

Chapter 1

Introduction

Beyond Foraging and Collecting: Evolutionary Change in Hunter-Gatherer Settlement Systems

JUNKO HABU AND BEN FITZHUGH

THE FORAGER/COLLECTOR MODEL

Twenty years ago, Lewis Binford published an article that revolutionized the study of hunter-gatherer settlement and land use. The article, *Willow Smoke and Dogs' Tails: Hunter-Gatherer Settlement Systems and Archaeological Site Formation* (Binford 1980), made the simple but elegant argument that seasonal or short-term hunter-gatherer mobility should be patterned in predictable ways with respect to spatial and temporal variation in resource availability. In the model, Binford distinguished residential mobility (the movement of all members of a residential base from one locality to another) from logistical mobility (the movement of specially organized task groups on temporary excursions from a residential base). Based on these distinctions, Binford identified two basic subsistence-settlement systems: forager systems that are characterized by low logistical mobility and high residential mobility and collector systems that have high logistical mobility and low residential mobility. According to Binford, the former systems are responses to environments where the distribution of important resources is spatially and/or temporally (seasonally) homogeneous, whereas the latter

JUNKO HABU • Department of Anthropology, University of California, Berkeley, California 94720 **BEN FITZHUGH** • Department of Anthropology, University of Washington, Seattle, Washington 98195

systems are adapted to environments where the distributions of critical resources are spatially or temporally uneven.

Binford's (1980) distinction between residentially mobile foragers and logistically mobile collectors has contributed significantly to our understanding of hunter-gatherer settlement systems and is probably the most influential source of hunter-gatherer settlement theory. Unlike many other models of hunter-gatherer mobility, Binford's forager/collector model "stresses the strategies behind the observed patterns, rather than the empirical patterns themselves" (Thomas 1983: 11). In other words, the primary objective of the model was to explain hunter-gatherer variability, rather than to create another set of normative generalizations about hunter-gatherer behavior. As a result, even though the forager/collector model was an informal model based on ethnographic examples of the G/wi San (Silberbauer 1972) and Nunamiut (Binford 1978), the model is applicable to a wide range of archaeological and ethnographic cases from various parts of the world.

Furthermore, the fact that the model specified the material consequences of hunter-gatherer behavior in terms of site types and intersite variability in associated tool assemblages (Binford 1980, 1982; see also Binford 1978) made this model extremely attractive to many archaeologists who were eager to find middle-range theories to bridge the gap between archaeological data and past people's behavior. Examples of the applications of this model to archaeological and ethnographic hunter-gatherer data include Schalk (1981), Thomas (1981), Kelly (1983), Savelle (1987), Savelle and McCartney (1988), Bang Anderson (1996), and Cowan (1999).

One dimension that has rarely been systematically discussed in the archaeological literature is the relevance of the forager/collector model in the study of long-term changes in hunter-gatherer subsistence-settlement systems. Because the model was based on short-term ethnographic observations, the primary focus was placed on the annual cycles of subsistence activities and resulting settlement pattern changes. The exception is Binford's 1983 article, which was entitled *Long-Term Land-Use Patterning: Some Implications for Archaeology*. Based on his interviews with elderly Nunamiut men, Binford defined an annual range as the area where people lived, hunted, fished, and collected during an annual cycle. According to his article, each Nunamiut group typically moved its annual range to a new area every nine years or so, and they came back to the same annual range after approximately 40 years. Although these observations are extremely insightful, the shift of annual range discussed in Binford's (1983) article did not lead to overall system changes, nor did it reveal changes during periods of several hundred to more than a thousand years. In other words, "the archaeology of the *longue durée*" (Ames 1991) in relation to the forager/collector model has yet to be developed. This is particularly important

in the context of the study of complex hunter-gatherers (e.g., Price and Brown 1985; Price and Feinman 1995), in which long-term changes in subsistence and settlement may play a critical role in explaining evolutionary changes in hunter-gatherer cultural complexity, including the development of social inequality (e.g., Fitzhugh 1996, 2002).

Binford's original formulation of the forager/collector model was subsequently critiqued and expanded by Polly Wiessner (1982), who argued that people regularly construct social relationships to mediate spatiotemporal resource variation, and that these social relationships are as significant in hunter-gatherer settlement strategies as the environmental parameters emphasized by Binford. Subsequent development of this line of reasoning in ecological anthropology has focused on the contexts in which exchange, mobility, and storage are differentially pursued (e.g., Blurton Jones 1987; Bettinger 1999; Goland 1991; Gould 1982; Hawkes 1992; Hegmon 1991; O'Shea 1981; Rowley-Conwy and Zvelebil 1989; Smith 1988; Speth 1990; Winterhalder 1986).

Binford himself has presented revisions to his original model, arguing, for example, that increased costs of pursuing terrestrial game should affect residential patterns in the absence of population pressure (Binford 1990). In such cases, investment in productive and predictable aquatic resources and the development of technologically intensive methods for improving the foraging efficiency of these prey items should lead to more residential stability. The addition of technological intensification to these models provides a mechanism for significant systemic change in the relative benefits of residential mobility that is generated, at least proximately, by internal developments in the technoeconomic system. Because the original version of the forager/collector model was framed in strictly environmental terms, any extension of the model to address long-term/evolutionary change would necessarily invoke environmental change as the primary cause of changes in residential and logistical strategies. By adding technological change in combination with environmental change, the forager/collector model leaves more room for the strategic input of individual decision makers and becomes more appropriate to the theme of evolutionary change (see Fisher, this volume; Fitzhugh, this volume).

Paralleling the forager/collector distinction, a separate but overlapping set of models has explored the social implications of hunter-gatherer modes of production and consumption. Woodburn's (1980) distinction between immediate-return and delayed-return hunting and gathering has been nearly as influential as Binford's forager/collector model. Highlighting the social consequences of immediate consumption compared to storage systems, this model has further engaged hunter-gatherer theory to consider the embedded contexts of environmental and social domains. It is significant

that immediate-return hunter-gatherers share many basic elements with Binford's concept of "foragers," whereas delayed-return foragers are very similar to Binford's "collectors," and the two models are often combined in application (for an exception, see Kelly 1995). Unlike the forager/collector model, the immediate/delayed-return distinction has more often been central in models of long-term systemic or cultural change (e.g., Testart 1982). Nevertheless, it can be argued that the model is insufficient because it lacks a mechanism to explain the economic change from immediate to delayed return and thus is little improvement over the original forager/collector model in the evolutionary dimension.

Bettinger's traveller/processor model (1999) draws together elements of the forager/collector model and the immediate/delayed-return model. Inspired in part by optimal foraging models, Bettinger proposes that a critical phase shift occurs when mobile hunter-gatherers find mobility increasingly costly relative to investment in processor-intensive subsistence pursuits. For him, a key shift occurs when people begin to invest their limited energy in resources that entail considerable processing costs to be useful. In his model, population growth and social circumscription are identified as proximate causes of increased mobility costs. In some ways, Bettinger's model comes closest to the goals of this volume in theorizing and indeed demonstrating that systemic (evolutionary) change is an expected consequence of long-term hunter-gatherer sequences (see Fitzhugh, this volume for similar argumentation).

Given these contexts, this edited volume pushes the range of hunter-gatherer theory and brings together a diverse set of authors and perspectives toward their goal of expanding our understanding of hunter-gatherer settlement dynamics and change. Within this context, this book seeks to contribute to (1) the development of new models that can explain variability in hunter-gatherer settlement and land use and (2) theoretical discussions of the mechanisms of long-term changes in hunter-gatherer settlement systems.

REEVALUATION OF THE FORAGER/COLLECTOR MODEL

The first dimension of this book concerns the reevaluation of Binford's forager/collector model (Binford 1980). The authors in this book take the pulse of the forager/collector model twenty years after its introduction. In particular, we assess the strengths and weaknesses of the model as it has evolved during this period. The authors are unified in the conviction that Binford's model has been, and continues to be, one of the best tools for understanding a major source of variation in hunter-gatherer subsistence-settlement dynamics. Nevertheless, several authors see a need to modify the model to make it applicable to cases outside of the rather restrictive set

on which the model was developed (e.g., Ames 1991), as well as to make it applicable to evolutionary scale changes in settlement system (e.g., Aldenderfer, Cannon, Fisher). In addition, this volume also provides an opportunity to subject the forager/collector model to rigorous archaeological evaluation.

Several authors in this volume point out the complexity of human-environment interactions and suggest that, in addition to the distribution pattern of critical resources as suggested by Binford (1980), other ecological, economic, technological, social, and ideological factors may have played an important role in determining subsistence-settlement systems. For example, for several authors, evolutionary ecology and its strict economic logic and formal modeling machinery is an excellent framework for formalizing the forager/collector model into a more testable set of hypotheses. David Zeanah, using optimal foraging models as his point of departure, suggests that the presence of unanticipated variability among Great Basin subsistence-settlement systems is a result of local trade-offs between diet breadth, transport costs, and central place location. Ben Fitzhugh draws on the patch choice model to suggest that maritime hunter-gatherers of the North Pacific might not always have been residentially stable "collectors," as is often assumed. Using a modified diet breadth model (Schmidt 1998), Lynn Fisher's chapter on the Paleolithic-Mesolithic transition in southern Germany suggests that hunter-gatherers may alter search modes (e.g., between focal pursuit of big and small game) in response to threshold conditions related to the costs and benefits of subsistence-based mobility. Merging environmental and social considerations with the help of evolutionary ecological risk theory, Renato Kipnis argues that late Pleistocene and early Holocene Brazilian rock art sites reflect changes in the context of intergroup information sharing and territoriality.

Ken Ames critiques the applicability of the forager/collector model to boat-using hunter-gatherers, suggesting that regular access to boats revolutionizes mobility strategies, residential patterns, and processing patterns of procured food, resulting in both longer foraging radii and longer logistical forays. He suggests that none of these changes can be accommodated by the classic forager/collector model. Ames' treatment reaffirms the value of comparative ethnography for refining archaeological models, and his conclusions are generally compatible with the archaeological applications of Cannon and Fitzhugh, who also consider boat-based hunter-gathering around the greater Pacific Northwest of North America.

One aspect of the forager/collector model that is not given sufficient discussion in any single chapter, but which emerges in the comparison between the chapters, pertains to the analytical meaning of the central concepts of the forager/collector model: foraging, collecting, residential mobility, and logistical mobility. According to its original formulation, foragers are supposed to

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