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CONFINIA
ET
HORIZONTES

THE ENVIRONMENTAL HISTORY
OF THE PREHISTORIC
SÁRKÖZ REGION IN SOUTHERN HUNGARY

ESZTER BÁNFFY (ED.)



1
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CONFINIA ET HORIZONTES VOL. 1

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ESZTER BÁNFFY (ED.)

**The Environmental History
of the Prehistoric Sárköz Region
in Southern Hungary**

With 129 Figures, 19 Tables, and 1 Digital Supplement

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Lectori salutem!

The launching of a new monograph series is a matter of courage and confidence. Courage that it is worthwhile to publish new books in this digital age of ours, and confidence in readers that they will be willing to take yet newer thick volumes in their hand and use them for their academic work or read them out of pure interest in prehistoric archaeology. The host institute, the Romano-Germanic Commission (RGK) of the German Archaeological Institute, has established, edited, and published several monograph series during its long life since it was founded in 1902: suffice it here to refer to the *Römisch-Germanische Forschungen*, the *Kolloquien zur Vor- und Frühgeschichte*, the series *Die Ausgrabungen in Manching*, and to the *Limesforschungen*. So, one may rightly ask, wherefore yet another one?

During the past few years, research in the RGK has been organised around two major themes and two logistically separate work teams, which are nevertheless bound by many strands scientifically. Under the umbrella of *Forschungsfeld 2*, the research topics related to the Iron Age and the Roman provincial period, research on the Roman *limes* and on the Barbaricum, i. e. the regions not occupied by the Romans, as well as research on the Late Antique period are addressed through related overarching questions such as “border studies”. *Forschungsfeld 1*, established at a later date, brings together fields of research and grand themes that had commanded scholarly interest during the first half of the 20th century and were revived during the past decade as part of the RGK research agenda. These cover the Late Mesolithic and the transition to the Neolithic, alongside themes from the Neolithic to the Bronze Age. Currently, there are several RGK and collaborative projects with various institutions and colleagues based in different countries within the framework of this research group. Similarly to the work group focusing on later prehistoric and early historic periods, the basic research questions in Neolithic and Bronze Age studies are few, but they are closely related to each of the running projects and those in plan.

While members of the *Forschungsfeld 2* work team have had several options for publishing their findings in the traditional RGK monographs, the early periods could not be fitted into any of the already existing series. Hence the idea of establishing *Confinia et horizontes*. The title of the new series matches the major theme of *Forschungsfeld 1*, “Marginal zones, contact zones”. The choice of one Latin and one Greek word was wholly intentional: marginal, liminal zones would be ideal settings for potential interactions between different groups initially separate from each other, which then established contacts through exchanges and trade, and later expanded the contacts to a mutual sharing and transferring of innovations and knowledge. And, as is usually the case, these contacts can be traced in the genetic make-up of the once separate population groups. Our goal is to publish cutting-edge new research: principally the projects of the RGK community, but since the time of individual research and authorship has since long passed, these publications, as a rule, will present the findings of dynamic collaboration with other institutions. The monographs will be grouped according to the various collaborative projects. Although it is not our intention to break up *Confinia et horizontes* into subseries, we shall quite clearly indicate if a major project is published in more than one volume that these volumes are closely related. Even more importantly, individual volumes will never be publications released

solely by the RGK, but will be equally owned by our partner institutes. This can also be seen as a symbolic gesture: these days, archaeological research generally involves the joint effort of specialists of fieldwork, environmental and non-invasive landscape research, geo- and bioarchaeology, all brainstorming together. The evaluation will then be based on data coming from each field of investigation. It needs to be repeatedly stressed that there is no difference between the two *Forschungsfelder*, between the different periods and phases of archaeological periodisation. Prehistory and history are equally important chapters of the human past. The ultimate goal of *Confinia et horizontes* is to integrate the data provided by various disciplines and interpret them jointly, in the hope that the result will contribute to a reconstruction and better understanding of the various dimensions of past societies. In other words, we truly hope that our prehistoric data will ultimately lead to history writing.

ESZTER BÁNFFY

Eszter Bánffy

The Danubian Sárköz:
A geographic, prehistoric, and historic region
in the southern Hungarian section of the Danube Valley.
An introduction

Archaeological investigations involving the use of precise geographic maps, let alone of aerial photography, were impossible in Hungary for long decades in the 20th century, as these were forbidden in the Eastern European countries behind the Iron Curtain. Environmental archaeology was therefore virtually restricted to the work undertaken by geologists and botanists. Military maps with a scale smaller than 1:25 000 were classified and kept under strict control. These maps were made available to professional archaeologists exclusively for field surveys in smaller areas, for example along a stream, or for areas encompassing the territory of no more than a few villages. Aerial archaeology was unknown for the very same reasons.

One of the main concerns of archaeological research into the Neolithic of the Carpathian Basin was the creation of a firm relative chronological sequence, primarily based on ceramics, less frequently on stone tools or other artefact types. As a result of archaeological work, the typological description of the finds and the nature of the interaction between the period's cultures were largely clarified by the later 20th century.

Any modern environmental work on the Neolithic of the riverine plains can only be based on the previous work of Krisztina Kosse, Nándor Kalicz, János Makkay, Ottó Trogmayer, and Pál Raczky (KOSSE 1979; KALICZ 1965; KALICZ/MAKKAY 1972; 1977; MAKKAY 1982; TROGMAYER 1968; RACZKY 1983; 1988). Based on this past research work, the pioneering fieldwork by Pál Sümegei and his co-authors and students means a step change, along with novel investigations on the fluctuation of groundwater over millennia by Gábor Serlegi (see these studies in the present volume with relevant literature).

Archaeological research on the Neolithic and Copper Age lagged behind in the western half of the Carpathian

Basin. This is especially valid for the Early Neolithic, i. e. the earlier 6th millennium BC. In 1990, N. Kalicz published a monograph summarising our knowledge of the Early Neolithic of Transdanubia, principally based on the evidence from field surveys and smaller excavations that indicated that the first farmers from the northern Balkans, various Starčevo communities, had crossed the Drava and had advanced as far as the hilly region near Lake Balaton. For many years, his study was an essential textbook for research on the Transdanubian Early Neolithic. Regarding the later 6th millennium BC, the first major advances were brought by the large-scale preventive projects. The investigation of extensive areas brought to light hundreds of LBK sites (BÁNFFY/OROSS 2009; MARTON/OROSS 2012). In contrast to the earlier Neolithic, the intensive presence of Lengyel cultural features was identified already in the early days of Hungarian archaeology, particularly in the south-eastern corner of Transdanubia, which was intensively studied by István Zalai-Gaál for many years (ZALAI-GAÁL 1986; 2002).

Following the transition in 1989, the methods employed in landscape archaeology began to develop rapidly and the number of specialists partaking in this work also increased. Significant advances have been made in the study of the northern frontier of the Körös culture in the Alföld (Great Hungarian Plain) through the insights gained from new sites investigated with wholly new research questions in mind, which also explored the nature of the interaction between prehistoric communities and their environment. The excavations conducted by Alasdair Whittle and his team at Ecségfalva, Békés county, and the work by László Domboróczki must be mentioned in this respect (WHITTLE 2007; DOMBORÓCZKI/RACZKY 2010; DOMBORÓCZKI ET AL. 2010).

The large-scale salvage excavations ahead of motorway constructions in the 1990s and especially from the

2000s brought an entirely fresh perspective on the internal chronology and the social changes in the 6th millennium BC, while smaller planned excavations shed exciting new light on the finer details of the blend between the Balkanic groups and the local population, as well as on the various dimensions of the transition to the Neolithic. These projects of preventive archaeology brought striking new results everywhere, but they proved to be particularly important for regions that had been under-researched. First of all, three micro-regional projects grew out of these major preventive archaeological investigations, one in the western Balaton region and two in regions lying farther to its west. The new data on the 6th/5th millennium BC settlement history in western Transdanubia contributed profoundly to our understanding of the Neolithic transformation in the Balkans and Central Europe, of which the study area represented the northernmost region (BÁNFFY 2000; 2004; 2006; 2007; BÁNFFY ET AL. 2007; BÁNFFY/OROSS 2009; BÁNFFY/SÜMEGI 2011; REGENYE 2008). In later centuries, the impacts reaching the area from the northern Balkans resulted in a kaleidoscopic blend of the new impulses and the already compound local substrate.

Since the fall of the Iron Curtain, all branches of geoarchaeology have become an integral part of studies on cultural development and (pre)historic processes in Hungary. The new findings of geology, geophysics, hydrology, geochemistry, botany, malacology, and vertebrate archaeozoology have been integrated into virtually every major research project. Studies on the diet and migrations of prehistoric populations increasingly rely on the findings of mitochondrial aDNA and stable isotope analyses, both important parts of bioarchaeology. Models and reconstructions of the initial phases of food production now incorporate the research results of hard science, while the interpretation of these results with a relevance for social interaction and social identities is largely the field of social archaeology.

In the Institute of Archaeology (RCH) of the Hungarian Academy of Sciences¹ (HAS) in Budapest for example, the geoarchaeological approach gained currency in the early 2000s: the first monographs on the environmental background of prehistoric and later cultures were written by research groups made up of archaeologists, geoarchaeologists, botanists, and malacologists (one of these was a volume on environmental archaeology in Transdanubia: ZATYKÓ ET AL. 2007). Simultaneously, the close cooperation with the Geoarchaeology Graduate School at the University of Szeged also brought new possibilities in working with PhD students, supervising their dissertations and involving them in the field surveys of the Budapest Institute of Archaeology.

In the early 2000s, a team of the Institute of Archaeology began to investigate a concentration of Neolithic

settlements extending for some 25 km along the eastern (left) Danube bank. The twin sites of Fajsz-Garadomb and Fajsz-Kovácsalom, both Bács-Kiskun county, as well as the early Neolithic settlement of Szakmár-Kisülés, Bács-Kiskun county, all lie in this alluvial, riverine flat landscape. The latter was excavated in the 1970s, but remained unpublished. A description of the Early Neolithic settlement, including the publication of what could be gleaned from the surviving documentation and finds of the Szakmár-Kisülés site, was published a few years ago (BÁNFFY 2013). Meanwhile, one of the above-mentioned preventive archaeology projects was undertaken on the western Danube bank, quite close to the Fajsz research project. The latter, necessitated by the construction of the M6 motorway, brought to light an exceptionally large site at Alsónyék, Tolna county. This settlement and burial place, with its estimated extent of 80 ha (as indicated by the excavated area and the geophysical prospections), is possibly not only the largest Neolithic site in Europe, but also an exceptionally important element of European heritage. The excavation of the site between 2006 and 2009 was followed by extensive analyses, still ongoing, much of it involving international cooperation. This work was supported by grants from the Hungarian Research Fund (OTKA)² for post-excavation work, the German Research Fund (DFG)³ for aDNA analyses, and collaboration with the European Research Council-funded project “The Times of Their Lives” (ToTL)⁴.

To set the scene, some concise basic geological information about the heartland of the Carpathian Basin seems in order. As a result of a collision of the Eurasian and north African plates (HORVÁTH ET AL. 2015), the basin was submerged in the Miocene (HORVÁTH 1993). After the Pannonian Lake dried out, the region became bisected by two major rivers, the Tisza and the Danube and their many tributaries. While the Tisza flows in the eastern lowland (Alföld) region, the Danube cuts the alluvial lowland from the hilly and forested western section in Transdanubia. The central section of this major river that flows across vast European regions with a mainly north-west to south-east course, from the Black Forest in Germany to the Black Sea in Romania, is the

1 Since 2019 the Institute belongs to the Eötvös Loránd Kutatási Hálózat (ELKH).

2 Alsónyék: az élelemtermelés kezdetétől az újkőkor végétől K 81230 (Alsónyék: from the beginnings of food production to the end of the Neolithic), led by Eszter Bánffy.

3 Bevölkerungsgeschichte des Karpatenbeckens in der Jungsteinzeit und ihr Einfluss auf die Besiedlung Mitteleuropas, led by Kurt W. Alt.

4 The Times of Their Lives: towards precise narratives of change in the European Neolithic through formal chronological modelling (ERC Advanced Investigator Grant 295412), led by Alasdair Whittle and Alex Bayliss.

Carpathian Basin. The present volume is dedicated to various investigations and their many-sided assessments that are in one way or another related to the Danube in southern Hungary, in the Sárköz region.

Aside from the decisive role of the Danube, the Sárköz region has another intriguing feature which merits scholarly attention. This is the marginal zone flanking the central Carpathian Basin, which appears to have acted both as an important divide and as a contact zone exactly in the region of our study area. From their studies on the changing climatic proxies and the associated substantial changes in the landscape conducted over a decade ago, environmental historian Pál Sümegei and archaeologist Róbert Kertész proposed the model of an ecological barrier running south-west to north-east that divided the Carpathian Basin into two halves, with the southern half largely part of the South-East European ecological zone and the northern half, especially Transdanubia with its heavily forested hills, part of the Atlantic climatic zone (SÜMEGEI / KERTÉSZ 2001). The line of the barrier roughly coincides with the divide in the geological structure. The region's current geological structure is essentially determined by the above-described collision of the European and African continental plate margins during the early evolutionary stages. Their tectonic deformation and uplifting led to the formation of the large Pannonian Basin; the barrier runs roughly through the central part of the Pannonian Basin, along the divide between the two ecological zones (HAAS 2015). This division, a collision between the tectonically less active Bohemian Massif and the Dinaric Plate with a higher seismic activity, can be noted along a south-west to north-east axis across the Pannonian Plain, causing different thermal conditions that influence the soil's heat flow and, as a consequence, the composition of the flora and fauna too (LENKEY ET AL. 2002). A glance at the mountain ranges running from southern Transdanubia to north-eastern Hungary in a clearly south-west to north-east direction also reflects the position of the different tectonic plates, again conforming to the direction of the barrier described by SÜMEGEI / KERTÉSZ (2001).

The previous archaeological investigations and the associated projects all imply that one important task is to investigate smaller regions with a combination of on-site and off-site analyses. It was realised quite early on, when the sites along both Danube banks were investigated, that the alluvial riverine wetland known as the Sárköz region flanking both the western bank of the Danube (Tolna Sárköz) and the river's eastern bank (Kalocsa Sárköz) is a unified and compact region in both the geographical and the historical sense.

The region's most prominent geographic element is the Danube, the river flowing across the greater part of the European continent. A closer examination of old

maps and the findings of geological investigations both indicate that the wide waterway we see today flowing between two banks did not exist before the river's regulation. The Danube split into two branches after leaving Budapest: one branch flowed slightly eastward and, winding along the edge of the drift-sand, reached the river's current main channel at the town of Baja. The main Danube bed shifted westward together with the old branches that later disappeared, and a marshland laced with streamlets providing excellent channels of communication extended along both river banks. Flanking both banks of the Danube, the Sárköz region formed a transition between the Great Hungarian Plain and Transdanubia (NEBOJSZKI 2006). Sámuel Mikoviny's military map commissioned by the Habsburgs in the 18th century depicts the still existing colourful mosaic of countless bends, side-branches, active channels, and periodically flooded floodplains dotting the marshland. The map of the First Ordnance Survey (1782–1785) recorded a similar environment. The current landscape of cultivated fields criss-crossed by channels was created by the river regulations begun in the later 19th century. The Danube had simply not existed as a frontier river in the 6th millennium BC: instead, the river branches meandered across a waterlogged marshland dotted with shallow sand-bars. Many of these branches were living rivers, while others were branches transformed into living water only during times of flood, or oxbows cut off from the main channel at some earlier time. The region was far from impenetrable: communication between the river's two banks was continuous during the past millennia, the only exception being the Roman *limes* along the river, although the Roman imports appearing in the heritage of the Sarmatian tribes living on the river's left bank suggest that the Roman frontier was not as impenetrable as it might seem and could be negotiated to some extent. Similarly, there is ample evidence for exchange between Transdanubia and the Körös valleys during the Neolithic, many millennia before the Roman rule.

The former Danube channels on the left bank shifted westward as the river's flow direction changed. Deposits from these former channels can be identified with the gravel and sand layers lying at a depth of c. 2 m (PÉCSI ET AL. 1981). The current north to south channel developed at the close of the Upper Pleistocene; the river has since remained the single natural drainage in the region (ROMSICS 1998). The area known as the Kalocsa Sárköz is a high floodplain extending for some 20 km from the Danube, whose terraced levees, rising no more than a few meters above the surrounding land, are criss-crossed by streamlets and the oxbows detached from the palaeo-Danube. Extensive areas are covered with alluvial silt; the excellent humified alluvial soils evolving from them make the area of the Sárköz region lying in the

Danube-Tisza interfluvium one of the most fertile agricultural regions (ROMSICS 1998).

The right bank of the Danube is covered with a waterlogged floodplain dissected by oxbow lakes up to the Szekszárd Hills. The small islets rising above the marshy floodplain were the remnants of one-time alluvial cones, the single flood-free areas during the long millennia before the river's regulation. These alluvial terraces were the only areas suitable for farming since the lower-lying areas were covered with gallery woods. The area is now predominantly covered with alluvial soils, with the occasional meadow chernozem on the higher terraces (MAROSI/SOMOGYI 1990).

It is clear from the above brief overview that similar geomorphological and hydrological conditions characterised both banks of the Danube. According to Imre Katona, "an extensive water-world and marshland extended from the Szekszárd Hills to the sand-banks of the Danube-Tisza interfluvium, with its own distinct life-ways and habits, a water-world which was neither part of Transdanubia, nor of the Great Hungarian Plain, but acted as a transition between the two. Lying between the Szekszárd Hills and the high sand ridges of the Danube-Tisza interfluvium was a deep, marshy Danube trough, on whose floor wound the unregulated Danube, roughly in its middle. The river between the two banks did not form a divide as it does today: the communities living on the opposite banks could communicate with each other without any hindrance. The real barrier between Transdanubia and the Great Hungarian Plain was the edge of the marshland flanking the river" (KATONA 1954, 2; my translation). The above description is an excellent summary of the environmental conditions in the Sárköz region: it was a uniform landscape before the river regulations, and thus also in the 6th–5th millennium BC.

The present studies not only focus on the alluvial plain, but also on the broader area of the forested and hilly landscapes in Transdanubia in the western Carpathian Basin. The reason for choosing a larger area is the chance for comparison: we can thus include the archaeological results of the neighbouring regions of central and western Transdanubia where fundamental research advances have been made during the past two decades.

It must at this point be recalled that Starčevo groups had also settled in roughly similar environments south of the Sárköz region: marshy loess dominates the areas bordering on the 90–200 m high alluvial soils between the Drava and the Sava, where floods occurred regularly (ŠPARICA 2007). In the Srem region, the Starčevo settlements similarly lie on high plateaus (PETROVIĆ 1976; 1984/85), resembling the location of the culture's sites in the Szekszárd area. According to Kornelija Minichreiter, the settlements lay "on riverbank terraces, on sun-

drenched, lower-lying gentle hill slopes in stream valleys and near water sources [...] on the plain next to former watercourses, of which only dry beds remain today" (MINICHREITER 2006, 80). The single major difference between the two regions was that Transdanubia was more heavily forested (SÜMEGI 2004).

It is important to bear in mind that apart from being a unique alluvial wetland along the Danube, the Sárköz region is also a liminal, marginal zone, lying between the South-East European lowland (i. e. the Voivodina and the Banat in the northern Balkans) and the cool and forested hills of Transdanubia that have more in common with the Atlantic Central European landscapes. A growing interest in the frontier zones in the Carpathian Basin has appeared in prehistoric archaeological research. Many models have been proposed for explaining the divides and frontiers between cultures and population groups as reflected in the archaeological record. These frontier studies reflect an awareness among archaeologists that research on the internal development of a particular archaeological unit should be coupled with the examination of the reasons for the halt in the spread of a culture if it was not caused by a geographic barrier, as well as of the reasons for the lack of interaction with neighbouring cultures in order to gain a better understanding of cultural development. Models on archaic frontiers have changed significantly during the past decades. Earlier, frontiers were generally conceived of as an impassable demarcation line (EHRICH 1961), even though boundaries of this kind hardly existed in Europe before the emergence of nation-states and their closely guarded borders. More recently, border zones are conceptualised as permeable areas, porous and dynamic, providing ample opportunities for interaction between different communities, and resembling frontiers rather than boundaries, whose mediating role is at least as important as their presence as a barrier.

The spread of sedentism and food-producing economies in the earlier 6th millennium BC represented a major advance towards civilisation in Europe. Studies shedding light on various dimensions of this process have an overall relevance for European prehistory. This is perhaps one of the main reasons why, besides the obvious interest in this subject in Hungary, new advances in frontier studies and discussions on the potential regions where innovations were transmitted, as well as on the modes and the actors of transmission have always been followed with keen interest.

A change in conditions can be caused by many different factors: different soils, fluctuating groundwater levels, topographic conditions, vegetation, and temperature – these are the environmental factors. Marginal conditions can also evolve owing to a change in subsistence practices, or between two groups in a frontier region as

a consequence of political, religious, linguistic or other factors leading to isolation (COLES/MILLS 1998). Some marginalising factors such as temperature, hydrological conditions, and natural topography are independent of a region's occupants, while others such as subsistence strategies have a strong impact on whether or not a particular group becomes marginal. What might be a disadvantage for one group can be an advantage for another one with a different life-style (HALSTEAD/O'SHEA 1982). An environmental marginality certainly existed in the case of the Szekszárd Hills region.

Living in a frontier zone of this type demanded a strong measure of adaptation from the communities settling there. This is a crucial dimension in any examination of the reasons of why the Körös groups played an in-substantial role among the first farmer groups migrating to the heartland of Central Europe along the Danube, while the Starčevo communities left an indelible mark. It seems to me that this transitional, marginal zone played a key role in the adaptation of the Transdanubian Starčevo groups and their willingness to make contact, without which there could have been no interaction with the local forager population, leading to the emergence of the formative Linearbandkeramik culture (LBK). Thus, the Danubian floodplains in southern Hungary and the adjacent Szekszárd Hills region played a prominent role in the Neolithisation of Europe.

Accepting the assumption that the Körös and Starčevo populations had belonged to different language families (or were part of the same language family, but spoke different tongues that had separated them to the extent of preventing mutual understanding), as had the northern and southern Transdanubian LBK groups and, later still, the Lengyel communities and the Neolithic groups to their south in the Drava region (the Sopot and Vinča groups), we should be able to define when and where these differences had evolved. The Körös and Starčevo populations were still part of the same cultural complex in the culture's early phase, which lasted until the turn of the 7th/6th millennia BC in the northern Balkans, not far from Hungary's current southern border. The early LBK can, for the greater part, be derived from the Starčevo culture, while the late LBK groups were the descendants of a single, early cultural unit with a lapse of a few generations, and the Lengyel culture is clearly descended from LBK. New cultural impulses, if any, could only have arrived from the northern Balkans, the very region from which this culture set itself apart. How can different language groups be assumed among the Neolithic populations of Transdanubia in the light of such a clear-cut genealogic order? It follows from the above that the current archaeological record is unsuitable for the study of the possible linguistic aspects of the Neolithic of the Carpathian Basin and thus linguistic explanations can-

not be invoked in the frontier models suggested for this region.

In the Transdanubian Sárköz region, the LBK settlement territory does not overlap with the Starčevo distribution, and, as the observations made at Alsónyék show, there might have been a gap between the site's two occupation phases. The reason for this gap may possibly be that the formative LBK area lay north of the Sárköz region, in central and western Transdanubia, in the Balaton region. After this short gap, the LBK spread across the entire Sárköz and the immediately adjacent regions (BÁNFFY 2003; MARTON/ROSS 2012; JAKUCS ET AL. 2016; 2018), as reflected by the often extensive and intensely occupied settlements. Another important issue is to what extent a newly arriving Sopot group from the Drava region had made a deliberate choice to occupy the Alsónyék site and to construct a circular ditch in the vicinity of the LBK house area, and, particularly, why a Lengyel community chose the very same flat hillslope for its settlement slightly later (the successive occupations and internal chronology of this long-lived settlement have been discussed in a volume published in 2016: OSZTÁS ET AL. 2016 and further contributions in the same volume).

The appearance of the Sopot culture north of the Drava River and north of its core area in Croatia is often considered to be a catalyst for the birth of the Lengyel culture from late LBK groups, and marks the advent of the local Late Neolithic at the turn of the 5th millennium BC. Given this broad situation, the eastern part of the Sárköz region, including its eastern end, the Vörös mocsár (Red swamp) area is notable not only for the major stratified Sopot settlement at Fajsz-Garadomb, but also for the north-westernmost Neolithic tell settlement in Europe. Fajsz-Kovácsshalom is therefore a key site for understanding the shifts in land use immediately before the emergence of the Lengyel culture, the large cultural complex spreading to vast regions of Central Europe (BÁNFFY 2003; BÁNFFY ET AL. 2014). The chronological position of the Sopot culture is even more intriguing in the western part of the Sárköz region, for example at Alsónyék, where the Sopot site lies just 1 km away from the Lengyel core settlement, with which it proved to be partly coeval (cf. ROSS ET AL. 2016).

The beginning of the 5th millennium BC saw the emergence of the huge Lengyel cultural orbit; in the Sárköz region this period is represented by the Lengyel settlement and cemetery at Alsónyék. Nearly 9000 of the approximately 15 000 excavated features can be assigned to the Lengyel phase, including 2359 burials, numerous pits and pit complexes, and 123 post-framed houses. Thus, the Lengyel presence and impact is one of the salient questions in the investigation of the environment and of land use.

A little farther to the north-west, the lacustrine area of Lake Balaton, surrounded by marshy creek valleys, was an ideal habitat for hunter-gatherers (ZATYKÓ ET AL. 2007; BÁNFFY ET AL. 2007). When examining how the settlements of both the Starčevo and earliest LBK cultures correlated with the wetland and lakeshore environments, which are more typical for Mesolithic foragers than for the habitats preferred by farmers, a local population has been generally assumed. As a matter of fact, the recent significant increase in relevant data has yielded both archaeological and environmental evidence for pre-Neolithic settlements.

The first data on the water level fluctuations of Lake Balaton, which postulated a rather high water table and an extended marshland around the lake at the dawn of the LBK, were published several decades ago (BODOR 1987; NAGY-BODOR/JÁRAI-KOMLÓDI 1999). More recently, a detailed environmental analysis of the Mid-Transdanubian Balaton region has been undertaken as part of a large-scale research project. This project targeted a full reconstruction of the region's geohistory based on all possible means of geoarchaeological and palaeoecological investigations (pollen, macrofossils, mollusca, sediments, and hydrology). Led and evaluated by Pál Sümegi and his colleagues, the project's goal was to reconstruct the anthropogenic impacts and the changes in their wake in the context of settlement strategies and land use (ZATYKÓ ET AL. 2007). The most recent investigations have indicated a climatic shift to a wetter period in the 6th and 5th millennia BC, including a fairly sudden rise in the lake's water level. The first study, by Knut Rassmann and colleagues, in this book is based on a method that has become a routine exercise during the past decade, but was truly pioneering when it was first employed. The geophysical prospections at the Alsónyék site were conducted in the area beyond the planned motorway track, which was therefore not excavated. The first results called for further investigations, and by the time the joint RGK and Institute of Archaeology (HAS) projects had been completed, several other small regions around the Neolithic sites of the Sárköz were included in the research project. Each year of the project, some novel method appeared that was tested and included in this work. The current state of research is reflected in the chapter by K. Rassmann et al. – however, given the rapid increase in new methods, it also provides a snapshot, an overview of the current methodological arsenal. The main author of the next chapter, Pál Sümegi, is an environmental specialist, a geoarchaeologist, who has been involved in the study of hydrological conditions and their changes over the centuries or, better said, over the millennia in southern Transdanubia. Lake Balaton is one of the most whimsical waters in the entire region,

whose water level fluctuated in the wake of even minor or minimal climatic changes. The study focusing on the Neolithic and the immediately ensuing period offers a good overview of the changes in the settlement history in the broader region.

P. Sümegi and his team, including several PhD students of the Szeged graduate school, focus on the environmental history of the Danube alluvial wetland and its margins in the west (in Transdanubia) and in the east (in the Danube-Tisza interfluvium). The comprehensive analysis in the chapter is based on many years of intensive environmental and geoarchaeological research. Sedimentology and pollen analysis are the two ends of the scale, when proceeding from the analysis of inorganic to organic remains.

The next chapter might seem a small detour in geographical terms, but it gives a good insight in the hydrological conditions of the southern shore of Lake Balaton and the adjacent areas in southern Transdanubia in total, to which also the Sárköz region belongs. Gábor Serlegi analyses the settlement positions of the different archaeological periods beginning with the Neolithic and Chalcolithic. One of the most important hydrological factors is the groundwater level of the hillsides. He creates models on how the possible settlements on the lakeshore, river banks, or more often higher terraces and hill slopes were determined by the groundwater level, also in terms of storage pits that had to be safe from the groundwater, and e.g. wells dug in different depths. The results are compared with stratigraphic data gained from excavations and from offsite corings around the settlements.

The last, rather lengthy chapter in this volume offers an overview of the macrobotanical investigations on several sites of the Sárköz region. Angela Kreuz initially began to work with on- and off-site samples with Péter Pomázi, a young Hungarian archaeologist and botanist, who regrettably stopped working on the interpretation of the samples and thus A. Kreuz was kind enough to complete the work herself. However, once she devoted herself to this immense work, she also included all the other Hungarian Neolithic sites she had been working on. The result is a major comparative study, providing a comprehensive overview of the major fields of archaeobotanical work in the Sárköz and other regions.

Thus, the present volume can hardly be regarded as an ultimate concluding work, but much rather as an introduction in at least two senses. Firstly, because the results – as set down in the other chapters of the book – reflect a certain stage of research, which, as we all know, changes rapidly with the introduction of new methods and theoretical approaches in prehistoric research. The other reason for the introductory nature of the present volume is that a series of further studies are currently in progress, covering osteology, aDNA, and stable isotope

analyses, Early Neolithic clay houses, Late Neolithic settlement structure and architecture, settlement pottery, and household analyses, interpretation of the thousands of the Neolithic burials, just to name some of the tasks still ahead of us in the Sárköz, this very special southern Transdanubian region. Most of the individual chapters of this introductory volume were initially not scheduled

for publication here, but it seemed prudent to bring them together, as – according to my hope – the sum will be more than its details. The present volume intends to “set the scene”, in the hope that soon the new facets of the Sárköz Neolithic will follow this introductory publication.

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