Experimental Archaeology refers to the application of experimental methods in data collection and description, interpretation, and explanation of the archaeological record. It is one of several increasingly important sources of archaeological analogy. It is a study by which archaeologists test the validity of assumptions made about past behavior. The usefulness of the approach is exemplified by a long history of experimentation which has its beginnings in the early nineteenth and twentieth centuries. Early examples include the work of the English archaeologists Lubbock, Joan Evans and A.H.L. Fox Pitt-rivers, who experimented with stone tools and digging implements in the nineteenth century as the basis for interpreting their manufacture and use.

In the twentieth century, the experimental tool tradition has been furthered by the pioneering work of Don Crabtree and François Bordes, whose work has led to the replication and identification of stages of production. Further work by the Russian scholar Semenov and a number of British and American scholars, including Lawrence Keeley, have defined methods of examining wear patterns produced on artifacts as the result of differing uses. These and other studies provide a basis for examining the relative efficiency of one tool or strategy over another. The experimental tradition has over the course of the twentieth century broadened to include the replication of features and the labor force required to construct such large and notable features as Stonehenge and the Egyptian pyramids. In some instances experimental projects have provided insights about the nature of construction, the efficiency of the technology used, and the deterioration of features after abandonment. In other instances experiments with replicated features have provided a more adequate determination of function. Yet other projects have included attempts to duplicate agricultural practices, to determine the feasibility of transoceanic travel so well exemplified by Thor Heyerdahl's Kon-Tiki voyage, and to reconstruct community lifeways.

Most experimental studies belong to one of four distinct categories. These include replication experiments, testing of methodological assumptions by applying them to known contexts, experiments involving site formation processes, and ethnoarchaeology, or the collection of ethnographic data with specific reference to archaeological problems.

The best represented are replication experiments in which artifacts or activities are reproduced. These are well exemplified by stone-tool replication as well as the reconstruction of features discussed earlier. These experiments are typically specific in design and assist the archaeologist in assessing the probable function of materials. Closely related are experiments which seek to evaluate the methodological assumptions made about the archaeological record by testing them in historical context. Test situations have included Plimouth Plantation and the investigation of the early twentieth-century village of Silcott in Washington State. Such studies make it possible to control time and space dimensions so important in archaeological interpretation. In addition, such contexts have broadened our appreciation of the lack of corroboration between historical records and archaeological data. These experiments have often caused archaeologists to consider the interrelationship of activities across communities.

An increasingly common experimental approach is that concerned with Site Formation Processes. The intent is to better understand the natural and behavioral processes which form archaeological sites and the subsequent alteration of deposits. One of the early and major discussants of the approach is Michael Schiffer, who introduced the idea of transformational processes, which attempts to construct the post-depositional history of archaeological sites.

In recent years an increasingly common experiment termed “ethnoarchaeology” has involved the collection of ethnographic information to address specific archaeological problems. The approach “checks” the validity of archaeological observations or hypotheses against ethnographic data. These comparisons are often specific and, as with Longacre's and Ayers's description of an abandoned Apache wickiup, describe associated spatial relationships of artifacts and features reflecting patterns of residence and activity. In the case of the Apache wickiup, observations were compared to contemporary Apache use of such structures as a “check” on the original interpretations. Ethnoarchaeology has greatly assisted our linkage of the past with contemporary behavior.
Typically archaeologists combine more than one of the experimental components. A number of archaeologists have used the study of site formation processes and Ethnoarchaeology to effect a broader linkage of past and present through Middle Range Theory. Binford's work among the arctic Nunamuit, and Yellen's research among the !Kung of the Kalahari Desert, have generated theories or explanations of limited relationships as the basis for examining the principles articulating more general theories. These studies link the dynamics of living cultures to their static consequences. Many good applications of this approach have been made by paleoanthropologists studying our earliest ancestors. Here the use of experimental approaches is critical. It is well exemplified by Brain's study of the accumulation of bone deposits at the South African site of Makapansgat and recently by Schick and Toth in Making Silent Stones Speak (1993).

As with all approaches, experimental archaeology has some limitations. In many instances, experimental evidence is negative, suggesting only that a particular phenomenon or event did not occur. Yet experimentation allows the testing of assumptions about the past by eliminating improbable hypotheses and identifying the range of possible explanations of highly variable archaeological phenomena. Increasingly over the past century, experimental archaeology has become a key element in understanding the past.[See also: Ethnoarchaeology; Theory in Archaeology.]

Bibliography

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