Advanced in Faunal Analysis for Archaeology

Matsui Akira

This paper briefly reviews from a historic perspective the development of the ways in which faunal remains excavated at archaeological sites contributed to archaeology, primarily drawing upon cases in Western Europe and North America. In particular, I focus on the role which the faunal analysis plays in reconstructing the past life ways.

Until the nineteenth century, detailed chronological framework of the Stone Ages had not been developed in England and France. Age determination of the Paleolithic sites had to depend on the association of stone tools with extinct or existing species of faunal remains. Consequently, paleontologists and geologists played a primary role in archaeology, especially prehistoric archaeology. In the nineteenth century in Denmark, for example, biologists actively engaged in archaeological investigations of shell middens. The kinds of research topics they were interested in included: 1) artifacts or “ecofacts” which would give them a clue to understanding paleoenvironment; 2) the existence of bite marks by dogs on bones; and 3) the estimation of seasons in which a site was occupied. Danish research into shell middens and the Swiss excavations of lake dwellings carried out in the late nineteenth century yielded a wealth of zooarchaeological data, and the news was immediately reported to North America, Asia, and Oceania. Consequently, numerous shell middens were excavated and the results were reported at that time.

In North America in the late nineteenth century, the majority of shell midden excavations took place on the East Coast and in the Florida Peninsula at first, and later the Department of Anthropology at the University of California at Berkeley became the center of research into shell middens. The reason why this research was made “anthropological” was that American archaeologists until the 1910’s did not recognize the importance of stratigraphy and typological changes of artifacts over time. American archaeologists assumed that shell middens were formed by continuous one series of actions. They further considered it possible to estimate the total number of shells in the midden based on the duration of time necessary to form a shell midden and population of a community which contributed to the shell midden, according to the following formula.

\[
\text{Amount of shell meat a resident takes a day} \times \text{time duration necessary to form a shell heap} = \text{total number of shells}
\]

Such a formula is not accepted by contemporary researchers, including myself. Nonethe-
less, I value the development of sampling technique resulted from shell midden research at that time. Unfortunately, once archaeologists began to develop chronological frameworks based on typologies of pottery and stone tools, faunal analysis became a minor branch in archaeology in the early twentieth century. The recognition of archaeology as an independent discipline also contributed to weakening ties with biologists.

In the 1950's, faunal analysis was again given an important place in archaeology. In England, J. Grahame D. Clark pioneered the branch called "economic archaeology" based on his wealth of earlier research experiences in environmental archaeology. Since economic archaeologist assumed, for example, that the faunal remains represented prehistoric people's food, they attempted to estimate the total amount of animals' meat which would have been existed at an archaeological site.

Similarly in North America, Walter Taylor voiced the importance of collecting floral and faunal remains at a site in order to reconstruct subsistence. In the 1960's under the influence of the "New Archaeology", Kent V. Flannery applied ecological concepts to archaeology and proposed a model of society adaptation to environment.

Following these important precursors, zooarchaeologists' interests have shifted to domestication of animals, hunting techniques, and cooking methods which were results of human manipulation of the environment, and methods and theories to investigate these issues have developed considerably. Under the current archaeological trends to reconstruct and explain the past life ways through the analyses of sites and artifacts, zooarchaeological studies are unveiling more and more potentials to contribute to the main stream of archaeology.