End report — PD 121128 Differences and trends in the hard animal material manufacturing tradition in the Carpathian Basin during the Late Neolithic period

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1. Implementation

With this project, we attempted to define the character of the Late Neoltihic worked hard animal materials in the present day Hungary. Eleven archaeological sites were selected for our study connecting to our previous research on other Late Neolithic settlements (Aszód-Papi földek and Polgár-Csőszhalom site 6). Our aim was to get a comprehensive picture about the worked hard animal material industry of the Late Neolithic period, especially the possible connections of the two main cultural complexes, the Tisza-Herpály-Csőszhalom and the Lengyel complex as well as the connections to the neighboring cultures. We aimed as well to spot regional differences among the very traditionally produced tool assemblages. Since very little is known in general about the worked hard animal material industry in this period, we wished to gain a synoptic picture in order to point differences in the tool manufacturing traditions, through different tendencies in manufacturing process and technical gests. Technological study made possible to point out slight differences in manufacturing among the larger cultural complexes tending towards further division possibilities.

2. Participants

The project did not necessitate the participation of specialists from different fields of archaeology, the leading researcher was able to carry out all necessary scientific as well as bureaucratic study and investigations connecting to the project.

3. Investigation and results

Our investigation was based on a detailed study of the worked hard animal materials in terms of a typological, technological and raw material preference. To fulfill our plans, eleven sites were selected for study all over present day Hungary. The complete worked hard animal material assemblage selected prior our project was studied, typological grouping cross-matched with raw material and skeletal element preference and technological study was performed. The technological study concentrated on several stages of the manufacturing chain, such as the first step of the raw material transformation, the débitage, followed by the different steps of the shaping, where the preform becomes a sketch, followed by a half-finished and a finished tool. Certain technological gests, processes and methods used during the production seem to be less connected to the technological level of the given society but merely a choice influenced more by traditions.

The composition of the collection and the raw material choice in terms of species and taxa seems to be as well more ruled by cultural phenomenons than environmental possibilities.

The comprehensive study of both typology, metrical data and technology offered detailed evaluation of such large tool cathegories as the points or bevels, which tended to build a mass where tendencies are hard to recognise.

In the case of the site Balatonmagyaród-Hídvégpuszta unfortunately it was impossible to fulfill the workplan. Despite of the former agreement and valid research permission the storing Thúry György Museum in Nagykanizsa refused to prepare the material for study based on stock protection reasons because of severe damage and thus immerse information loss in the documentation. As an archaeologist I do understand the importance of protection of the excavated find material, so I had to understand their decision.

3.1 Connotative picture on the worked hard animal material industry of the Hungarian Late-Neolithic

As a result of our research project we gained an overall picture about the worked hard animal material industry of the Late Neolithic period. Study and evaluation of collections of several sites and the re examination of their archaeozoological material initiated a possibility to compare the picture based on the study and evaluation of other find categories, such as pottery with the picture worked hard animal material industry shows us.

We assume a well developed, advanced, more or less unified technological knowledge in the complete Carpathian basin. One of our main aims was to shed light on the reasons of differences observable in the worked hard animal material industry. Both in the archaeological material of other raw materials, we saw differences between the eastern and western half of the country. These differences are partially numerical: the worked hard animal material collections originating from eastern side of the Danube are more numerous than those of the western side. One explanation is plain natural. This may be due to the unfavorable transdanubian soil conditions, where animal bones tend to be found less frequently.

3.2 Differences in raw material preference

We did not see large differences in the typological composition of the collections between the eastern and western half of the country, although some remarks can be made on raw material preferences. Game species were frequent all over the territory of neolithic Hungary and the increasing importance of hunting in Late Neolithic times is a common statement made by archaeozoologists already some decades ago. Game species were available throughout the country, such as the most important species to our research are red deer, roe deer and wild swine. Deer antler is a particular important raw material for several tool types, with the need of elasticity and shock resistance, such as heavy duty tools and intermediate tools (wedges). Due to our zoological data, this raw material was available in neolithic times in Hungary, but analyzing our data we confirmed, that it was used more often on sites of the Lengyel Culture. As seen in Aszód, we may presume, that Lengyel culture communities had more ties with the manufacturing of antler tools, taking a risk of experimentation with the raw material, but gaining a unique knowledge of manufacturing practices.

A typical situation in the Late Neolithic is the importance of large mammals, especially cattle followed by swine. This is true for the worked assemblages as well, although we have to stress, that the increasing importance of games, especially red deer and roe deer followed by wild boar is more represented among the modified bones.

3.3 First study vs. re investigation of the archaeozoological material

Re-examination of the archaeozoological material proves clearly that if the circumferences allow, this is a task, time shall be spent on. There is a significant difference, as presumed by us, regarding the number of worked hard animal material objects, where archaeozoological study was performed in contrast to sites, where it is lacking.

Site	Archaeozoology (NISP)	Tools originally selected	Tools newly identified	TOTAL
Veszprém-Jutasi út	6170	13	94	107

Sormás-Török földek (Lichtenstein-Tugya 2007)	467	4	5	9
Nagykanizsa-Palin (Lichtenstein-Tugya 2007)	1789	14	32	46
Szombathely-Oladi plató	1850	7	7	14
Szemely-Hegyes	293	26	1	27
Pusztataskony-Ledence (Csippán 2018)	3004	84	34	118
Szentgál-Teleki dűlő (Bartosiewicz 2009)	964	10	-2	8
Öcsöd-Kováshalom (Kovács-Gál 2008)	21094	663	¤	663
Alsónyék-Bátaszék	15801	436?	¤	436+?
Kisköre-Gát (Bökönyi 1974)	613	112	¤	112
Balatonmagyaród-Hídvégpuszta	?	?	¤	?

The re-examination of the archaeozoological material was not always possible. In the case of Öcsöd-Kováshalom I had to trust the archaeozoologists (Kovács-Gál 2008) and worked with the rich collection gathered by them since the access to the storage rooms was impossible to study the material. The archaeozoological study of Alsónyék-Bátaszék happened prior and parallel to my investigations and the communication was very good between me and the archaeozoologist, theoretically all modified pieces were gathered. Although we have to stress that the original plan on synchronizing the work of the archaeogoologist and me in terms of the sample strategies and selecting material for archaeozoological study from certain parts of the settlements was not completely fulfilled due to disadvantaged financial changes to the paralell project it was embedded in. At the end we decided together with the excavation leading archaeologist to concentrate on the modified hard animal material already collected at the field and selected along the archaeozoological study and if a financial possibility opens to continue the archaeozoological identification we will go on according to our previous plan.

The best proof of profit from examination of the archaeozoological material is demonstrated by the case of Veszprém-Jutasi út. Archaeozoological study was never performed before, only those finds were known and inventorised, which were identified by the archaeologist herself during the excavation. I was the first checking the archaeozoological material for modified hard animal materials, and the task was fulfilled with great success, exceeding even my own expectations, multiplying the number of modified finds and completing our collection with the pieces of the always lacking manufacturing debris.

At last, but not least, Pusztataskony-Ledence was the site, where the theoretically perfect situation of study could be carried out. The throughout study of the complete site run more or less parallel to our project (financed as well by a project PD 116711) housed by the same institution (ELTE). There was a possibility to communicate with the archaeozoologist during the study both ways as well as looking directly into the zoological material. The close work together resulted, that the modified hard animal materials could be selected completely from the archaeozoological material during the

process of the identification.
Sites with already done archaeozoological study lie somewhere in between this two ends. The fact, that the archaeozoologist already looked through the complete zoological material is a guarantee for the selection of significant amount of modified hard animal material finds, but our study revealed, that still, finds remain hidden among the animal remains, and can be selected by a new study of the zoological material. As presented above, there are large differences between the zoologists themselves and their efficiency in discovering the finds for us.

There was a large gain due to the re-examination of the archaeozoological assemblages in certain tool types quasi non or only sporadically existing before due to misidentification. In our case already before the beginning of the project a question to pay attention to was the presence or absence of antler tine tools participating in stone tool flaking named as punches and pressure flakers. These special tool types are of great importance since throughout the whole Neolithic the major raw material for working different materials were grinded and flaked stones. We may assume, that stone flaking was an everyday task, certainly not done by every member of a community, but practiced regularly. Since the main stone flaking techniques used in the Late neolithic are lamellar, the necessity of intermediate tools for the production of blades is inevitable. Based on analogies from different countries, this was done mostly using an antler tine tool as intermediate piece in the case of indirect percussion and as a direct tool by pressure flaking. All these tasks were done by hardly any modified red deer antler tines, which are easily misinterpreted among the other hundreds of tine fragments as natural breaks. Usually only the basal part of the tine shows any trace of sectioning (wheather sawing of chopping), the tine tip is hardly modified, in some cases a bit chopped or scraped flat. Antler in Hungary tends to gather limescale crust on its surface, these modifications are often hardly visible on the archaeological material. Based on experimental evidence and throughout literature parallels then again there was a possibility to collect several manufacturing stigmas characteristic to these tool types, helping in the correct identification as punches and pressure flakers. Like this I was able to identify these tools at several sites in the already collected hard animal material assemblage, but the main goal was the selection a large amount of such from the archaeozoological collections not realized by the archaeozoologists. At the site of Nagykanizsa-Palin-Anyagnyerőhely 9 pieces were identified from the zoological material and this tool type missing before completely from the assemblage.
The archaeozoolical re-investigation enlarged our collection of wastes, débitage products, preforms and sketches as well, which are essential for understanding the manufacturing chain and as such the life histories of the objects.
As a concluding remark we have to stress, that the average archaeological education is not enough for the sufficient recognition of the modified hard animal material finds during the usually non ideal circumferences of the excavations. This is true more or less for the present day archaeozoological education as well, the large individual differences in efficiency of selecting the modified finds approves, that the training must be deepened to help the archaeozoologists to recognize the stigmas of human modification and differentiate them form taphonomical and other natural caused phenomenons. This is even more true for the hard recognizable manufacturing techniques, like fracturing and pressure flaking or for the deer antler, where the modification stigmas may be easily misinterpreted as natural causes.

3.4 Differences in the manufacturing chain and some technological choices

We see different trends based on our technological investigations made on the débitage methods and shaping techniques during our research. A detailed data collection was made on every detectable steps of the manufacturing process. Actually this was one of our biggest aim of the project, since such systematic studies of the technological aspects of the manufacturing process was never performed before, it was very promising in results.
In Transdanubia slightly more fracturing occurs than in the eastern half of the country. It does not mean, that exclusively such techniques were used, in contrary, the average neolithic techniques and methods, like bi-partitioning by the most commonly used groove and splinter process rules the assemblages, but if we evaluate our data, a slight shift may be seen towards fracturation. It may have a connection to the more variable raw material and skeletal element choice used for certain tool types as well suggesting a different traditional background in the treating of animal bones respectively. In contrary, the attitude towards antler tends to be really strict, like the attitude on the Great Hungarian Plain towards bone manufacturing. At the other hand at the Great Hungarian Plain the commitment to a given species and skeletal element and preference for a good prepared débitage seems to be the strong living tradition. According to our data, the finishing shaping and reshaping of the tools shows a slight difference, too between the two large cultural complexes. Transdanubia is ruled by abrasion, while on the Plain, scraping is preferred.
On the other hand, we may trace slight differences between communities inside the large cultural complexes.
Technological investigations made us possible as well to systematize such large tools type roups as points and bevel ended tools. According to our data, althoug the law of the manufacturing regarding species, skeletal element and stages of manufacturing were quite fix throughout the period, there was a place for individual/collective choice and preference, which were detecteable comparing the different sites.

3.5 Collating old collections with new excavation material

Our original plan was to select sites with old collected material both from the western and eastern half of the country to compare with modern excavated materials from the same territory to test the reliability of such old collections. Our hypothesis was that the old excavated materials will be poorly identified and thus less numerous especially in less modified and thus less recognizable pieces.
Szentgál-Teleki-dűlő and Balatonmagyaród-Hídvégpuszta were spotted from Transdanubia and Kisköre-Gát from the northern border of the Great Hungarian Plain.
In the case of Balatonmagyaród-Hídvégpuszta there was no possibility to fulfill the examination, but we were able to test our hypothesis partially at Kisköre-Gát and Szentgál-Teleki-dűlő. A common problem of these old collections is, that the sorting and storing archaeozoological material changed significantly in the last decades (worked on the right lines, happily). We selected these sites for study, because we found data, that the archaeozoological study was made. Kisköre-Gát was studied by Sándor Bökönyi (Bökönyi 1974) and Szentgál-Teleki-dűlő by István Vörös (Bartosiewicz 2009). We hoped for the possibility to re-check the archaozoological material to test, if all modified pieces were discovered by the archaeozoologist or not. Unfortunately we experienced, that the archaeozoological material of Kisköre-Gát, stored in the Hungarian National Museum is not the full assemblage, but merely a selection of the most interesting pieces. This phenomenon is not unique, was performed regularly, but restricts the possibility of checkups, and the material of Szentgál-Teleki-dűlő was lost together with the identification data.

As conclusion we have to stress, that the old excavated materials are not always suitable for such kind of checkup, we have to work with the already selected worked material and archaeozoological data.

3.5 Regional differences

Alongside the large differences existing between the eastern country half, the territory of the Tisza-Herpály-Cultural Complex and the western Lengyel Culture we were luckily able to detect further shades of cultural impacts mirroring in the worked hard animal material industry.

The North Eastern territory, which was represented by the medium sized collection of Pusztataskony-Ledence 1. shows a clear typological pokeyness with a defined over representation of bone awls and wedges. Despite the relative large number of finds, the heavy duty antler tools are almost completely missing from the material. The nearby lying Kisköre-Gát, excavated decades earlier, revealed in contrast a rich and variable collection.

The middle and southern part of the large Hungarian Plain is ruled by the tells and the surrounding flat settlements. Regarding number and diversity, we found the most interesting collections. The sites of Öcsöd-Kováshalom revealed a large collection of finds. Manufacturing waste and half finished objects shed light into the production of the tools, which seems to be quite controlled and conservative at the site.

In northwestern Hungary we found merely moderate sized find materials, which may be due to the unfavorable soil condition as seen at Szombathely-Oladi plató respectively. The finds themselves corresponding to the observations made on the pottery show strong connections to the western Lengyel culture.

In the middle part of Transdanubia we investigated some sites with rondels (Nagykanizsa-Palin, Sormás-Török földek) and some flat settlements (Veszprém-Jutasi út, Szentgál-Teleki-dűlő).

On the southern part of Transdanubia the new excavation of the rondel at Szemely-Hegyes and the exceptional site of Alsónyék-Bátaszék was investigated at least partly. The rich find material shows strong connection to the southern Vinča Culture.

3.7 Summary and interpretation

As concluding remarks we may say, that the situation is far more complicated then dividing the country into two large cultural groups paralleling the two main cultural complexes. The picture we see is much more colorful. Even more attention shall be paid on the surrounding territories since our investigations proved strong and intense connections to the neighboring cultures. The northwestern part of the country, Szombathely-Oladi plató respectively, shows strong similarities to the western Lengyes Culture sites. Find material of Alsónyék-Bátaszék on the other hand showed strong influence of the Vinča culture.

Our preconception, the large sites revealing rich find materials serving as frame, while the medium to small sized materials with less variable material can fit into this picture is not valid. The large sites indeed gave us large amounts of finds to study fully suitable for raw material preference, manufacturing and use wear observations, representing all stages of manufacture and use as far as discarding and thus helping to understand the life biographies of these object far better, than ever before. We are able to test our subjective hypothesizes with statistical methods on these collections and understand their manufacturing chain better. Besides all the above mentioned advantages we see the disadvantages of these large collections in the high variability of these tools pointing out, that these settlements were afar from being "average". The high degree of the variability underlines

hypothesizes of researchers based on other find categories, than worked hard animal materials (pottery respectively), that these settlements were merely outstanding places, possible matching points of larger communities to cultures.

3.7 Possibilities for future extension of the research

There are at least two possible ways to continue and extend our research. One is further continuing collecting data and taking in more materials from different sites of the period together with the re-examination of the archaeozoological data. On the other hand as concluded for our research more attention must be paid on the education of the worked hard animal materials as well for the future archaeologists as well as archaeozoologists.

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