Cultural ecological and zooarchaeological research of prehistoric settlements
The connections between the late Copper Age households and the household rubbish

THEORIES

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AIMS AND RESOURCES OF THE THESIS

I identified over 23,000 pieces of animal bones from six different archaeological sites in this thesis. The aim of my research was not a conventional archaeozoological analysis, but the particular ecological, semiotic and systemic interpretation of these bones.

In the first step I had to determine the research questions, that would give the guidelines to my research. I drafted seven of these type of question. These were as follows:

1. Are the cultural anthropological and systemic methods useable for this small and special group of archaeological finds? Is it possible to make type-groups by classifying these finds as in the case of another find types?
2. Are these bone finds sufficient in terms of numbers for the purposes of anthropological investigations? Is it possible to outline a special cultural and ecological system based on the animal bones? How could it emerge itself? How could it work? Along what kind of relationships?
3. How can meat consumption and other forms of exploitation of the animals impact the cultural system? What was the importance of the animals in the social-, economical-, or the religious life? Were there any connections between the late Copper Age animal offerings and the economic life? Or did they have only a sacrificial function?
4. What methods can be used in approximating theories and the practice? What kind of sciences that we have to use for? How can we find a link between the semiotic or structural methods and the archaeological finds? What are the additional meanings of animal bone finds? How can we construct a semiotic system from these small scale of finds?
5. What kind of mathematical methods can prove correspondences between these theoretical structures, systems or subsystems? Which metric data can be used in testing relevant hypotheses statistically?
6. What is the most basic economic, social or ideological level, on which we can find clues to these phenomena?
7. What are the new and useable results generated by this kind of research?

These questions show that my research is synthetic. First, it applies a special method, but on the other hand the analyzed sites are broadly distributed in the territory of Hungary, so these sites showed a larger scale of the meat consumption, animal exploitation and keeping during the late Copper Age in the Carpathian basin.

RESULTS

The first part of my work was concentrated on the most important problem: how much information is encoded in animal bone finds? Earlier researchers declared, that bone finds are natural organic remains (ecofacts). This approach limited their interpretation. In my thesis I would like to explore a new aspect of these finds through their encoded information. For this purpose I used a basic archaeological categories such as attribute – artefact – type – assemblage – culture – culture group – technological complex as defined by David L. Clarke. During the identification, it became clear that animal bones, like other archeological finds, reflect these categories, just as much as any other type of finds.

During the analysis of animal bones the importance of the taphonomic processes has been emphasized. Quantitative methods useable and unuseable from the viewpoint of the thesis have been carefully selected. The clarification of these concepts facilitates the interpretation of the bones like a „real” archaeological finds.

In the next step, I had to make a draft of the information that we know about the animal bones as archaeological finds. This draft had two aspects: zoological and cultural.
In this summary I used all of the premisses and methods of the archaeozoological science. Finally I clarified:

1. What kind of information is encoded in the animal bones?
2. How many layers of interpretation do they possess?
3. How many questions can be answered from their cultural aspect?
4. How many questions can be answer from their zoological aspect?
5. What are the archaeological entities in the case of animal bones?

After these questions and answers I tried to identify links between the archaeological and cultural anthropological methods, system theory and the animal bones.

For this purpose firstly I had to review a cultural ecological methods and the basics of systems theory. In this part I had an advantage, that neither cultural ecology nor the systems theory are unknown methods in archaeology.

In the case of cultural ecology I realized, that the animal bones fit within the conceptual framework of cultural ecology. Julian Steward's cultural ecology has three steps:

1. Description and deep interpretation of the contact between the natural environment and the human culture.
2. Determination of the technology of consumption of the natural environment and methods of adaptation.
3. Determination of the influence of the adaptation and the consumption technology in other parts of the human culture.

following Steward's method with special system thinking I could make a modell of a special cultural paleoecosystem.

This special system composed is of the natural environment (habitat), including both living (biotic) and unliving (abiotic) phenomena, the domestic animals and the subsistence strategies of the culture.

The population of domestic animals in this case has a very important aspect, as domestic animals represented the transition between the domestic and wild spheres of life, they belonged to the primary environment of the human settlement.

These entities actuate the system with their relationships and feedbacks forming a dynamic equilibrium, because the changes in the entities do not make changes in the structure of the system.

The system is working with a special dynamic aspect providing the main contact between the different entities. This is meat consumption, because in our case this act is the main important aspect in our special ecosystem.

The further aims of the thesis included the identification of archaeological links between prehistoric households and the household rubbish (as represented by animal bones). For this purpose I had to use other scientific methods.

The adaptation of semiotic methods allowed the analysis of the structure of meanings of animal bone finds. For this step I made a draft of the semiotic methods used in my thesis. The parallel between the scientific methods in archaeology and abductive reasoning is more conspicuous. The evidence of human acts, in to possess of adequate rules, are recognizable.

Recognizing the correct rules depends on the researcher. Peirce said, that the human mind can choose the correct rules. The researcher screens all information through personal experience.

In our case the first step of abductive reasoning the different meanings of animal bones had to be reviewed.

The Result: the bone finds seem to be deposed without any rules. They display no high scale differences. Probably all of the settlements’ inhabitant ate meat, but of different qualities and quantities.

In order to understand this patterning, I had to differentiate not between bone finds, but between the different depositions or features.

Some deposits contained many of bones of different animal species. These bones represented different body parts of the animals. These bones were distributed within a limited space. Meat eating thus formed a special system at Copper Age settlements.
The quality and the quantity of meat were a part of a system.

The archaeological evidence of this system is represented by animal bones, in the form of household rubbish.

These finds were determined by the inhabitants of the particular settlement and culture.

The next step in abductive reasoning was to create a Rule. The Rule in our system is, that the scattering of the animal bones were determined by cultural and personal phenomena. In order to recognize the system we need to identify the elements and entities of the system. For this purpose additional rules are needed:

1. We have to see both diachronic and synchronic processes during the analysis.
2. We have to realize, that one can see only the combined results of both diachronic and synchronic processes.
3. The pointer of the stage of the system were the quality and the quantity of the meat.

In a view of the Result and the Rule, We can realize what was the Case in this abductive reasoning. The Case was, that the useable meat-resourcees distributed in equal quantity between the different parts of the settlement. So same resources, same act, same deposition. The differences only in the distribution of the bodyparts.

This differences indicate different meat-eating phases.

These phenomena were studied using statistical methods. I choose numerical taxonomy, a well known method for classifying finds in archaeology.

The use of numerical taxonomy is more problematic in the case of bone finds, because they possess similar attributes. On the other hand the most important economic species were important in all archaeological periods in very similar proportions. They showed no functional differences. So I had to realize that animal bones are unfit for numerical taxonomical analyses.

At this point I did not use the method for classifying bones, but rather the entire contents of features for the analysis. The different features were treated as operational taxonomical units (OTU).

Finally I explored the practical implications of my thesis. At first I needed a short review of the research history of the Baden complex and the natural history of the Carpatian basin. Next I made the complex archaeozoological and cultural ecological analysis of animal bone finds from different archaeological sites. On the basis of my research I declared, that the main differences between the different settlements were in the resource management by the inhabitants.

The archaeozoological investigations were carried out on the basis of statistical methods. Using numerical taxonomy, I had a different number of feature-groups at all settlements.

Traces of houses tend to be invisible at Copper Age settlements due to the absence of foundations. By projecting the feature-group onto site plans on the basis of abductive reasoning, I could localize individual households. The different households are defined by all feature-groups. A localization of 21 households became possible at the six settlements investigated using this method.

In the last part of my thesis I was dealing with the special phenomena of the Baden culture complex: the bodies of sacrificial animals. For this purpose I had to review the religious studies, in order to find a uniform and useable terminology for this phenomenon. In the statistical analysis of animal bodies quantitative variables became necessary.

On the basis of Eliade's distinction between Holy and Profane, I sub-divided visible variables of animal bodies, into three main groups of naître – space – time. Statistical analyses yielded the following new results:

1. is the visibility of distinct groups depends on the species, the age and the position of sacrificial animals.
2. Another important group was separated on the basis of the association and the appendix.
3. The last group was defined by the signs of the fire and the pathology of the animals.

I continued my investigation using semiotic methods developed by Roland Barthes, and thanks to this method I could recognize the stratification of meanings between phenomena of the animal sacrifice.
In my thesis I tried to redefine animal bone finds and placed them in a special cultural paleoecosystem. I attempted a whole review of the contact between different subsystems (e.g. social, economical, ideological) of culture and the phenomena of meat consumption, in as reflected by animal bone finds. I also tried to redefine the stratification of meanings of this special archaeological find-type.

My work opened numerous new questions. Continuous research will be necessary to better understand the meanings of animal bone finds.