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

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<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Author(s)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction: Beyond Foraging and Collecting: Evolutionary Change in Hunter-Gatherer Settlement Systems</td>
<td>Junko Habu and Ben Fitzhugh</td>
<td></td>
</tr>
<tr>
<td>PART I</td>
<td>REGIONAL SCALE PROCESSES OF SETTLEMENT PATTERN CHANGE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Going by Boat: The Forager-Collector Continuum at Sea</td>
<td>Kenneth M. Ames</td>
<td>19</td>
</tr>
<tr>
<td>3</td>
<td>Jomon Collectors and Foragers: Regional Interactions and Long-term Changes in Settlement Systems among Prehistoric Hunter-Gatherers in Japan</td>
<td>Junko Habu</td>
<td>53</td>
</tr>
<tr>
<td>4</td>
<td>Logistical Organization, Social Complexity, and the Collapse of Prehistoric Thule Whaling Societies in the Central Canadian Arctic Archipelago</td>
<td>James M. Saville</td>
<td>73</td>
</tr>
<tr>
<td>5</td>
<td>Natufian: A Complex Society of Foragers</td>
<td>Ofer Bar-Yosef</td>
<td>91</td>
</tr>
</tbody>
</table>
PART II. MICROEVOLUTIONARY APPROACHES TO LONG-TERM HUNTER-GATHERER SETTLEMENT CHANGE

Introduction to Part II 153

Chapter 6 • Mobility, Search Modes, and Food-Getting Technology: From Magdalenian to Early Mesolithic in the Upper Danube Basin 157

Lynn E. Fisher

Chapter 7 • Long-term Land Tenure Systems in Central Brazil: Evolutionary Ecology, Risk-Management, and Social Geography 181

Renato Kipnis

Chapter 8 • Central Place Foraging and Prehistoric Pinyon Utilization in the Great Basin 231

David W. Zeana

Chapter 9 • Residential and Logistical Strategies in the Evolution of Complex Hunter-Gatherers on the Kodiak Archipelago 257

Ben Fitzhugh

PART III. BEYOND ECOLOGICAL APPROACHES TO HUNTER-GATHERER SETTLEMENT CHANGE

Introduction to Part III 307

Chapter 10 • Sacred Power and Seasonal Settlement on the Central Northwest Coast 311

Aubrey Cannon

Chapter 11 • Long-term Change and Short-term Shifting in the Economy of Philippine Forager-Traders 339

Laura Lee Junker
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
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 Nunamiat (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 Nunamiat 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 Nunamiat 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; Bettenger 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. 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
be residentially mobile, “mapping onto” resources, whereas collectors are supposed to be logistically mobile, extracting resources at a distance from stable residential camps. Ames’ analysis suggests that this dichotomy may be invalid in certain contexts. Boat use leads to greater camp sedentarism but fewer logistical forays (because the daily foraging radius is enlarged, thus reducing the need for overnight forays) and fewer specialized extraction facilities (because bulk transport enables processing tasks to occur at the base camp). More complex subsistence organization then can yield archaeological patterns structurally similar to classic foragers (see also Fitzhugh).

Case studies presented by other authors clearly reflect recent shifts in theoretical interests away from the study of subsistence-settlement systems themselves. For example, Aubrey Cannon’s chapter on the Central Northwest Coast of North America suggests that, although the forager/collector model provides a useful first step in organizing the complex array of settlement systems, it does not take into account important factors such as social constraints and opportunities or the role of ideology. Similarly, Mark Aldenderfer suggests structural modifications to the model in terms of history, agency, contingency, and cultural logic. In addition, Jim Savelle, who in one sense uses the forager/collector model without revision, shows how social changes can limit the flexibility of a cultural system to respond to critical changes in the availability of resources. He suggests that amongst the Thule culture, collecting systems with more highly structured social organization may have been less responsive to environmental change than less socially structured foraging systems, leading to their collapse (and presumed extinction of the local population) during the Little Ice Age.

Finally, many of the chapters in this volume indicate that hunter-gatherers in the past may have shifted along the forager/collector continuum quite frequently (e.g., chapter by Habu) and that the settlement patterns may have varied even at a local level (e.g., chapters by Bar-Yosef, Habu, and Zeannah). Although the presence of such diversity is not contradictory to Binford’s original model, these case studies nevertheless warn of the danger of oversimplification in interpreting hunter-gatherer subsistence and settlement.

**INTRODUCTION**

Second, the reexamination of the forager/collector model leads to theoretical considerations of long-term changes in hunter-gatherer subsistence-settlement systems. As discussed above, this is a topic intentionally neglected in Binford’s original treatment. We are interested in the mechanisms of changes in the geographical distribution of hunter-gatherer settlement and activity locations and also in the theoretical implications of these changes for evolutionary processes, such as the development of hunter-gatherer cultural complexity, the transition from hunting-gathering to food-producing societies, and/or changes in the role of exchange and dependencies between hunter-gatherers and farmers. The forager/collector model is essentially an ecological model, in which hunter-gatherer settlement systems are related to the seasonal and spatial distribution of critical resources. By expanding the discussion to include the evolutionary implications of changes from foragers to collectors or vice versa, contributions in this volume enhance our understanding of hunter-gatherer subsistence-settlement systems and their causal conditions.

The use of the term “evolution” in the title of this volume and throughout raises important semantic questions. Current archaeological theory has tended to restrict the use of the word “evolution” to strictly Darwinian forms of heritable change. This is partly due to the growing dissatisfaction with the theory of “social evolution” in the tradition of Spencer, Morgan, Marx, White, and others.

The sense in which we are using the term here, following the tradition that Binford and others have been instrumental in developing, is more systemic than particularistic, and therefore not directly related to Darwinian mechanisms of evolutionary change. We feel that the term remains useful in characterizing systemic change in relationships within and between social/environmental parameters and individual strategic behaviors, where this change results in unprecedented organizations (see Fitzhugh, this volume). Traditional views of hunter-gatherer variation have failed to consider the role of cumulative evolutionary process. In studies of social evolution, hunter-gatherers are assumed merely to reflect the ecological contexts in which they find themselves. They are at the baseline of evolutionary models of food production, village sedentism, complexity, and the additional trappings that have dominated archaeological interest during the past half-century. Several of the authors in this volume would probably agree that a goal of anthropological archaeology is identifying the mechanisms (including Darwinian ones) that contribute to systemic evolutionary change. Others probably would not.

A focus on evolution does not need to demand a unilinear or progressive view, as is commonly assumed. The paper by Junko Habu makes this point effectively by showing that systemic change is reversible. Savelle’s paper shows that increasing complexity can be hazardous in the face of environmental change, dispelling any lingering myths that evolved complexity is in any way “adaptive” in a progressive sense.

“Evolution” in the sense used here is sometimes posed in opposition to “history,” where systemic evolutionary theory is concerned with explicating predictable processes of change in general terms, whereas history comes to represent idiosyncratic change, pernicious, unpredictable, and
unique (see Schrire 1995). In some cases, history is also used to place individual creativity, intellect, and agency into the picture of change. The authors in this volume vary in the degree of emphasis placed on the evolutionary process versus historical idiosyncratic effects.

Several authors in this volume identify historical factors as important in long-term hunter-gatherer change. Aldenderfer argues that archaeological models of social evolution should include explicit recognition of the importance of history, contingency, agency, and cultural logic. Cannon feels that the pattern of stasis and rapid change on the Northwest Coast is best explained as a result of ideological conservatism.

GLOBAL COMPARISON OF LONG-TERM CHANGES IN HUNTER-GATHERER SETTLEMENT AND LAND USE

In addition to the two objectives discussed above, this volume also seeks to broaden our understanding of regional diversity in hunter-gatherer subsistence and settlement at the global level. By assembling case studies that document long-term changes in hunting and gathering settlement and land use around the world and in varying social and ecological contexts, the theoretical points made in this collection have significant empirical grounding. The contributions also serve as a source of comparative data from which readers may build a more generalized understanding of evolutionary dynamics of hunter-gatherer settlement systems in the future. Toward this goal, an international group of authors has been recruited to discuss relevant aspects of their research on five continents (plus insular Japan) that temporally ranges from the late Pleistocene to the recent past.

Comparison of long-term changes among case studies presented in this volume indicates that evolutionary trajectories of hunter-gatherer settlement systems may vary significantly in different parts of the world. For example, although the cases from the Northwest Coast (chapter by Cannon) and from the Subarctic (chapter by Fitzhugh) represent the development of logistical strategies and storage through time, the case from Jomon Japan (chapter by Habu) indicates that such directional changes may not necessarily have been the norm in other parts of the world. Laura Junker’s chapter on hunter-gatherers in Southeast Asia provides a valuable archaeological example in which long-term changes in hunter-gatherer strategies may have been closely related to forager-farmer trade.

SUMMARY

In sum, this volume seeks (1) to assess the successes and limitations of the forager/collector model after twenty years of currency, (2) to push the explanation of hunter-gatherer settlement pattern organization and evolution beyond the confines of Binford’s original treatment, and (3) to present globally diverse samples of archaeological case studies of the evolution of hunter-gatherer settlement systems. Although the case studies presented here cover only part of the global diversity in hunter-gatherer settlement systems and the quality and quantity of currently available archaeological data limit our ability to understand past hunter-gatherer settlement systems more fully, we nevertheless hope that this volume will help stimulate active discussions on long-term changes in hunter-gatherer subsistence, settlement, and land use.

In his Afterword to this volume, Doug Price notes the recent resurgence in interest in archaeological studies of hunter-gatherers. This volume suggests that hunter-gatherers remain a significant and vital topic of archaeological inquiry. And how could it be otherwise? Hunter-gatherers have been leaving archaeological remains for more than a million years and have expanded into most habitable landscapes around the globe. Far from the stereotypes of a century ago, we now recognize that variability is the dominant characteristic of hunter-gatherer economic, social, and political organization, and we are better positioned than ever to develop comprehensive explanations of much of this variability. Binford’s forager/collector model remains a vital tool for understanding a portion of this variability across space, and it provides a useful starting point for modeling evolutionary change through time.

In the temporal dimension, the papers in this volume further disabuse us of the notion that evolutionary trajectories are unilinear, progressive, or inevitable. Instead, they suggest greater fluidity along the forager/collector continuum, greater importance of high local scale variation in environmental and social parameters, and a greater role for chance (i.e., history and/or contingency) in local trajectories than has previously been considered. These papers also clearly show that although hunter-gatherers can vary the way they organize themselves residentially and logistically according to an array of local variables, nevertheless, common tendencies emerge from the mix. This suggests that continued effort in documenting and explaining the evolutionary dimension of hunter-gatherer settlement and land use will bring us closer to an understanding of the causes underlying systemic change in hunter-gatherer societies.

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INTRODUCTION


Introduction to Part I
Regional Scale Processes of Settlement Pattern Change

The four chapters in Part I discuss regional scale processes of settlement pattern change using archaeological examples of classic "collectors" in four areas of the world: the North Pacific Coast of North America, the Canadian Arctic, the Jomon of the Japanese Islands, and the Natufians in the Eastern Mediterranean. We have assembled these chapters in this first part, because they share the theoretical orientation and operating assumptions of the original forager/collector model more closely than many other chapters, some of which radically depart from the model's founding principles. Looked at from another angle, these four chapters represent a middle ground between more formal approaches associated with evolutionary ecology (chapters in Part II) and approaches of social archaeology in which individual actions and historical contexts are emphasized (chapters in Part III).

The theoretical and methodological implications of these four chapters cover a wide range. First, they demonstrate that, despite recent theoretical shifts toward an emphasis on history and ideology on the microscale (such as individuals and households), the analysis of subsistence and settlement on the macroscale will continue to enrich our understanding of past hunter-gatherer societies. Using the forager/collector model as their point of departure, the authors of these chapters propose that additional factors be considered in our examination of hunter-gatherer cultural landscapes. Although each author does so in a different way, the results all indicate that, with these additional considerations, we can draw more realistic pictures of hunter-gatherer lifeways while still acknowledging the importance of subsistence activities and settlement organizations as the hub of the hunter-gatherer landscape.
Second, the case studies presented in these chapters indicate that, with modifications and extensions, the forager/collector model, which was originally developed to explain synchronic system dynamics, can be applied to investigating diachronic change. During the 1970s and early 1980s, when Binford's *Nunamiut Ethnoarchaeology* and the original versions of the forager/collector model were published, major research foci were on examining synchronic diversity under different natural environments, rather than on studying diachronic change from an evolutionary perspective. In fact, one of the major contributions of the model at that time was that it detached the concept of sedentism (low residential mobility) from the unilinear perspective of cultural evolution. More than 20 years after the publication of the original model, authors of these chapters highlight various ways in which the model can be operationalized to examine subsistence-settlement characteristics at a particular point in time and also to provide explanations for long-term system change. Though this was not the original intent of the model, the case studies presented here demonstrate the utility of the model in this new direction.

Third, the examinations of long-term settlement change presented in these four chapters reveal considerable regional diversity of evolutionary trajectories. The role of organizational complexity, including intensive subsistence activities, sedentism, and social inequality, in the course of cultural evolution has been a topic of debate among researchers (e.g. see volumes edited by Arnold 1996; Gregg 1991; Koyama and Thomas 1981; Price and Brown 1985; Price and Feinman 1995). Bar-Yosef's emphasis on cultural complexity among Early Natufian collectors, which suggests the presence of sedentary, nonegalitarian hunter-gatherers before the advent of agriculture in the region, fits nicely in the context of the traditional picture of "Neolithic Revolution." On the other hand, the chapters by Habu and Savelle indicate that the direction of long-term change may not necessarily be unilinear, nor does it always form the foundation for the transition to food-producing societies. Although Ames' chapter does not directly address the issue of long-term change, the large body of ethnographic evidence that he assembled can also be evaluated in the context of long-term system change. In this regard, comparisons among these case studies will allow us to reexamine the nature and role of hunter-gatherer cultural complexity in relation to the traditional view of evolutionary stages of culture.

Altogether, the four chapters in Part I explore one possible avenue through which we can expand our understanding of the dynamics of change in the hunter-gatherer cultural landscape. Needless to say, archaeological insights into the causes and consequences of dynamic system change presented in these case studies will be a rich source of information for area specialists regardless of their theoretical orientations. (Eds.)

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Introduction to Part II
Microevolutionary Approaches to Long-term Hunter-Gatherer Settlement Change

Unlike the first part of this volume, the second and third parts depart more radically from the theoretical hearth of the forager/collector model and take the issue of hunter-gatherer settlement and subsistence change beyond the now classic cultural ecological paradigm that was nurtured in archaeology in large measure by Binford's writings. Of these next two parts, Part II is the most closely allied in ecological terms, but unlike the cultural ecological approach, authors in this part have turned in greater or lesser degree toward the more formal modeling approach of evolutionary ecology.

Evolutionary ecologists seek to account for adaptive variation in ecological context by referring explicitly to Darwinian evolutionary mechanisms (Winterhalder and Smith 1992). Evolutionary ecology (more specifically behavioral ecology) has influenced anthropology and archaeology since the 1970s (e.g., Dyson Hudson and Smith 1978; Yesner 1981). It has been most visibly represented in archaeology by optimal foraging studies of hunter-gatherer subsistence. Behavioral ecological approaches have nevertheless been developed for a much broader array of anthropological topics (e.g., collective action and political stratification), and for both hunter-gatherers and food producers. To date, the formal behavioral ecological models that have been most effective in archaeology are those that deal with issues of subsistence, where archaeological data are most easily assessed according to economic utility (in a subsistence currency such as calories, travel distance, processing difficulty). Formal models have been developed to evaluate strategic and political social behavior, but so far these have proved relatively coarse for empirical evaluation with archaeological data (and the reverse is also true that archaeological data are commonly too coarse to be
used to test models of strategic behavior directly). Fortunately for the topic of this volume, behavioral ecological models that deal with mobility and subsistence behavior are much more refined and have received considerable empirical support, as contributions to this part demonstrate.

Many archaeologists who have gravitated to evolutionary ecology have done so out of an interest in using the more formal and more precise modeling tools that are a hallmark of this approach. These models, commonly developed from the study of animal behavior and ultimately from microeconomic principles, tend to be more biologically grounded and reductionist (see Winterhalder and Smith 1992 for a defense of reductionism). They often avoid explicit use of concepts such as "culture" and "ideology," which are notoriously difficult to define as variables in formal models. Many researchers see these "cultureless" models as good ways to delineate those aspects of human social behavior that can and those that cannot be explained according to reductionist biological principles. Others mix evolutionary ecological models with arguments from more anthropologically inspired constructs.

One key aspect of evolutionary ecology that has drawn converts from other strains of ecological anthropology is its continued insistence on a hypothetico-deductive scientific method. Though out of fashion in some social science circles, the approach of generating and testing explicitly deductive hypotheses, based on simple and formal models, has lasting appeal to many. Evolutionary ecologists approach the task of constructing an understanding of the world like that of erecting a building. They seek to establish firm foundations rooted in the common biological heritage of all living creatures before erecting an explanatory edifice for dimensions of sociocultural behavior and organization that have emerged from this foundation. Using a more solidly anchored foundation, higher stories will be better grounded.

One area where cultural ecological and evolutionary ecological models have converged is around the concept of human adaptations to risk and risky environments. The chapter here by Kipnis is an example of this convergence, where the "risk buffering" theme in cultural ecological research (e.g., Halstead and O'Shea 1989) has been joined with "risk-sensitivity" analyses from evolutionary ecology and microeconomics (e.g., Smith 1988; Winterhalder 1986; Winterhalder et al. 1999). This convergence has encouraged the development of more conceptually rigorous and ultimately more testable models that retain important insights of both sets of models. Though largely comparable, it may turn out that these two strains of "risk" modeling retain some yet unresolved and ultimately constructive contradictions (compare, for example, Bamforth and Bleed 1998 and Fitzhugh 2001).

Attempts to formalize issues of hunter-gatherer residential and logistical mobility, foraging range, prey selection, sharing, and group hunting have led to the development of models of central place foraging (Zeannah,

REFERENCES


Introduction to Part III
Beyond Ecological Approaches to
Hunter-Gatherer Settlement Change

Unlike the preceding ecologically oriented parts, the chapters in this part share an interest in exploring the roles that historical processes (idiosyncratic events), emergent cultural factors (e.g., ideology), and human agency and creativity play in long-term change of hunter-gatherer settlement and subsistence. Without contradicting the importance of ecological variables, each of these contributions argues in its own way that ecological factors are insufficient to explain hunter-gatherer settlement and subsistence change. This is an important perspective in a volume oriented toward ecologically grounded applications. Clearly, history matters, and cultural traditions and human actions have efficacy in directing the course of long-term cultural change.

It is notable that the challenge presented here to ecological approaches has had significant currency in biological and ecological debates, as well as in anthropology and archaeology. Historic ecology is emerging as a field that explicitly includes a role for historic contingency in shaping the development of particular environments or populations. Without abandoning the successful principles underlying ecological modes of explanation, it allows us to take the influence of unique, historic events into account. In the case of better understanding the evolution of hunter-gatherer settlement systems, we are inclined to view the different approaches here along a continuum from focus on explanatory generality (ecologically focused) to realism (historically and culturally focused). The chapters in this part are geared more toward the latter.

To some extent, these approaches take inspiration from the historical "revisionist" debate of hunter-gatherer social and economic organization.
(e.g., Schrire 1984; Wilmsen 1995). For example, Junker’s chapter attempts to answer several key questions regarding the nature of the interaction between hunter-gatherers and food producers. The long time-depth that her database covers gives her a distinctive advantage in tackling this controversial issue. The two case studies by Cannon and Aldenderfer suggest possible ways in which ethnographic analogies may help us find alternative explanations to ecological or “rational” reasoning. Despite various potential problems, the use of ethnographic analogies will remain crucial in archaeological studies as an aid in constructing interpretive frameworks. This is particularly important when we attempt to approach history and ideology and also gender (see e.g., Cannon 1998). In this regard, case studies provided by the three chapters will positively contribute to the discussions on using ethnographic analogies and other nonarchaeological sources to structure models of interpretation.

The contributions by Cannon, Junker, and Aldenderfer to this volume are particularly significant when we think of the active debate between processual and postprocessual archaeologists since the mid-1980s. Because Binford was one of the original proponents of processual archaeology, the use of the forager/collector model is typically equated with adopting a processual approach. However, due to the growing interests in social and ideological issues in archaeology during the late 1980s and 1990s, the boundary between processual and postprocessual archaeologies is not nearly as clear-cut as it used to be (Trigger 1990, 1998). Instead of adopting a rigid ecological approach, the authors of these chapters use the forager/collector model as a heuristic device to identify places where ecological variables are insufficient to account for evolutionary sequences. It is worth noting that several archaeologists (e.g., Hodder 1999) have suggested that processual archaeology might prove more appropriate for studying small-scale hunter-gatherers but not necessarily for more complex societies. The fact that two of the three authors in Part III (Junker and Aldenderfer) deal with the interaction between hunter-gatherers and food producers (including herders) may support this general dichotomy.

Despite strong emphasis in these chapters on historical contingency and cultural logic as influential factors, none of them adopts an interpretive/narrative approach, which is increasingly gaining support among postprocessualists (e.g., Hodder 1999; Pluciennik 1999; see also Terrell 1990). In other words, if we follow an epistemological criterion to draw a line between the two schools, these chapters may not fall into the category of postprocessual. Regardless of labeling, which we think is unimportant and to a certain extent inadequate, these chapters do demonstrate various ways in which long-term change in settlement practice can be explained with reference to the specific cultural setting and historical sequence of each case. (Eds.)

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