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Binford, Lewis R.

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Lewis Roberts Binford (1931–2011) was perhaps best known for his profound impact on the discipline of archaeology. He played a key role in the transformation of archaeology from a particularistic study of select artifacts and human constructions to a holistic and scientific examination of past human behavior. Binford's epistemological approach essentially expanded the scope of social and cultural anthropological theory to encompass the entire span of human evolution. In fact, a portion of his archaeological research examined the very origins of "culture" itself. The following discussion, however, focuses primarily on his contributions to anthropological theory.

Biography and Definitive Works

Binford was born in Norfolk, Virginia, in 1931. During the Depression, he spent many hours hunting, fishing, and canoeing with his father in the Dismal Swamp near Norfolk. It was here that he learned about the wildlife, archaeology, and Native American history of this diverse region. Binford started college at Virginia Polytechnic Institute before enlisting in the U.S. Army. He was assigned to an army language school in California, where he completed an intensive course in Japanese. He then served as an interpreter in Japan and was assigned to work alongside several anthropologists who were involved in a large resettlement program on the Ryukyu Islands. Through this experience, Binford became interested in anthropology and archaeology. He went on to work in Okinawa, coordinating the remuneration of local communities, studying traditional house construction, and carrying out "rescue archaeology," when he assisted in relocating tombs that were being moved for military construction.

After his discharge, Binford completed college at the University of North Carolina (BA in 1957) and went on to pursue graduate studies at the University of Michigan (MA in 1958 and PhD in 1964). After completing his degree, Binford went on to have a distinguished teaching career at numerous universities, including the University of Michigan (1960–1961), the University of Chicago (1961–1965), the University of California–Santa Barbara (1965–1966), the University of California–Los Angeles (1966–1968), the University of New Mexico (1968–1991), and Southern Methodist University (1991–2003). While at the University of Chicago, Binford assembled his first cadre of graduate students, including Mel Aikens, Les Freeman, James Hill, Kent Flannery, Richard Gould, Bill Longacre, Tom Lynch, Christopher Peebles, Bob Whallon, Henry Wright, and others. Binford ultimately served as dissertation advisor for more than 79 students. His epistemological perspective and the results of his research are presented in 23 authored and coedited books and monographs, as well as in 141 journal articles, book chapters, reviews, and comments.

Two of his earliest publications, *Archaeology as Anthropology* (1962) and *Archaeological Perspectives* (1966), laid the groundwork for reorienting

American archaeology and the discipline of archaeology in general. Binford forcefully argued that archaeologists should abandon the idealist concept of culture based on "shared ideas, norms, and traditions." He chose to adopt the anthropologist Leslie White's view that culture was a nongenetic means of responding to the challenges posed by both the biophysical and the social environment. White had also emphasized the thermodynamic, systemic nature of culture and the significance of energy capture for understanding cultural evolution and complexity. Binford saw that this perspective possessed considerable explanatory power and would serve anthropological archaeology quite well.

Previously, archaeologists and other social scientists had assumed that much of the past was unknowable. Binford, on the other hand, argued enthusiastically that all cultures are systems within which food getting, technology, social and political organization, trade, religion, and ideology are all intricately interconnected. Change within any one subsystem reverberates through all of the other, interrelated subsystems. Given this view, artifacts and associated materials could then be seen as the material correlates of a full range of past human activities. The major challenge that then confronted all archaeologists was to utilize the static remains that exist in the present to evaluate their arguments about the behavioral dynamics of past societies.

Theoretical Contributions to Anthropology

During the 1960s, American archaeology began to undergo a fundamental shift. The traditional working definition of culture and the "space-time" taxonomic systems for ordering archaeological information were recognized as inadequate. Archaeology, at this point, was like a language with an ever-expanding vocabulary but without a grammar! A significant paradigm shift was required to make more effective, and more productive, the use of archaeological "facts." It was time for a new synthesis, and Binford led the charge.

Binford's first major step toward building anthropological theory and reshaping American archaeology was his doctoral research. His dissertation, *Archaeological and Ethnohistorical Investigations of Cultural Diversity and Progressive Development among Aboriginal Cultures of Coastal Virginia and North Carolina* (1964), focused on the South Atlan-

tic Slope Culture area defined by the anthropologist A. E. Kroeber in 1939. This region lay between the Blue Ridge Mountains and the coastal plains and had been occupied historically by the Nottaway, Powhatan, Nansemond, Chowan, Tuscarora, and Meherrin. This culture area was both culturally and ecologically diverse. Native populations made use of a variety of food-getting technologies to obtain their food by means of hunting, gathering, fishing, and cultivating domestic crops. These Native American groups were also organized into a diverse array of sociopolitical systems.

Binford set out to make use of historical records and on-the-ground reconnaissance in order to identify archaeological sites that could be linked reliably to known tribal or ethnic groups in the region. The methodology is known as the direct historical approach. His ultimate goal was to study Native American cultural complexity and its causal linkages to the productivity of natural food resources such as plants, deer, bear, and migratory or anadromous fish throughout the piedmont region. This approach reflects a significant departure from the idealist view of culture (i.e., ideas drive and shape behavior) used by both anthropologists and archaeologists at that time because it causally linked the variation in biotic variables to the levels of complexity in cultural systems recorded in historic documents. Binford then used rich ethnohistorical literature to develop quantitative measures of cultural complexity based on tribal territory size, population density and distribution, settlement types and patterns, and degree of subsistence specialization. He found, for example, that the numbers of status positions as well as the population densities within these societies were highly correlated with fishing efficiency (the numbers of fish caught with devices and nets). Furthermore, Binford found that the Powhatan, who were characterized by the most complex sociocultural organization, had established clusters of villages and hamlets within the productive transition zone between fresh-water and brackish-water habitats.

Much of Binford's research and writing to follow were devoted to constructing the epistemology and methodology for anthropological archaeology. He proceeded to develop research methods for archaeologists, involving statistical analyses, sampling, site survey and research designs, actualistic or experimental studies, and ethnoarchaeol-

ogy (archaeologists studying the material remains generated by contemporary groups). It was also during this time that Binford began to give greater attention to the philosophy of science and to deal with questions like "How do archaeologists know what they know?" and "How do they gain greater confidence in our knowledge about the past?" Binford cautioned, for example, that archaeologists must make careful use of ethnographic information and analogies. Once formal similarities are recognized between certain archaeological observations and relevant ethno-graphic records, archaeologists should then deduce a series of interrelated hypotheses that can be tested using archaeological data. In addition, archaeologists should expect to find patterns of past human behavior that are not represented by ethnographic analogs. During the 1970s, Binford began a long-term ethnoarchaeological study of caribou exploitation among the Nunamiut Eskimo of the Brooks Range in northern Alaska. One of the ultimate goals of this field research was to understand the behavioral dynamics that generated bone assemblages in the archaeological record. This investigation is also a very significant contribution to the anthropology of Arctic hunters. It provides invaluable insights into the exigencies of human adaptation to extreme environmental conditions, and it isolates the underlying reasons why a given behavioral strategy is employed in a given situation. Should caribou be butchered to derive select anatomical parts, or should the hunters strive to make use of the entire animal? What anatomical elements of the caribou provide the greatest amount of fat and therefore the greatest number of food calories? Under what environmental conditions do hunter-gatherers implement food storage? These are anthropological insights that are frequently not documented in traditional ethnographies.

In 2001, Binford published a major synthesis of his global study of hunter-gatherers, titled *Constructing Frames of Reference: An Analytical Method for Archaeological Theory Building Using Ethnographic and Environmental Data Sets*. This monumental study mirrors the general questions and rudimentary methods utilized in his dissertation nearly four decades earlier. Yet this research was conducted on a global scale, and it involved analyses of a comprehensive, comparative database, including 339 hunter-gatherer groups from

the Americas, Greenland, Africa, India, Siberia, Japan, Southeast Asia, and Australia. These contemporary ethnographic cases were used to project estimates of population size and density for major biomes throughout the world. He concluded that the earth could have supported about seven million hunter-gatherers prior to the appearance of farming and herding. Binford then constructed a “terrestrial model” that utilized measures of plant and animal productivity to calculate independent estimates of population sizes and densities for any given location on the earth. Additionally, 15 variables related to demography, subsistence, group size, and mobility derived from the historical and anthropological variables were, in turn, analyzed in relation to a diverse array of climatic and ecological variables (e.g., latitude, longitude, mean annual temperature and bio-temperature, mean annual rainfall, net annual plant productivity, and water balance). These variables had been calculated for 1,429 weather stations around the world.

Binford utilized the terrestrial model to generate 21 “empirical generalizations” about hunter-gatherer adaptations. Yet it should be emphasized that the relevance of the variables initially used by Binford was grounded in ecological and anthropological theory. He found, for example, that sedentary groups do not rely on terrestrial game animals. This is understandable given the high energetic costs of meat transport in the absence of dogs, sleds, watercraft, or horses. He was then in a position to generate expectations about resource intensification and transitions from preferred ungulate hunting to more intensive food-getting strategies based on plant gathering and processing, aquatic resources, plant cultivation, or pastoralism. By extension, Binford’s terrestrial hunter-gatherer model possesses sufficient power to explain behavioral shifts toward other food-getting strategies.

Conclusions

Binford challenged anthropologists and archaeologists to expand the scope of their research, to develop more rigorous methodologies for data collection and analysis, and to think more critically. Science is a marathon without a finish line. Our understanding of past and present human behavior and cultural systems does not come easily. Social scientists can produce reliable knowledge by

means of an iterative process that involves generating, testing, and refining (or rejecting) explanatory models. These models are, then, combined to construct scientific theories. The robust consequences of these theories are then continually scrutinized and evaluated. Binford continually made use of the complex web of what we know to define better what we do not understand about the external world. He demonstrated how social scientists should make use of models and theories to identify productive anthropological and archaeological research questions, to construct causal arguments, and to evaluate those arguments by means of rigorous, structured observation and analysis. And he reminded us later in his life that theory building is not for the timid or faint of heart.

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