chronological contemporaneity, the two settlements had a differing structural layout. Although both had a prominent stratified settlement mound that was separated from the single-layer settlement part by a ditch, the system of the ditches, their structure and, presumably, their social use differed substantially. The fact that the single ditch enclosing the Bosnyákdomb mound was closed towards the river would suggest that it had a symbolic, rather than a defensive purpose. On the testimony of the current evidence, the Bosnyákdomb ditch was not interrupted by one or more entrances, while at Csőszhalom, the entrances were created and maintained for a long time in accordance with the cognitive rules of a distinctive “cosmo-vision”. The single ditch at Bosnyákdomb has its counterparts among the enclosure ditches of the Neolithic settlements in the southerly areas of the Hungarian Plain, one of which has been recently identified by magnetometer surveys at Szentpéterszeg-Kovadomb (Raczky, Anders 2014). This would suggest that each community constructed its settlement and architectural structures according to different spatial rules in the different locations of Polgár Island. In terms of architectural sociology, this also means that it is difficult to establish correlations between the period’s social groups and the different settlement elements, or to identify consistent patterns over a larger area (Trebsche et al. 2010).

The ditch and palisade systems created alongside the construction of tells may be considered three-dimensional symbolic structures that evidently survived Late Neolithic tells. During the Early Copper Age Tiszapolgár culture, these fortifications remained part of the environment of single-layer, horizontal settlements, as shown by the examples of Tiszaug-Kisrétpart, Vésztő-Bikeri and Körösladány-Bikeri (Gyucha 2015: 175–187).

Despite the spatial differences, we could identify traces of similar community events on the settlement mounds at Bosnyákdomb and Csőszhalom such as the recurring practice of house burning. It would appear that a similar scenario was followed in these cases, with some of the furnishings left in their original location inside the houses. As a result of intentional, organised house burning events, a wealth of organic material and macrobotanical remains have been preserved on both Polgár tells, which are not only material remnants of various activities and events, but also shed light on certain dimensions of how humans had used the period’s ecologic environment.
In the case of Bosnyákdomb and Csőszhalom, we could also observe that ceramic wares with elaborate decoration were part of the paraphernalia accompanying community events at the time the life of the central mounds began, which probably involved complex feasting and ritual activities (Raczky et al. 2011). Later, the former rules governing community events appear to have been relaxed or perhaps even discarded, and the use of elegant fine wares appears to have declined and to have lost its role in mediating symbolic messages through its decoration. In our interpretation, the spread and increasingly frequent use of more coarsely-made pottery with applied decoration accompanied changes in social behaviour at the close of the Late Neolithic and was not merely the artefactual “marker” of a new period, the Early Copper Age Tiszapolgár culture (Raczky, Anders 2008). The knobbed ware found in the burnt house of the latest occupation level at Bosnyákdomb thus marked the end of a social process in the mid-fifth millennium BC, which appears to be bolstered by the AMS dates. Further studies are necessary to determine whether the incised Tisza style pottery found on the horizontal settlement at both Bosnyákdomb and Csőszhalom had likewise borne imprints of regional, chronological and/or social dimensions.

Despite the smaller excavated areas, we identified wholly different mortuary practices at Bosnyákdomb, diverging fundamentally from the funerary rites practiced at Csőszhalom. The bones of the deceased were secondarily deposited into the ditch of the central mound, a practice also noted in other cultures of the European Neolithic, from Herxheim (Zeeb-Lanz et al. 2016) to Okolište (Müller-Scheessel et al. 2009). The unusual pit found in the central area of the Bosnyákdomb settlement close to a house structure, the human remains it contained and the fragments of the special vessel covering them can be seen as a ritually structured deposit (“odd deposit”) in that location (Garrow 2012).

The various cultural features discussed in the above indicate that the community responses of the groups settling and living in the Polgár area during the Late Neolithic to the environmental challenges of the land around them were embodied by a set of distinctive cultural behaviours. Nevertheless, certain elements in the colourful diversity of material features and their different levels outline the structure of a micro-regional network with Csőszhalom in its centre in the Upper Tisza region.

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