1 Behavioral Archaeology: Origins and the Four Strategies

An outgrowth of the "new" or "processual archaeology," behavioral archaeology arose during the early 1970s at the University of Arizona under the leadership of J. Jefferson Reid, William L. Rathje, and the author. Its first major tenet was simple: archaeologists, trained to study artifacts, can focus on the relationships between human behavior and material culture in all times and all places (Reid, Schiffer, and Rathje 1975). Beyond legitimating the study of modern material culture and furnishing a firm mandate for experimental archaeology and ethnoarchaeology, this tenet laid a foundation for crafting new questions about the past and present along with the conceptual tools to help answer them. Indeed, behavioral archaeology today can be likened to a large toolbox containing concepts, principles, approaches, and heuristics that researchers—whether processualists, evolutionists, or postprocessualists—may find useful alongside their own toolboxes. Unlike other conceptual schemes, behavioral archaeology is causally agnostic when it comes to explaining behavioral change: there are no *a priori* causes and no prescribed social theory. Rather, there are tools for investigating causes in specific cases. A behavioral archaeologist is, in the broadest definition, merely a person who uses some of these tools to advance a research project that attends to relationships between people and artifacts.

Over the decades, behavioral archaeology has furnished tools that can be employed to study archaeological inference and the formation of the archaeological record, to formulate questions in experimental archaeology and ethnoarchaeology, and to reconstruct technology and investigate technological change. Moreover, recent contributions address subjects such as social power, ritual, human communication, and landscapes. In the course of asking questions about these subjects, many practitioners raise new questions about the relationships between human behavior and material culture, and, in striving to answer these questions, contribute new concepts, principles, and heuristics to the behavioral toolbox. This small book cannot furnish a complete inventory of the contents of this large and constantly growing set of tools. Rather, the emphasis is on presenting the core tools and case studies along with a sampling of new directions.

The New Archaeology

In his first major programmatic statement, Lewis R. Binford (1962), leading theorist of the "new" or "processual" archaeology, presented the discipline with a daunting challenge. He argued that

because artifacts function in the major subsystems of every society—technology, social organization, and ideology—archaeologists could in principle construct inferences about these subsystems from archaeological remains. The ability to make such inferences, he insisted, was constrained by our "methodological naiveté" (Binford 1968a). In Binford's view, archaeologists had to devise new ways rigorously to link past dynamics (i.e., behavior and organization) to present-day statics (the archaeological record). Acknowledging that an ancient philosophy might be beyond reach, Binford nonetheless insisted that much of the structure of dead societies was recoverable. In the following decades, archaeologists accepted Binford's challenge, but developing *appropriate* method and theory has not been easy (histories of processual archaeology include O'Brien et al. 2005; Patterson 1986; Trigger 1989: 289-328).

Binford further claimed that reconstructing past lifeways and establishing principles of culture process could be achieved if archaeology became a full-fledged science. Turning to positivist philosophers of science such as Carl Hempel for guidance, he prescribed a heavy dose of theory building, explicit testing of hypotheses in formal, problem-oriented research designs, and search for laws that could serve in explanations (Binford 1968a, b). As I recall, this prescription did not sit well with many culture-historical archaeologists, some of whom believed that they were already doing science.

Although Binford's exhortations to "traditionalists" fell largely on deaf ears, a generation of young and enthusiastic processualists, empowered by his inspiring vision, developed methods for reconstructing, for example, subsistence-settlement systems and social organization (Binford and Binford 1968). The doctoral dissertations of William A. Longacre (1970) and James N. Hill (1970), completed in 1963 and 1965, respectively, stirred great interest at home and abroad. After all, on the basis of ceramic and other analyses, they claimed to have inferred marital residence patterns in pueblo sites of east-central Arizona. A few processualists, including Robert M. Adams (1966), Mark P. Leone (1968), Fred Plog (1974), and Ezra B. W. Zubrow (1975), employed archaeological evidence for evaluating models, theories, and laws—usually borrowed from other disciplines—about processes of cultural change. Processual archaeology's propensity to borrow theory and method from diverse disciplines was given impetus in the late 1960s by the publication of *Analytical Archaeology* (Clarke 1968). Clearly, this was a heady time for young archaeologists experimenting with new methods and ideas, seeking to establish niches in the discipline on the basis of innovative research.

The Beginnings of Behavioral Archaeology

During processualism's heyday in the early 1970s, a behavioral archaeology began to take shape at the University of Arizona. J. Jefferson Reid and I were graduate students in the Department of Anthropology; William L. Rathje, a recent Harvard Ph.D., was a young assistant professor. In coursework, fieldwork, and outside readings, we three had been exposed to processual polemics and products, and I had an especially rich grounding in the new archaeology. As an undergraduate at UCLA, I had taken classes from Lewis R. Binford, Sally R. Binford, James Sackett, and James N. Hill. During the summers of 1968–71, I participated in the Field Museum's Southwestern Expedition directed by Paul S. Martin in the Hay Hollow Valley of east-central Arizona, where Hill and Longacre had done their pioneering studies and where, in 1968, Mark Leone, Fred Plog, and Ezra Zubrow were senior staff members. When I entered Arizona's graduate program in 1969, I fully expected to earn a Ph.D. for some as-yet-unformulated processual project under the tutelage of William A. Longacre. Things didn't turn out quite as I expected (for a detailed autobiography up to 1987, see Schiffer 1995a: 1-24).

Fellow graduate students at Arizona came from a variety of intellectual backgrounds, and not a few—especially Donald Graybill, David R. Wilcox, and Mark Harlan—had various reservations about 1960s-style processual archaeology. In the context of wide-ranging discussions with our peers, Reid and I began to question basic tenets, such as Binford's (1964: 425) oft-quoted statement that "The loss, breakage, and abandonment of implements and facilities at different locations, where groups of variable structure performed different tasks, leaves a 'fossil' record of the actual operation of an extinct society." Such programmatic statements, we believed, were an invitation to apply statistical methods to the archaeological record in a rote manner and to interpret the resultant patterns directly in behavioral and organizational terms. Regrettably, processual methodology did not encourage researchers to consider—much less develop ways to control for—the effects of intervening processes, such as refuse disposal and various disturbances, which also might have contributed to the statistical patterns. We came to believe that the processual approach to inference, which failed to take into account the cultural and noncultural formation processes of the archaeological record, was incapable of producing sound knowledge about the past. The explicit handling of formation processes, as specified in our models of inference, became a pillar of behavioral archaeology (e.g., Reid 1985; Reid, Schiffer, and Neff 1975; Schiffer 1972a, 1976; Sullivan 1978).

In other important respects, however, behavioral archaeology was clearly an intellectual offspring of processualism. We fully accepted Binford's claim that artifacts were intimately involved in all aspects of human societies. At first our formulations followed Leslie White's (1949) tripartite subsystems (technology, social organization, ideology), but in later years William H. Walker reminded us that these categories obscure variability in the many ways that artifacts take part in activities. Thus, only as a first approximation are behavioral archaeologists apt to discuss today the techno-functions, socio-functions, and ideo-functions of artifacts (e.g., Rathje and Schiffer 1982; Schiffer 1992). At a more advanced level it is recognized that activity-specific interactions, as between people and artifacts, make possible phenomenally varied functions (Schiffer and Miller 1999a, b; Schiffer and Skibo 1997; Skibo and Schiffer 2008).

We also agreed with processualists that archaeology had to become more scientific. This could be accomplished, not by adopting cookbook approaches to hypothesis-testing and statistical applications, but by generating our own principles (theories, models, and laws) through experimental research and ethnoarchaeology, and by treating the archaeological record as a unique source of evidence for studying processes of long-term change (Plog 1974; Schiffer 1975a). In this view of archaeology's potential to become a unique behavioral science, we have not wavered. Indeed, behavioral archaeologists have made sustained efforts to craft distinctive bodies of theory.

At first, however, many of us tried to treat prehistoric cases with systems theory, ecology, and neoevolutionary principles (Reid 1973, 1978; Schiffer 1975b). As Reid is fond of pointing out, a small dose of general systems theory is salutary for first-year graduate students who utterly lack a scientific background. Although ecology (in its cultural and behavioral variants) properly calls attention to people–environment interactions, much effort is needed to make artifacts an explicit part of the modeling process (for recent attempts, see Bettinger et al. 2006; Kelly 2000; Ugan et al. 2003). Neoevolutionary principles and stage models did capture some large-scale patterns of cultural change that had been known since the mid-nineteenth century, but archaeological applications tended to devolve into tedious debates about whether a particular past society was a chiefdom or a state. Reid, Rathje, and I concluded that new principles—archaeological principles explicitly dealing with artifacts—would have to be formulated if we were to succeed in explaining behavioral change.

Like archaeologists of the 1950s, processualists had the immediate effect of expanding the range of legitimate questions about the past, decisively toppling traditional ladders of inference (e.g., MacWhite 1956). Behavioral archaeologists intensified that trend, removing additional strictures to

both questions and subject matter. In particular, Rathje's foray into modern garbage (e.g., Rathje et al. 1992; Rathje and Murphy 1992) provoked a rethinking of archaeology's nature and scope. If the traditional definition of archaeology excluded "garbology," a more expansive definition of the discipline would have to be crafted.

One day in 1972 Reid solved the definitional problem: archaeology, he insisted, was the study of relationships between human behavior and material culture in all times and all places. This move brought even present-day societies—traditional, intermediate, and industrial—within archaeology's reach. Under Rathje's bold leadership, behavioral archaeologists rooted through fresh garbage, surveyed vacant lots, and prowled flea markets. This definition also provided the intellectual space in which postprocessual archaeology took shape during the 1980s. However, like processualists, the Cambridge postprocessualists at first paid little attention to problems of inference, even eschewing scientific epistemology and methods (e.g., Shanks and Tilley 1987).

Reid suggested that the kinds of questions that can be asked about the relationships between human behavior and material culture form a framework of four interrelated strategies. Behavioral archaeology's four strategies (Reid 1973; Reid, Schiffer, and Rathje 1975) were proposed as a way to reintegrate a discipline that, during the 1970s, was apparently fragmenting (Clarke 1972: Chapter 1). The four strategies did not impose an overarching social theory in order to promote integration. Instead, they called attention to the interdependence of different kinds of research, and highlighted the contributions that archaeologists asking different questions (scientific or historical) could make to our understanding of the past and present. The following section, adapted from Reid, Schiffer, and Rathje (1975), outlines the four strategies.

The Four Strategies of Behavioral Archaeology

In Strategy 1, the archaeologist employs material culture made in the past to answer historical—i.e., particular—questions, descriptive and explanatory, about past societies. For example, one might ask, What was the mean population size of Grasshopper Pueblo between A.D. 1275 and 1400? When was the Eva Site occupied? What plant and animal resources were exploited by Paleo-Indians in the southeastern United States? Why did pueblo populations of the Southwest aggregate during late prehistoric times? Such questions, tied to particular regions of time and space, characterize most archaeological practice, whether prehistoric, historic, classical, industrial, or "indigenous" (*sensu* McGuire 2008).

Both in inference and explanation, research in Strategy 1 necessarily employs innumerable principles, many of which have been borrowed from other disciplines. Even so, for many decades archaeologists had also fashioned their own inferential principles by conducting experiments and exploiting ethnographic observations.

Formalizing this use of actualistic data, Reid defined Strategy 2 as the pursuit of *general* questions in present-day material culture in order to acquire laws useful for making behavioral inferences. The kinds of general questions that typify Strategy 2 include: What traces does a specific pottery-forming technique, such as coiling or paddle-and-anvil, leave on the finished product? What kind of polish is formed on a chert scraper that processed a dry hide? What is the relationship between residential mobility and investments in architecture? How long does it take dry maize kernels to decay in a constantly moist (but not water-saturated) depositional environment? Why are whole, apparently still-usable artifacts sometimes left behind on occupation surfaces? These are all *general* questions because they lack specific time–space referents. The answers to these questions take the form of experimental laws. Experimental archaeology, action archaeology, ethnoarchaeology, and living archaeology are terms applied to research in Strategy 2.

Experimental archaeology and ethnoarchaeology have followed the behavioral script since the mid-1970s, blossoming far beyond our expectations and addressing significant general questions, many of which we had not contemplated (for recent treatments of experimental archaeology, see Mathieu 2002 and Saraydar 2008; on ethnoarchaeology, see David and Kramer 2001; Fischer 2008: Chapter 5; on the early history of both in the United States, see Schiffer 2009). That this expansion is mainly a consequence of our early programmatic statements is doubtful. Because processualists—even some culture historians—were already moving in these directions (e.g., Chang 1958), a larger process of disciplinary maturation was no doubt at work; behavioral archaeologists merely endorsed the move toward actualistic studies, gave them a scientific rationale, and pursued them with vigor (e.g., Longacre and Skibo 1994; Schiffer and Skibo 1987; Schiffer, Skibo, Boelke, Neupert, and Aronson 1994). Indeed, archaeologists of every theoretical persuasion recognize that they cannot learn anything about past human behavior unless they employ experimental laws formulated in actualistic research contexts or, when necessary, borrow such laws from other sciences. Happily, the discipline now boasts dozens of books and monographs that codify principles in relation to particular artifact materials and inferential topics (e.g., Adams 2002; Cotterell and Kaminga 1990; Keeley 1980; Odell 2004; Rice 1987; Whittaker 1994).

In recent years, I have shown that one can also generate principles and models of potential archaeological utility by exploiting evidence from the historical record. I call this an "expanded ethnoarchaeology" (Schiffer 2008a), even though this nomothetic, historical research straddles the fluid boundary between Strategies 2 and 3.

Strategy 3 is the study of past material culture in order to produce principles that can be applied to understand processes of behavioral change in the past (and in the present). It is predicated on the belief that the archaeological record itself is the most appropriate source of evidence for seeking and evaluating principles of change processes. The kinds of general questions that might be asked in Strategy 3 include: Does the practice of irrigation agriculture lead to the establishment of state-level societies? By what processes do groups begin to domesticate plants? In what ways can large, stratified, multi-ethnic societies achieve social integration over long periods? Although earlier archaeologists gave lip serve to the goal of understanding processes of change, processualists such as Adams (1966) and Plog (1974) brought this goal to the fore. One implication of Strategy 3 was that archaeologists could become socially relevant by applying their new principles to the present (e.g., Fritz and Plog 1970; Martin and Plog 1973). Regrettably, few have availed themselves of the many opportunities afforded by Strategy 3; rather, archaeologists continue to borrow trendy social theories and models from other disciplines with decidedly disappointing results. Indeed, a case could be made that much of the "social theory" now in vogue is little more than reworked ideas from American historical anthropology, expressed in new jargon by people in other disciplines, and then imported into archaeology.

In Strategy 4, archaeologists study modern material culture, often in industrial societies, so as to shed light on modern human behavior in specific places. Questions that typify Strategy 4 include: Did an increase in sugar prices affect the consumption of sugar-containing products in Tucson, Arizona? What reuse mechanisms do people employ in Atlanta, Georgia? In what ways do graffiti in Los Angeles reflect inter-ethnic tensions? Rathje's Projet du Garbage was the first and most important example of Strategy 4 research (Rathje and Murphy 1992).

Although sporadic studies of modern material culture have taken place since the 1970s (e.g., Gould and Schiffer 1981), until recently the Projet du Garbage remained the only *major* project. However, as researchers in other disciplines began to study material culture (e.g., Dant 2005), a growing number of archaeologists, including postprocessualists, at last accepted the arguments we raised so long ago: archaeologists, by virtue of their training, are highly—perhaps uniquely—qualified to study artifacts in ongoing industrial societies (for recent examples, see Buchli and Lucas

2001; Gould 2007; Graves-Brown 2000; Tilley 2006). Moreover, the subject matter of historical archaeology has been moving ever closer to the present (Hicks and Beaudry 2006; Orser 1996), and it is no longer unusual to encounter studies of twentieth-century artifacts.

Strategies 2 and 3 are nomothetic strategies, asking and seeking answers to *general* questions, whereas the particular questions of Strategies 1 and 4 exemplify historical research. Besides calling attention to nascent trends in the discipline, behavioral archaeologists also argued that the flow of questions and general principles among the strategies serves an integrative function. Thus, the historical strategies make use of principles generated in the scientific strategies, and the scientific strategies take up questions that arise in the historical strategies. We believed then (e.g., Reid, Schiffer, and Rathje 1975; Schiffer 1975a)—and still believe now (Reid 1995; Schiffer 1995b)—that there is no inherent conflict between science and history in archaeology. By training and temperament, individual researchers tend to specialize in one or another endeavor; however, some also make contributions to both history and science.

Conclusion

As the chapters below demonstrate, behavioral archaeology has undergone significant changes since the 1970s as its practitioners shed intellectual baggage inherited from processualism, responded to challenges posed by the advent of postprocessual and evolutionary archaeologies, and explored new research domains (LaMotta and Schiffer 2001; Part IV, below). Yet, through it all, behavioral archaeologists have maintained a focus on describing and explaining the varied relationships between people and artifacts in all times and all places. Because these relationships can be investigated from both historical and scientific viewpoints, depending on the kind of questions one asks, behavioral archaeology today is broad enough to encompass the interests of archaeologists of every theoretical orientation—as long as their work is anchored by the study of human behavior—i.e., people–artifact interactions at many scales.

Behavioral archaeology can serve this integrative function because it does not privilege particular causes of behavioral change. There is no orthodoxy in "social theory." Rather, following Binford's advice of so long ago, we have created method, theory, and heuristics that can help any archaeologist to discern the causes—usually proximate causes—in specific cases. The remaining chapters present an introduction to behavioral method and theory along with selected case studies: Part I is basic principles, Part II is inference and formation processes, Part III is the study of technology, and Part IV is a sampling of new directions. Later chapters help to bring the history of behavioral archaeology up to date.