

EÖTVÖS LORÁND UNIVERSITY FACULTY OF HUMANITIES  
SCIENCES OF HISTORY DOCTORAL SCHOOL ARCHAEOLOGICAL PROGRAM  
PhD DISSERTATION

**JUDIT P. BARNA**

**THE FORMATION OF THE LENGYEL CULTURE IN SOUTH-WESTERN  
TRANSDANUBIA**

SUMMARY

BUDAPEST, 2011

## GOALS AND SOURCE MATERIALS OF THE DISSERTATION

Since the discovery of the first site of the Transdanubian Sopot culture, Becsehely I., it has been apparent both for Hungarian and international researchers that this territory played a role of primary importance in the formation of the Lengyel culture at the beginning of the 5<sup>th</sup> millennia BC. As it is generally viewed, the two main components in the formation of the culture were the Central European (Transdanubian) Linear Band Pottery culture (LBC) and the Sopot culture. It has also been accepted that there were genetic continuity between the LBC and the Lengyel cultures, in the first instance on the grounds of the high scale coincidence of the territories of both cultures; even though no factual pieces of evidence of the continuity have been available. Transdanubia, South-Western Slovakia and the western part of Burgenland compose the territory of the emergence of the Lengyel culture where, during the period prior to the emergence of the Lengyel culture, different territorial groups of the LBC had settled: the Keszthely, the Music Note, the Zselíz groups and the Šarka style. The presence of the Transdanubian Sopot culture – on the grounds of the settlement pattern earlier thought to be loose and dispersed – seemed to be hardly at all correlated with that of the LBC, but at the same time the high scale similarity found in the material culture proved that there was direct correlation between the Sopot and the Lengyel cultures. Accordingly, the genesis of the Lengyel culture was considered as a process taking place on the multicultural substrate of the LBC groups in which the Sopot culture played a catalyser role causing and inspiring the transformations. The chronological situation and the role of the Malo Korenovo style pottery originating from Croatia, which appeared in Transdanubia for the first time on the site at Becsehely I., were not clean-cut.

For two subsequent chronological phases in the formational process first Slovakian, later also Hungarian researchers used the auxiliary notions “Vor- and Proto-, (Pre- or Prä-)lengyel”. The creation of new terminology was in part motivated by the fact that the transition process from the Middle to the Late Neolithic could not be described by conventional concepts of archaeological culture, and in part also because of the paucity of archaeological sources from the period. The theory that the formation of the Lengyel culture was comprehended as a process that began during the Vorlengyel horizon and end with the appearance of the early classical Lengyel culture (Lengyel I) was hypothesized to compensate the lack of sources due to the scarcity of few known sites.

Compared to the status quo outlined above the results of large-surface excavations beginning at the end of the 1990’s in Zala county brought sweeping changes in this research area. The find assemblages on the sites at Sormás-Török-földek, Sormás-Mántai-dűlő, Petrivente-Újkúti-dűlő and Becsehely (I)-Bükkaljai-dűlő dated to the turn of the Middle and Late Neolithic, which were unearthed during the works preceding the construction of the M7 motorway provided an opportunity to redraw the picture formed earlier on the basis of sporadic data about the Transdanubian Sopot culture. The re-evaluation of the Sopot culture as one of the basic components of the Lengyel culture

made it also necessary to revise of the earlier opinions and statements made about the formation of the Lengyel culture. This was even more motivated by the fact that on the site at Sormás-Török-földek, besides the find material from the Sopot culture, the find material from the formative phase of the Lengyel culture was also found. The two sites at Sormás are located in immediate vicinity of each other; the Mántai stream composes their common border.

The goal of the dissertation is to try to clarify the role of the Sopot culture in the formation of the Lengyel culture based on find assemblages and the results of the excavations made on the sites at Sormás-Török-földek, Sormás-Mántai-dűlő and Esztergályhorváti, which provide composing the main sources of the dissertation. The concrete form of this is the evaluation of the common features of both cultures. The developmental correlations are principally present in two areas: in the settlement layout and in the find material, so the comparison of these is the major goal among other goals of the dissertation. Though the altogether three ditch-systems excavated on the two Sormás sites made parts of the settlement layout, they also necessitated independent comparison, as a result of which the period at the turn of the Middle and Late Neolithic could be approached also from a new aspect. The monographic processing of the find material was not targeted in the dissertation. Due to the nature of the source material the question of the mortuary customs was studied tangentially only. A large amount of stone materials was found on both of the Sormás sites, the examination of which contributed to a great extent to the clarification the communication systems of the Sormás settlements thus complementing the result acquired by the examination the ceramic finds imported to the site.

In order to get to know the sites in a more complex way, apart from stone and animal bone finds samples from the filling material and charcoal were also collected systematically during the excavations to establish a starting point for a possible reconstruction of the environment. Based on the results of the different natural scientific investigations such as the investigation of the provenience of the stone materials, the radiocarbon dating, the archaeozoological and anthropological studies and the environmental-historical studies, a comprehensive and detailed picture was gained about the historical events and their natural environment in South-Western Transdanubia at the beginning of the 5<sup>th</sup> millennia BC. In the light of all these, grounded conclusions could be drawn on the time, place, mode and nature of the formation of the Lengyel culture and the directions of the spread of the formative phase.

During the first phase of the excavations large-surface excavations were performed on the sites at Sormás in 2002 and 2003 the goals of the dissertation were formulated, and the source find assemblages were collected in 2003. However, in 2005 and 2006, unexpectedly, new excavations were carried out on the sites. The new excavation in 2005 on the site at Sormás-Mántai-dűlő augmented the find material only to smaller extent, but on the Török-földek site both the excavated area and the find material were doubled. The new results yielded important, new pieces of information especially regarding the settlement layout, which altered the proportions of the different

kinds of find assemblages that composed the main sources for the dissertation, for this instead of a detailed comparative analysis of the pottery the analysis of the settlement layout and the enclosures was brought into prominence. Especially the house types of the formative phase of the Lengyel culture was considered to be of high importance since the house types of the formative phase were found, in Sormás-Török-földek for the very first time. The dissertation did not offer sufficient and appropriate framework for a detailed pottery analysis. It became obvious that a simultaneous, comparative analysis and evaluation of the pottery assemblages from both Sormás sites according to standardized criteria would make it possible to establish a fine-scaled internal chronological system of the late Sopot and the formative phase of the Lengyel culture, the elaboration of which should be subject of an independent, large-scale study. In the framework of the present dissertation, apart from the pottery assemblages that made it possible to separate the distinct habitation phases, we have studied the imported pottery finds and finds related to ritual activities were also studied. In this latter respect, both Sormás sites were particularly rich.

## EFFECTCS

**Sormás-Mántai-dűlő.** A long-lasting settlement of the TLPC existed on this site, which was established already in the elder stage of the culture however still survived in the late Zselíz phase. It was followed by an extensive, enclosed, typically flat, single-layer settlement of the Sopot culture. Based on some settlement features of the Sopot culture superposing each other, one can presume a longer duration of the settlement without any interruption, which is confirmed also by the uniform characteristics of the pottery. There were rows outlining more than 30 houses or house sites standing scattered side-by-side on the site. The orientation of the houses was toward North - South; North, Northwest - South, Southeast and Northwest- Southeast, and no hierarchical difference could be observed among the houses. In some cases pits dug around the house sites outlined certain sites for houses. All the houses did not existed simultaneously, the nucleus of the settlement could move several times during the lifetime of the village. All the dwellings without exception were above-ground, they were wattle-and-daub structures built of different sized piles,, with an oblong ground plan. The architectural traditions of the LPC are reflected in the structures of the houses. The Sopot village during most of its life was enclosed by a simple, circular ditch with a V-shaped profile, the entrance of it was indicated by the discontinuity of the ditch. As for the general sight of the settlement a lane through the gate must have been of basic importance, which divided the settlement into two parts. Some sites of hypothetical houses interrupted the lane track which suggests that some of these features were not built at the time when the gate of the enclosure were used. From this it may also be presumed that the settlement existed for a longer period of time. In a later stage of its existence the settlement was extended over the enclosed area. Regarding the role of the enclosure it could be mainly a surrounding ditch, it had no defensive function. Its layout never had a complete circular

form, it did not continue in the eastern part of the settlement, so the settlement was never fortified by the ditch. In the foreground of the gate an extremely large pit was excavated, which was used for clay mining, and which was presumably created simultaneously with the construction of the enclosure. Apart from the function of the enclosure as a surrounding ditch, its sacral, symbolic role can be presumed on the basis of finds related to rites (pig jaw and bucranium, anthropomorphic figurines) and the orientation of the gate, which is the same as the orientation of gate No. 8 of Enclosure N. II on the site at Sormás-Török-földek. The astronomically oriented gates on the two sites suggest the use of common architectural principles and it is a shared feature with the Lengyel culture. The extremely large pit used for clay mining in the foreground of the gate is another similarity, the analogues of which can be found on the site at Sormás-Török-földek related with both enclosures. The orientation of the gate excavated on the Mántai-dűlő site suggests that a part of these architectural principles may already have been known in the Sopot culture except for the strictly regulated roundel-shape ditch. Several pieces of imported pottery from the Vinča and the Zselíz III cultures were also found. The find contexts of the Malo Korenovo-type pottery fragments could not be interpreted clearly, they were found both with the findings of the Keszthely-group of the TLPC as well as the Sopot cultures. The life of the settlement on the site at Mántai-dűlő came to an end earlier than that of these settlement excavated on the neighboring Török-földek site. The fact that the settlement was used in some way during also the lifetime of the formative phase of the Lengyel culture is proved by a fragment of a Sé-type anthropomorphic figurine which was found as a stray find, in a secondary position.

Two main house types could be differentiated: structures composed of holes dug for piles and posts (type A) and structures composed of foundation trenches (type B). Some more groups, altogether 11 variation within the main types were differentiated. The high number of variations arose from the incomplete layouts of the houses. Amongst the ground plans firmly recognized there were big, timber frame longhouses composed of 4 x 3 lines of postholes (with two more variations), big or medium size timber frame longhouses, composed of 3 x 3 lines of postholes (with four more variations), building sites encircled by ditches and structures composed of foundation trenches (with two more variations).

**Sormás-Török-földek.** On the site – following a short habitation during the Early and Middle Neolithic (1<sup>st</sup> and 2<sup>nd</sup> habitation phases) – the 3<sup>rd</sup> habitation phase represented by the Sopot culture was the longest one. By this time there was established an extended and long-lived, enclosed settlement, with more sub-phases, which lived partly contemporaneously with the settlement in the Mántai-dűlő site, but contrary to it, it experienced the beginning of the formative phase of the Lengyel culture. We could differentiate three habitation sub-phases, by the determination of which beyond analysing the find assemblage we started from the diverse building phases of Enclosure No. II. and the analyses the relationship between the settlement layout and the houses.

**Habitation sub-phase 3a1.** The existence of this habitation phase apart from the evidence provided by the find assemblage is proven first of all by the earliest building phase of the

ditch with a V-profile however as for the dwelling houses there are only few, uncertain pieces of evidence available. The features from which the Korenovo-style potteries accompanied by the findings of the Sopot culture originate are classified to this sub-phase from. The antecedent of Enclosure No. II can be linked to this earliest Sopot habitation sub-phase. The bottom of this straight-line ditch-section is pointed, that is – contrary to the earliest, hollow-bottom-ditch on the site at Sormás-Török-földek, established during the TLPC habitation – it already has V-profile. This was probably a foundation ditch for a palisade. Regarding the evolution of the enclosures later, it is of great importance that in this building phase the ground-plan of the enclosure is not yet a regular round shape, but the at same time its profile is typical, it is V-shaped; like the enclosures of the Sopot culture excavated in Petrivente and Becsehely I. There was also a gate in this building phase, which is indicated by an earthen bridge across the ditch. The outlines of this ditch occurred deeper than the arched ditches in Enclosure No. II, and the gate No. 3 which cut across these ditches in this direction; all these also prove that sub-phase 3a1 antedates sub-phase 3a2, during which these latter ones were established.

**Habitation sub-phase 3a2.** The final arrangement of Enclosure No. II may be dated to habitation sub-phase 3a2. It is proven on the one hand by the stratigraphic relationship between the gate documented on the straight ditch-section and gate No. 3 and, on the other hand, the corrected, regular round shape ground plan. The straight ditch section built during sub-phase 3a1 was inlayed into the final ground plan. The renovations documented in several places and the corrections indicating smaller and larger corrections commemorate the memory of large-scale building activities and the arrangement of the regular round shape ground plan. Enclosure No. II in its final form was composed by two, slightly oval ditches running in line with each other, which had similar depth, width and V-shaped profiles. Several bridges constructed of earth or wood crossed the ditches. Its external diameter was 276 meters. Gate No. 3 and some other gates outlined by several similar constructed earthen bridges belonged to this building phase: gate No. 2 towards north and gate No. 1 toward west. Two extremely large pits used for clay mining also belonged to this habitation phase. There were altogether three of this kind of features found on the site: apart from the ones mentioned already there was one more example in the foreground of the southern gate of Enclosure No. I. They could be linked to the construction of the enclosures or their gates, or to the arrangement of a fortification. This assumption is supported also by an observation made on the Mántai-dűlő site. Considering the relative chronology it is of outstanding importance that the extremely large pit used for clay mining, which belongs to the gate No. 1 (the southern gate) of Enclosure No. I was in superposition with the ditches of Enclosure No. II. This vertical stratigraphic condition is a clear piece of evidence for the fact that Enclosure No. I is younger than Enclosure No. II. The extremely large size pit used for clay mining, which belongs to gate No. 2 of Enclosure No. II almost intersects the outer ditch of Enclosure No. II, thus providing horizontal stratigraphic evidence for the fact that these two features could not be contemporaneous. It must be stressed that in the case of Enclosure No. II references still cannot be made to regular circular enclosure

(roundel), although several elements of this form – a regular or almost regular circular ground-plan, ditches with V-profile and partly astronomically oriented gates – had already appeared. The deviation from the roundels is indicated mostly by the relationship with the settlement, and in this context, by its function: all the houses of the Sopot settlement, in all of the habitation phases, remained inside the ditches. The typical house type of this habitation sub-phase is the above-ground, pile structure house standing on a building site encircled by ditches and pits, at the southern end of which there was also a smaller building which presumably had an economic function, constituting together a household cluster. A fragment of a seated anthropomorphic figurine, which was painted red, was found in one of the ditches encircling a building site of a dwelling-house: it is a flat-bodied figurine with its arms kept bounded under the breasts represented by small knobs, which can be considered as one of the leading types of find in the Sopot culture. As for the houses, a certain alignment can be observed in every single habitation phase to the lane running through the gate used in given sub-phases: during habitation sub-phase 3a2 they were aligned to the approximately N, NW-S,SE oriented lane running through gate No. 2; their longitudinal axis is parallel with the direction of the lane. All these provide clear evidence for the fact that the enclosure, the gates and the settlement were built up together as one single, coherent architectural unit. Sub-phases 3a1 and 3a2 are closely correlated; there is only a slight chronological difference between them. The Sopot settlement reached its maximum intensity during sub-phase 3a2: the highest number of contemporaneous dwelling-houses could stand in the settlement during this sub-phase, and a smaller building with an economic function may have belonged to some of them. The double circular enclosure had been built by then, and there were at least three contemporaneous gates opened through it (gates No. 1, 2 and 3).

**Habitation sub-phase 3 b.** This habitation phase is the continuation of the previous one; it is the uninterrupted survival of the Sopot settlement. Enclosure No. II is was maintained according as manifested by multiple renovations, the signs of which can mostly be seen in the NE section of the enclosure, west of the gate No. 3. The renovations had the aim to clean the bottom of the ditches filled in from time to time. It makes significant differences compared to the preceding habitation phase that new and different kinds of gates were opened. The new gates were not simple earthen bridges: the outer ditch was crossed by a pile-structure bridge built of wood, which was fortified by a gate built also of wood. We can assume three of this kinds of gate (No. 8, 9 and 10); the remains of one of them (gate No. 8.) were excavated, the other two are suggested by indirect data. The major part of houses which are aligned to the lane running trough gate No. 8.; may have belonged to habitation sub-phase 3b, all of them represent basically a 4 x 3 layout indicating a pile-structure longhouse. Some houses seem to lying in the track of the lane running trough gate No. 8; all of them belong to the habitation sub-phase 3a2, that is they are older than the lane in question. One of the houses of habitation sub-phase 3b gave one of the concrete stratigraphic data concerning the relative chronological relation between the Sopot and the Lengyel culture: a pit of the early Lengyel culture

(feature 1176) superimposed a posthole No. 1259 of the house No. 34 (a house of the Sopot culture). There was more than 30 centimetres of difference between the elevation levels of the two pits.

The 4<sup>th</sup> habitation level is constituted by the formative and the early phase of the Lengyel culture, which was also significant, similarly to the preceding Sopot-settlement. This is proved not only by the establishment of another circular enclosure (the northern enclosure or enclosure No. I), groups of houses and the abundance of the find material, but also by the fact, that- besides Sé - it is one of the biggest, central-type settlements of the formative phase of the Lengyel culture. The chronological relationship between the Sopot and the Lengyel cultures can be detected on the one hand by the stratigraphic data mentioned already, and on the other hand, by the relationship of the two circular enclosures. The find material confirms the data obtained through the analysis the settlement layout. Habitation 4 can be divided into two sub-phases (4a and 4b).

**Habitation sub-phase 4a:** Between the two sub-phases distinguished based on the analyses of Enclosure No. I the earlier one represents the beginning of the formative phase of the Lengyel culture, which is dated by the Sé-type findings. The whole of Enclosure No. I can be connected to this habitation phase: it was established and it was also used only during that time. Enclosure No. I is much smaller than Enclosure No. II (its outer diameter is 124 m ), and its relationship to the settlement features is completely different, too: the major part of the features excavated in its inner space are not contemporaneous with it. There was not a single remain of a contemporaneous dwelling house identified in its inner space. The enclosure is in this case already a real Lengyel-type roundel of sacral function in the true sense of the world, separated from the inhabited territory. The orientation of gate No. 1 is equal to that of the single excavated gate of the roundel in the site at Sé; gate No. 2 looks toward South. The human bone remains found in the ditches and the vessel-depot found in the inner ditch may be associated with the sacral character of the roundel. The leading finds of the habitation phase are the Sé-type anthropomorphic figurines and the Sé-type anthropomorphic vessel. The former ones represent this period even in those cases, when they are found together with mostly Sopot-character findings in a mixed context. An example of this type became known from the uppermost level of the outer ditch of Enclosure No. II confirming the fact that the ditch was almost filled in completely.

The topographical location and the geometrical (set out) central point of Enclosure No. I were most certainly arranged to the topographical location and geometrical central point of Enclosure No. II most certainly established already by the Sopot culture; the central points of both enclosures lie on a common North-South oriented axis. There are no settlement features in the space between the two enclosures, this space is practically empty which may lead to the conclusion that the two enclosures were contemporaneous. More specifically, the establishment of Enclosure No. II dates back much earlier, but by the end of its active use, for a short time, it existed simultaneously with the then newly established Enclosure No. I.

While in the settlement layout and in the use of the enclosures it is possible to distinguish distinct phases, in other aspects, primarily in the pottery finds, the analyses points out signs of continuous, uninterrupted development. The continuity of the settlement is indicated by the fact that while Enclosure No. I functioned as a separated location serving presumably social-sacral purposes, the dwelling houses belonging to habitation phase 4a stood inside Enclosure No. II, in the same way as the houses of the preceding Sopot settlement. So there were visible signs of the ditches on the ground, since in the orientation of the Lengyel houses not the north-south direction was determinative, but their alignment to the enclosure. It is true even for the next habitation phase.

**Habitation sub-phase 4b:** The last habitation phase at Sormás-Török-földek can be dated to the middle second half of the formative phase of the Lengyel culture, somewhere between the settlement at Sé (Lengyel 1a) and the period of the site at Szombathely-Oladi plató. That lastly mentioned site is the continuation of the settlement at Sé-Malomi-dűlő, it is somewhat younger than that, it represents a transformation to the Lengyel IB development stage (early classical phase). Some of the characteristics of the anthropomorphic representations of the site at Oladi-plató (Olad or Střelice type) already appeared (for example the animal-like representation of a human face, raised arms in an adorning position instead of small stumps representing the arms), but the flat-topped biconical heads of the figurines, considered as one of the main characteristics of the Olad-type representations, are still missing. The find material shows some similarity with the finds of Svodín „Nach-Lužianky“-horizon (the 1st building horizon of Svodín). The existence of this final habitation phase is proven by the features which, on the one hand, are in superposition with the place of the levelled Enclosure No. I. and features disturbing the features of the habitation phase 4a; and which extend over the enclosure, especially towards East. This habitation phase was detected not only in the area of Enclosure No. I, there are several houses and settlement features that also represent this phase. In the decoration of the pottery more complex patterns appear, which cover the whole surface of the vessel. The few incised pottery – except Butmir-type incisions – may also be connected to this phase, since this type was already unknown by the beginning of the formative phase. Several fragments are already representations of the high, conical pedestals. The lid handles ending in double animal heads or their stylised variations and the flat-topped knobs are new types and as it is suggested by some uncertain data, the geometric altars with flat lids also appeared as well. As for the enclosure, following the stratigraphic data it was not used anymore; even two bigger features of the habitation sub-phase 4b are in superpositions with the inner ditch of Enclosure No. I and the track of the lane running through gate No. 2 are disturbed by features. The elimination of Enclosure No. I – judging by the homogenous filling – was the result of a conscious levelling and not a longer, natural filling in process however its reason is unknown, as not clues were found for the possible causes for abandoning the settlement. The settlers abandoned the early Lengyel settlement at Sormás-Török-földek, and the settlement at Sé was also abandoned after a while. It can be stated with certainty that as the whole life

of the settlement was characterised by a longer, uninterrupted development, its end was neither caused by hostile attack, nor by the appearance of foreign ethnic groups. No traces of destruction layers or unburied bodies were found, which could indicate warfare. The early Lengyel period was followed by a several hundred year-long habitation hiatus, the end of which is indicated by sparse settlement features of the Middle Chalcolithic Balaton-Lasinja culture.

It is also important not only in terms of the settlement history of Sormás-Török-földek, but also considering the formation of the Lengyel culture that the material culture – especially the find material belonging to the 3b habitation phase – reflects a perceptible overlap: the vessel forms and the decorations of the pottery of both cultures reveal significant similarities, in fact, matches. Similarities can be encountered even on pieces of find types that are different in both cultures. The anthropomorphic figurines are such finds: the mixture of the styles of both cultures gains special emphasis by the fact that they are present not on the objects of the everyday life, but on sacral ones. The abundance of the ceramic painting appearing in the late phase of the Transdanubian Sopot culture is also a common characteristic with the formative phase of the Lengyel culture. A specific characteristic feature is that yellow painting became more frequent, amongst the red painted motives the thick and thin lines constituting line bundles appear, – which due to their regularity create the impression that they were not hand-painted, they were made by a multi-pointed, comb-like tool. All these features may be interpreted as indications of continuous transformation.

In the site at Sormás-Török-földek in many cases the characteristic finds of both cultures were found together in the same settlement feature, based on which – similarly to some other researchers – in an earlier stage of processing it was presumed that possibly the two cultures partially existed simultaneously. The radiocarbon dates – which also show a partial overlap considering both cultures – do not contradict to this interpretation. The investigation of Sormás-Török-földek and, the division of the individual habitation phases yielded a clear stratigraphic evidence of the fact that in those cases, when there was superposition, the Lengyel culture over-stratified the features of the Sopot culture. Because of the superposition the joint occurrence of finds of both cultures may be partly due to an additional mixture, partly to a characteristic of a transitional phase, which reflect the characteristics of the late Sopot and formative Lengyel cultures. The situation observed on the site at Sormás-Török-földek may be correlated closest to the relationship between the late Szakálhát and early Tisza cultures at the turn of the Middle and Late Neolithic in the Great Hungarian Plain. The early, formative phase of the Tisza culture may be derived from the southern group of the ALP, the transformation reflects in addition to a change in the pottery styles in the continuation of the settlement pattern (in the sequences of the tell settlements).

The evaluation of the ditches, enclosures and their relationship to the settlements contributed to a better understanding of the relationship between the Transdanubian Sopot and the formative Lengyel culture. The comparative analyses of the ditch-systems uncovered during the M7 motorway project made it obvious that amongst the contextual

and formal elements of the real Lengyel roundels at least two of these (regular circular layout, astronomically oriented gates) appeared for the first time in the enclosures of the Transdanubian (late) Sopot culture. Consequently, the Sopot culture also had a huge impact on the development of the enclosures. At the same time, ditches with a pointed bottom (Spitzgraben), which are also one of the main characteristics of the Lengyel roundels, are present also in the ditch-systems of the late LBC. The sites with enclosures and roundels in the southern part of Zala county dated to the turn of the Middle and Late Neolithic reflect the process during which the area used for sacral activities was gradually separated gradually from the settled territory. This “process of demarcation” took place also in the Eastern part of the Carpathian Basin in the same period.

Studying the orientation of the enclosures on the sites at Sormás resulted in new pieces of information considering the cognitive abilities of the Late Neolithic people. It was proven that the people of the early Lengyel culture had certain, empirical astronomical knowledge acquired by observations and some geometrical knowledge, related first of all to the Sun, which they used during the planning, setting and conscious placement of the enclosures in the landscape. The process of setting enclosures began with setting out the Eastern gates, the direction of which was indicated by the position of the Sun in the horizon at sunrise. The incorporation of these celestial phenomena into the sacred knowledge and its practical use seems to be general. The marked role of the eastern direction may refer to a certain initiation rite and may correspond to the conception of the enclosures as centre places in a religious-historical sense. A part of the principles and customs could be known already in the Sopot culture.

Esztergályhorváti. The pottery finds of the common grave excavated partly in 1994 with an area less than 4 m<sup>2</sup> raised the same problem as the settlement on the site at Sormás-Török-földek investigated over a surface of almost 53000 m<sup>2</sup>; namely that the pottery style can be considered both as late Sopot and as the formative Lengyel culture. The find assemblage is still without parallel. A single piece of the find assemblage, the small flask with red painting and small knobs on its belly, is the one and only one, the parallel of which cannot be found in the Sopot culture. The common grave in Esztergályhorváti due to the bone remains of many individuals, all of them males; buried at the same time and considering its obvious ritual character; was interpreted by several researchers in various different ways. Independently of its diverse interpretation, the sequence of seven radiocarbon dates made from bone samples, is the most important sequence based on the largest number of samples to date from this time period.

## CONCLUSIONS

Based on the achieved results the newly acquired knowledge about the Transdanubian Sopot culture and the formation of the Lengyel culture may be summarised as follows: The Sopot component (the Brezovljani-type of the Sopot culture) played a much stronger role in the formation of the Lengyel culture than it was supposed earlier; its impact can be traced beyond the material culture also in the settlement mode, also in the development of the enclosures belonging to the settlements, and, partly related to it, in

sacral life, too. In addition, the Sopot impact can be traced, in a concrete form, even in objects related to rites: in the representation of the spine of the Sé-type anthropomorphic vessel, furthermore, in schematic forms, which imposed strict rules on the representation of the Sé-type anthropomorphic figurines and their canonical nature. Such schematic form, a similarly determined way of representation – albeit in a completely different mode – can be detected in the anthropomorphic representations of the Sopot culture. The mode of representation ruled by such a strict way is completely unknown in the Central European LBC; where a diversity of anthropomorphic figurines can be observed.

The direct impact of LBC prevailed in a more limited extent, than that of Sopot, but it is still perceptible in several fields: in the distribution area, in the architecture, in the duality of the pottery quality, in the formation of the Sé type anthropomorphic vessels, etc...).

By the end of the Middle Neolithic a high concentration of settlements developed in South-western-Transdanubia, considering both the settlements of the late Keszthely-group and that of the Sopot culture. In the territory considered earlier as a periphery compared to the Sopot central core area a secondary settlement block was formed, which consisted of a close chain of extended and enclosed settlements, such as Petrivente-Újkúti dűlű, Becsehely (I).-Homokos dűlű, Sormás-Tűrűk-fűldek and Sormás-Mántai-dűlű. The continuation of the settlement concentration is reflected by the fact that amongst the above mentioned sites Sormás-Tűrűk-fűldek was the single one, on which a centre-like settlement reflecting longer settling emerged by the beginning of the Late Neolithic. The settlement concentration was accompanied by a population concentration, which explains the discrepancy formerly thought to be unsolvable between the (previously estimated insignificant) number of people comprising the Sopot population and its significant impact on the material culture of the Lengyel culture.

It is well-known that the exchange-system which connected the Balkans and remote regions of Northern Europe gained impetus by the end of the Middle Neolithic, and played a leading role in the formation of the Lengyel culture. This route ran on the western edge of Transdanubia approximately on the track of the later Amber Road, at the foot of the Alps. The big Neolithic sites in South-western Zala county were part of this connection system. Long-distance trade determined the character of the trade connections: the exchange of Spondylus, salt and stone raw materials were exchanged from long distances. Especially the continuously on-coming impulses from the South and to a lesser extent maybe people's movements, contributed to the start of changes. There were perceptible impacts, different in nature and scale, perceptible impacts arriving from different directions: from the central core area of the Kőrűnovo and later Sopot-Brezovljani culture, from the late Zselűz group, from the Vinča culture through the Sopot culture, from the Central Bosnian Butmir culture and, very slightly, from the Adriatic Sea (Danilo culture) through the Butmir culture. Further impacts arrived from the territory of present-day Austria: first from the direction of the Šarka-type of the LBC, later the Stroked Pottery Culture, and finally, perhaps through even more mediation from quite remote territories of the Balkan Peninsula, from the Gumelnitza culture, too.

Many pieces of tangible evidence of this exchange-system were found on both Sormás sites, as well. All these cultural impacts were added to the LBC cultural substrate, which in South-Western Transdanubia was constituted first of all by the Keszthely-group, but where also the Malo Korenovo culture appeared. While it is known that in its central core area Malo Korenovo played a role in the formation of the Brezovljani-type by a transfusion with the classical Sopot culture, its role in South-Western Transdanubia is still unclear.

The determination of the habitation phases and examination of the finds belonging to a given habitation phase made it clear that in habitation phases 3 and 4, which can be connected to the Sopot and formative Lengyel cultures, both in the settlement layout and in the find materials an uninterrupted, continuous development may be estimated. While all sub-phases (3a1-a2 and 3b) of habitation phase 3 are filled by the settlement of the Sopot culture, both sub-phases of habitation phase 4 are connected to the Lengyel culture. The continuity is best illustrated by habitation phase 3b, while the life of the Sopot culture continued in the settlement, in the find material, especially in the pottery style a clear change can be noticed, even though it is not possible to draw a sharp borderline between the old (the late Sopot) and the new (formative Lengyel) styles. The mixture of the two styles can be seen both in the find assemblages from the features and in the whole habitation phase 3, but in certain cases even on objects, too. The new pottery style was strongly manifested by the time of the habitation phase 4, already during its earlier stage, which is already the Sé horizon of the Lengyel culture. It is a sign of the uninterrupted development of the settlement and together with it also the formative phase that habitation phase 4 survived the Sé horizon and the image of its find materials is determined by the characteristics of the Lengyel Ia-Ib transition.

The contemporaneity of the late Sopot and the early Lengyel cultures, suggested proposed by several researchers but never proven beyond doubt, was – in the light of the facts experienced in Sormás-Török-földek – illusory, it resulted from the false interpretations of the equivocal find contexts. On the site at Sormás-Török-földek, in cases when unequivocal superposition was found, the Lengyel culture always seemed to be younger.

Find material of transitional character typical for the 3b habitation phase was not found on the site at Sormás-Török-földek for the first time, but it was the first occasion to clarify its relation to both the Sopot and Lengyel cultures. Find assemblages of similar character, when they were found in Sopot context, were earlier identified as late Sopot finds (for example: Baláca), if they were found in early Lengyel context (for example: Sé, Esztergályhorváti), they were listed to the earliest phase of the formative Lengyel culture. This may partly explain the overlap, partial match of the radiocarbon dates gained on the one hand for the late Sopot and, on the other hand, for the formative phase of the Lengyel culture. On the other hand, it is very likely that this transitional phase could not last much longer than a period covered by the +/- 30-40 years long margin of error. The exact length of this transitional phase cannot be determined due to the low number of the radiocarbon data at our disposal. For comparison, it is mentioned in this

thesis that the duration of the transitional period of the Tisza culture was estimated for 50-100 years based on the data extracted at Öcsöd.

Apart from the habitation sub-phase 3b of Sormás-Török-földek the case of Esztergályhorváti proves that a short, however sometimes also independently represented transitional phase must be taken into account. The presumption of a transitional phase – exactly in the context of Esztergályhorváti – was already made theoretically.

The whole existence of the site at Sormás-Török-földek indicates a long, peaceful development, which, based on radiocarbon data, lasted at least for 400 years. It is not known, what put an end to the existence of the early Lengyel settlement, but there are not any perceptible traces of violent occupation, invasion or destruction. The same may be supposed for the whole area and age that were examined. All these refutes the opinion raised earlier regarding to the interpretation of the common grave at Esztergályhorváti, which described the period of the formation of the Lengyel culture as a warlike period of violent conflicts between foreign invaders and local inhabitants. In this way, the recognition of Sormás-Török-földek as a representation of peaceful, uninterrupted development of the period may be considered as a step closer to the interpretation and clarification of the historical background of the common grave at Esztergályhorváti, which allows to reject at least one of the earlier interpretations.

The situation described above can be made parallel broadly with the situation observed in the Hungarian Plain at the turn of the Middle and Late Neolithic, with the relationship between the late Szakálhát – early Tisza cultures. As the late Szakálhát-culture in the Southern part of the Hungarian Plain was re-labelled later by researchers as the formative phase of the Tisza culture due to the continuity detected in the settlement pattern. In the same way the transitional sub-phase represented by habitation sub-phase 3b of Sormás-Török-földek and Esztergályhorváti could be renamed as the earliest formative phase of the Lengyel culture.

All these refer to the fact that the development of the Southern part of the Hungarian Plain and the South-Western part of Transdanubia broadly took place in the same rhythm. As it was already proven in the Late Neolithic of the Hungarian Plain that the two main factors of the emergence of the Tisza culture were a change of the characteristics of the settlements and the formation of a new exchange-system, the same two components can be detected also in the period preceding the formation of the Lengyel culture.

This similarity can be traced also in the development and the change of the function of the enclosures by the turn of the Middle and Late Neolithic at the turn of the Vinča B1/B2. In the Eastern part of the Carpathian Basin and in the South-Western part of Transdanubia the process during which the inner place enclosed by the ditches became also a territorially separated place for sacral activities took place at the same time.

As it is proven by the South-western Transdanubian excavations, the Sopot enclosures influenced to a greater extent the development of the Lengyel roundels than

those of the LBC. The reason why the Lengyel roundels are distributed all over the territory, where earlier the LBC was distributed, is that the LBC is one of the ancestors of the Lengyel culture, but the canonised form of the roundels (more and more regular circular layout and astronomically determined orientation) was formed as a result of the Sopot-impact.

It must be stressed that the formation of the Lengyel culture was a process determined not only in time, but also in space, and took place within narrow limits. Based on the geographical situation of the earliest, already Lengyel-reckoned sites – characterised by the Sé type anthropomorphic figurines – an attempt was made to reconstruct the paths of this spread. The main path of it is naturally indicated by the track of the later Amber Road, but one can presume even two junctions along it toward the East (one in South-Western Transdanubia and the other in the district of present-day Szombathely), which explains the emergence of the sites of the formative phase in the interior of Transdanubia. The reconstruction of paths running through Transdanubia in directions about SW-NE and approximately W-E was made possible on the one hand on the geographical distribution of the formative phase-sites, and on the other hand, the application of the system of the diagonal roads of the later Roman Pannonia province as a model.

#### SELECTED BIBLIOGRAPHY OF THE AUTHOR

1. P. Barna, J.-Pásztor, E. 2011: Different Ways of Using Space: Traces of Domestic and Ritual Activities in a Late Neolithic Settlement in a site at Sormás-Török-földek. *Documenta Praehistorica* XXXVIII (2011), 185-206
2. Adatok a dunántúli késő neolitikus háztípusokhoz. A Sopot és a korai lengyeli kultúra házai Sormás-Török-földek lelőhelyen. *Beiträge zu spätneolithischen Haustypen in Transdanubien. Häuser der Sopot- und der Lengyel-Kultur am Fundort Sormás-Török-földek.* MFMÉ – StudArch 12 (2011), 31-45
3. Sormás-Török-földek településtörténeti áttekintése. II. A késő neolitikum. *The history of a settlement at Sormás-Török-földek. II. Late Neolithic.* ZM 19 (2010), 93-115
4. P. Barna, J.-Pásztor, E.: Two Neolithic Enclosures at Sormás-Török-földek (SW-Transdanubia, Hungary) and their possible geometrical and astronomical role. Case study. In: Calado, D.-Baldia, M.-Boulangier, M. (eds.): *Monumental Questions: Prehistoric Megaliths, Mounds, and Enclosures.* BAR International Series 2122, Vol. 7, 2010, 119-125

5. A Sopot kultúra házai és települése Sormás-Mántai-dűlő lelőhelyen. ZALAI MÚZEUM 18 (2010), 11-27
6. Pásztor E.-P. Barna J.: A késő neolit Lengyel kultúra körárkai. Lehetséges csillagászati ismeretek a Kárpát-medencében. *The enclosures of the Late Neolithic Lengyel culture. Evidence for astronomical knowledge in the Carpathian Basin.* In: †Bende L.-Lőrinczy G. (szerk.): *Medinától Etéig. Régészeti tanulmányok Csalog József születésének 100. évfordulójára.* Szentes 2009, 205-213.
7. P. Barna J.-T. Bíró K.: Import leletek és nyersanyagok Sormás-Mántai-dűlő és Sormás-Török-földek lelőhelyeken. ΜΩΜΟΣ VI. (Szerk.: Ilon G.) Szombathely, 2009, 279-294
8. P. Barna J.: Antropomorf edények töredékei Sormás-Török-földekről, a korai lengyeli kultúrából. *Bruchstücke anthropomorphen Gefäße aus der frühen Lengyel-Kultur in Sormás-Török-földek.* TISICUM XIX. (2009), 39-53
9. Újabb adatok a dunántúli Sopot-kultúra kultuszéletéhez. Késő neolitikus absztrakt állat alakú oltárok a DNy-Dunántúlról. *The cult life of the Transdanubian Sopot culture. Abstract animal altars of the Late Neolithic from south-western Transdanubia.* In: †Bende L.-Lőrinczy G. (szerk.): *Medinától Etéig. Régészeti tanulmányok Csalog József születésének 100. évfordulójára.* Szentes 2009, 215-224
10. Sopot vagy Kostolac? Egy anthropomorf szobrocska kulturális besorolásának kérdése az újabb adatok tükrében. *Sopot or Kostolac? The question of the cultural affiliation of an anthropomorphic figurine in the light of new data.* Ósrégészeti Levelek 10 – (2008), 2009, 89-94
11. Lelelőhelyleírás: Sormás-Török-földek. In: Horváth L.-Frankovics T. (szerk.): *Régészeti feltárások az M7-M70 autópálya Zala megyei nyomvonalán. Összefoglaló jelentés az 1999-2008 között végzett feltárásokról.* Zalaegerszeg, 2008
12. Pásztor et al. 2008: Pásztor, E.-P. Barna, J.-Roslund, C.: The orientation of rondels of the Neolithic Lengyel culture in Central Europe. *Antiquity* 82 (2008), 910-924
13. Késő neolitikum: Lengyel kultúra. Sormás-Mántai-dűlő és Sormás-Török-földek. In: ILON 2007: Ilon G. (ed.): *Szászorszápek. Emberábrázolás az őskori Nyugat-Magyarországon. Wonderful Beauties. Human Representations in Prehistoric Western Hungary.* Szombathely 2007, 129-147
14. Középső és késői újkőkor átmenete: Sopot kultúra. Sormás-Mántai-dűlő és Sormás-Török-földek. In: ILON 2007: Ilon G. (ed.): *Szászorszápek. Emberábrázolás az őskori Nyugat-Magyarországon. Wonderful Beauties. Human Representations in Prehistoric Western Hungary.* Szombathely 2007, 84 - 99

15. A New Site of the Lengyel Culture in Sormás-Török-földek (County Zala, South-western Transdanubia). In: Kozłowsky, J.-Raczky, P. (eds.): *The Lengyel, Polgar and related cultures in the Middle / Late Neolithic in Central Europe*, Kraków, 365-380, 2007
16. P. Barna-Tóth 2005: Késő neolitikus viseletrekonstrukciók a lengyeli kultúra leletei alapján. *Reconstruction of Late Neolithic costume based on finds of the Lengyel culture*. *Ősrégészeti Levelek* 7 (2005), 50-59
17. Sormás-Török-földek. Településtörténeti áttekintés I. A középső neolitikum. Emlékkötet Müller Róbert 60. születésnapja alkalmából. ZALAI MÚZEUM 14 (2005), 17-36
18. Adatok a késő neolitikus viselet megismeréséhez a lengyeli kultúra újabb leletei alapján. Some data to Late Neolithic costume according to new finds of the Lengyel culture. ZALAI MÚZEUM 13 (2004), 29-53
19. A lengyeli kultúra tömegsírja Esztergályhorvátiban. The Common Grave of the Lengyel Culture in Esztergályhorvát (County Zala). ZALAI MÚZEUM 6 (1996), 149-160

MANUSCRIPTS ACCEPTED FOR PUBLICATION:

20. Miniature anthropomorphic vessel at the early Lengyel culture site at Sormás-Török-földek, SW-Hungary. *Prehistoric Studies - Manuscript accepted in April, 2009.*
21. Pásztor, E.-P. Barna, J.: Concepts of space, place and time in Late Neolithic Carpathian Basin: the geometry of rondels of the *Lengyel* complex. Manuscript accepted in April, 2009.
22. Újabb adatok a DNy-Dunántúl középső neolitikuma időrendjéhez. ΜΩΜΟΣ V. Előadás az Őskoros Kutatók IV. Összejövetelén, Debrecenben, 2005. március 22-24. Manuscript accepted in September, 2006.