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ANIMAL HARD TISSUE INDUSTRY IN THE PRECUCUTENI  
CULTURE. CASE OF STUDY: THE ARTEFACTS FROM THE  
SETTLEMENTS OF  
ISAIIA AND TÂRGU FRUMOS

DOCTORAL THESIS

- Abstract -

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Through this thesis we aimed to characterize the industry of animal hard tissue industry in the Precucuteni culture by approaching various aspects of the production, use and function of the artifacts in the society. The image tends to be holistic; the artifact is analyzed throughout all the processes in which it was involved during its existence, from the mental projection of the object, the implementation of technological knowledge in order to transform matter into object, the cycles of use and refurbishments, the discard, the period in which it lied underground until its recovery through archaeological excavation, when it becomes the subject of cataloguing and typological interpretations more or less subjective of the archaeologist.

Although the study of animal hard tissue industry can provide diverse and rich information on the life of the prehistoric societies, its informational potential has not been fully exploited in the prehistoric archaeology in Romania, studies on this subject being underrepresented compared with those dealing with other types of artifacts. In these circumstances our approach is justified and useful.

Our investigation has as a start point the *intra-site* analysis of two settlements characteristic for the phases II and III of the Precucuteni culture: Isaiia – *Balta Popii* and Târgu Frumos – *Baza Pătule*. The choice for the two sites is justified by the importance of their cultural characterization of the two phases, the extent and quality of the archaeological investigations, as well as through the direct access to the materials, these being kept in the Seminary of Archaeology of “Alexandru Ioan Cuza” University and the Museum of Cucuteni Civilisation (part of the “Alexandru Ioan Cuza” University Museum), both from Iași.

The working methods are updated and widely used in the European archaeology and involve reading the stigmas that the technological gestures and the use of the tools *stamped* on their surface and on the volume of the objects.

*The technological investigation* is the main type of speech used in this paper. The analysis focuses on the reconstruction of the technological chain operations, in order to identify the constants of the manufacturing process. The first step of the analysis is to *read* the artifact, i.e. identifying manufacturing techniques and procedures by reading the macro- and microscopic technological traces that they produced. The second stage of the study is the interpretation of the data by focuses on three issues: the acquisition of raw materials, the methods of transforming it and the degree of technological development.

We thus intend to answer a series of questions. Concerning the issue of raw material acquisition, we aim to define the terms of the relationship between the availability of natural

resources, exploitation of wildlife for food manufacturing and the procurement of the manufacturing substrates.

Then, the methods and techniques used for the transformation of the raw material are analysed, in order to identify the elements that can be used for labelling the technology of the two communities.

The degree of technological development is another indicator used in our analysis, which refers to the effort and technological investment necessary to obtain an object.

*The functional approach* aims to identify the activities, in which the objects were used, the use of the tools and the relationship between intention, morphology and the manufacturing technology of the object. In this paper we use the model of analysis proposed by the researcher Rozalia Christidou and then developed by Isabelle Sidera and Alexandra Legrand, which involves reading the signs of wear by *macroscopic examination (high power approach)* of the volume supplemented by *the microscopic examination (low power approach)* of the surface of the artefact. Through combining the two types of observation there can be identified a number of elements that constitute the functionality of an object: action, movement directionality, the type or certain characteristics of the worked material.

For a particular type of object, the polished astragals, which constitutes a homogeneous class in terms of functionality, we used the *chaîne d'usure* method (proposed by I. Sidera and G. Giacobini) through which the stages of the wear development are recorded. Through the planimetric analysis of the artifacts we want to highlight the patterns of abandonment of objects and determine whether the production and use of objects of hard animal tissue is related to a specific area of settlement.

The data obtained through the *intra-site* analysis are then confronted with the bibliography to get an overview of this type of industry for the Precucuteni culture. We made comparisons between the two collections studied by us and the material from other settlements of the Precucuteni culture of our country, Republic of Moldavia and Ukraine. Were targeted particularly the sites of Bernashevka, Luka Vrubleveckaja, Florești and Tîrpești, for which more detailed information are given in the archaeological literature.

Thus, we worked on two quantitatively unequal categories of data and resulted from using different methods of investigation. The first category of data is the product of the direct analysis of the collection of sites of Isaiia and Târgu Frumos, which is based on a methodology developed specifically for this industry.

The second category of data is the one obtained for other Precucuteni settlements. In this case the information is, in most cases, fragmentary and monovalent, the approach is

typological, built on morphological, metric or presumed function. In very few cases technological information is provided.

The analysed lot consists of 352 artifacts, at different stages of production (finished objects, brackets, blanks, waste debitage) and having as raw material one of the four types of hard materials of animal origin: bone, antler, teeth, shells.

The analysis of each piece in the collection was made according an examination grid through which is queried different attributes of the artifact. For the organization of the information was created a database using the File Maker program. The information was divided into the following fields: stratigraphic context and cultural data, data on the conservation status and overall look of the artefact, the morphological data, data on raw material transformation processes, data on wear and functionality of the item, metric data, photographic documentation.

The same structure was used in the composition of the object records, in the form of two *corpora* of data inserted in the text, in the chapters corresponding to the two case studies. The two case studies were treated according to the same model, which consists of six parts: the archaeological site, the corpus of data for the typology of the objects, manufacturing technology, functionality and planimetric distribution of the artifacts in the settlement.

Following the *intra-site* analysis of the two collections and the comparative study of the material from other sites, we reached a number of conclusions.

Thus, through the technological analysis of the two collections of material verified by the literature, we were able to identify some patterns in the way of manufacturing objects that actually constitutes the *savoir-faire* of the Precucuteni communities. To some extent it was clarified how the variables relate to technological, functional, social and economic development in this industry. The acquisition of raw materials responds primarily to the functional and technological requirements, being influenced to a lesser extent by the subsistence economy. In all the settlements, whether the subsistence model is based on the exploitation of wild or domestic species, the raw material for the manufacture of objects comes mainly from *extra-muros*, be it procuring bones, antlers or teeth.

The proportion of different raw materials slightly varies from one site to another; the bone industry is always the most represented (60% of the artifacts). This situation is explained by the fact that the main type of object of economic importance is the punctiform object, made exclusively from bone.

The use of antler is primarily related to the activities employing tools with greater resistance to shock, so the horn is preferred for making handles, hammers, hoes.

Boars' teeth and shells, due to their pearly appearance and colour are primarily used for making ornaments.

As for the species chosen as raw materials the deer was preferred; stag and cattles hard animal tissue also have high proportions, each representing a source of material for express functional categories. Thus, the metacarpals and metatarsals of deer and other small ruminants were used for the production of pointed objects and in some settlements also the antlers of different functional purpose. The stag is the first source for producing the antler objects, but also the long bones are used in some cases to obtain pointed objects and tools with bevelled edge. The long bones from cattles are used: metacarpals and metatarsals for procuring bone powder, the plate bones as scapula and pelvic girdle (for items less common) or the short bones, as astragals, whose role is less tied to economic activity. Ribs are very rarely used to support the manufacture of tool with bevelled edge (only two items).

It can be seen, in the manufacturing of the tools a relatively simple concept, which involves a low level of technological development, objects preserving the natural morphology of the bone, the raw material conception is "furnished" and not changed. The chain of the technological operations in most cases is simple, usually with two operational sequences, the debitage and the processing of the distal part, rarely the mesial.

Our investigations on the functionality of the objects have documented the use of bone tools in leather (leather scraping and piercing fresh or tanned leather) and vegetable fibre processing (weaving baskets, weaving). The only way to document such occupations involving the use of perishable materials that resist only in exceptional conditions is just through such an analysis. The smoothing of ceramic vessels using bone tools it has also been attested.

An important contribution that this paper brings in the study of the animal hard tissue industry is the documentation of an activity practiced in prehistory for which there was no previous information namely, extracting bone powder. This was proven by macro and microscopic examination of the waste from this activity, namely the bone extraction media, previously misrepresented in the literature as items used for polishing.

Practices of discard of the objects were certified; their purpose was outside the scope of economic activities, rather linked to religious beliefs and behaviours of the community.

The existence of trade with animal hard tissue products was proven by the presence of ornaments made of shells of Mediterranean origin and some tools made through manufacturing method foreign to the Precucuteni environment.

Through the compared analysis of the material from the Precucuteni settlements, the most obvious feature is the homogeneity of the material. It is a unitary industry with the same category of objects with similar morphology, and most importantly, a common technological background. So there are certain shared knowledge and technological traditions in a vast geographical area (which includes the territory between the Siret and Dniester Rivers). This unity, initially surprised in the ceramic material was also observed in the lithic assemblage and now confirmed for the case of bone industry.