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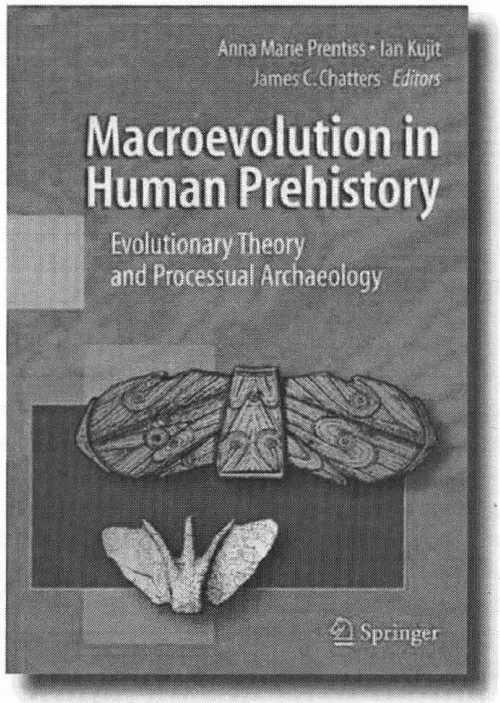
BOOK REVIEW:
Macroevolution in Human Prehistory: Evolutionary Theory and Processual Archaeology

Edited by Anna Marie Prentiss, Ian Kuijt, and James C. Chatters. Springer, New York. 324 pp. ISBN 978-1-4419-0681-6 (hardcover). US $159. 2009.



Evolutionary theory in archaeology has been a primary theoretical perspective used to understand cultural change in human societies through time by applying biological terminology and processes to archaeological questions. This comprehensive volume on macroevolutionary theory is a recent attempt to revitalize evolutionism in archaeology. The chapters highlight the interactions between macro- and micro scales of cultural evolution by addressing key topics mirrored in the structure of the book: contemporary problems and concerns in macroevolutionary theory, approaches in cultural change, and macroevolutionary processes. Macroevolutionary theory capitalizes on the ability of archaeology to follow culture change over large expanses of time by using artifacts as markers (phenotypes) of cultural change that represent underlying ideas and behaviors of a culture (memes). The study of these memes facilitates the observation of cultural evolution.

In the first section, "Issues in Macroevolutionary Theory," volume contributors introduce and discuss the substantial strides evolutionary theory has made towards explaining the evolution of social complexity in hierarchal communities. Traditional perspectives on social complexity explain it as an adaptation produced by selection for the most prominent functions performed within complex forms of organization. Michael Rosenberg argues in Chapter 1 that this view largely ignores the process of group selection. Group selection as perceived by macroevoutionists operates on the properties of the group as a whole. Macroevolutionary theory focuses on the group as integrated individuals who are at a higher level within the societal structure and therefore influence selection and affect the whole. Group selection, according to Rosenberg, directly affects social structure and organization. Through analysis of group selection and the factors that influence it (such as environmental conditions), evolutionary archaeologists may attempt to explain cultural complexity.

In Chapter 2, Marcy Rockman attempts to addresses the connection between cultural evolution and the biosphere using the landscape-learning model to link environmental knowledge to foraging strategies. However, this discussion falls short on making a tangible connection between individual choice, resource limitations, and the archaeological record. Landscape-learning relies on behavioral flexibility, and accounts for unpredictable environmental factors, but it does not consider unpredictable responses to normal environmental conditions.

The final chapter in part 1 is a case study on societal complexity in western Arctic prehistory designed to confront the concepts discussed in the first two articles. Mason uses evolutionary theory to deconstruct style and function with the purpose of discerning identity, ethnicity, and cultural relationships. This first section defined macroevolution and cultural evolution in prehistory, and introduced some of the key issues such as handling group variability, human behavior, and environment, and inferring these concepts from artifacts. However, these concepts are difficult to consider without accounting for the unpredictable nature of human behavior.

The second section, entitled "Macroevolutionary Approaches to Cultural Change," is a series of case studies that apply evolutionary theory to archaeological examples. The first article by Anna Prentiss explains socioeconomic strategies among complex hunter-gatherer communities in the Pacific Northwest. Specifically, Prentiss describes two periods in the Mid-Fraser (Northwest Interior Plateau) region where dramatic changes sparked the emergence of new socioeconomic strategies—the collector and complex collector strategies (see Binford 1980), which emerged first in the coastal and riverine areas and moved into the interior plateau of BC. Prentiss attributes these socioeconomic changes to alteration of foraging strategies, human fitness levels, and underlying cultural norms. Interestingly, Prentiss moves past these scales of measurement to include variables not included in traditional macroevolutionary perspectives, such as labor integration, social arrangements, land-use pattern and range, and changes in the relationship between humans and their environment.

The next case study takes the reader to the Zapotec region in the Mexican state of Oaxaca to study the transition from chiefdom to state. Charles Spencer applies the morphogenesist model of primary state formation to explain the rise of Monte Alban from Early Monte Alban I phase to Late Monte Alban I phase. The morphogenesist model applies the principles of cell growth and cellular differentiation from developmental biology to explain the process of cultural evolution. Using this perspective, Spencer creates a gradual picture of state formation, in which, almost imperceptibly, chiefdoms become states. The application of the morphogenesist model in conjunction with an adaptive landscape model provides another interesting combination of models in which to explain cultural evolution. As Spencer suggests, pursuing analogy between biological and cultural evolution in isolation is not constructive—instead researchers should use two explanatory models to address cultural transitions. In this case, Spencer combines macroevolutionary theory and the morphogenesist model to analyze the emergence of Monte Alban as a primary state within an adaptive landscape. Using multi-perspective approaches, researchers can explore the complexities of socioeconomic transitions by looking at the risks, costs, and potential benefits involved.

In the final contribution to this section, Melinda Zeder addresses a long standing question in archaeology—the emergence of agriculture in the Near East. Zeder applies selectionist evolutionary archaeology, microevolutionary archaeology, and human behavioral ecology to cultural evolution. She then applies the tenets of each to the transition to agriculture from hunter-gatherer lifeways. Predictably, she concludes that each of the models provide certain benefits to understand cultural change but, also predictably, all of them fall short because of their tendency to over emphasize biological underpinnings and their literal application of biological evolutionary theory to human behavior.

This second section applied different aspects of macroevolutionary theory (human fitness, landscape models, and morphogenesist theory) to explain transitions observed in the archaeological record at both the state level and among complex hunter-gatherers. While these discussions provided interesting perspectives and analogies to explain cultural evolution they do not address why groups react with these behaviors. Instead, these models classify numerous cultural groups together, and use one perspective to explain cultural change for all of them.

The third collection of chapters in this volume is largely concerned with three variables: cultural diversification, stasis, and extinction and their roles as macroevolutionary processes. Opening this section, James Chatters explores the idea of stasis in the archaeological record of the Mississippian complex. Problems quickly become apparent with Chatters' early statement, that "change in higher level entities is a very rare event." This is highly unlikely and based on an overgeneralization of a limited data set of cultures represented by the archeological record. Perhaps it is more realistic to recognize that change may be occurring at higher levels, but archaeologists cannot detect it. Chatters expands his discussion by introducing the "resource management strategies" (RMS) perspective. RMS is used as a tool to measure selection and human fitness levels, by analyzing the physical traces of these behaviors (artifacts, patterns of associated artifacts, soil stains, and seasonal patterned floral and faunal materials).

RMS are used in the following chapters by Prentiss and Michael Lenert to explain cultural stasis and change in Arctic prehistory among the Pre-Dorset, Dorset, and Thule groups by analyzing artifact types and foraging strategies. Specifically, the authors are concerned with the periods of material stasis, during which cultures remain unchanged in the archaeological record. Despite the obvious problems with the concept of cultural stasis observed within a representative sample of the past, the authors explain that these three groups are not different populations, but the same cultural group undergoing long periods of cultural stagnation. The apparent breaks that have been misclassified as new groups are, in fact, the results of cultural transition or evolution. Ian Kuijt and Prentiss make this same argument in the following chapter about cultures in the Near East.

The volume's conclusion draws the major contributions together while defining evolution and creating parallels between biological and material culture systems. Robert Bettinger reiterates the importance of macroevolutionary theory by presenting his version of the paradigm, which favors the fitness landscape perspective. Macroevolution, Bettinger argues, is the only paradigm that separates cultures into meaningful units by which they can be measured. However, he fails to address how one theoretical perspective can be so malleable to apply to human behavior worldwide.

When applied to archaeological queries, macroevolutionary theories about cultural evolution are well suited to explain overarching trends in human behavior as they appear in the archaeological record. However, even with the new research and perspectives included in this volume, evolutionary theory continues to struggle with the same basic considerations as other paradigms. These conundrums of the evolutionary perspective resonate strongly when researchers attempt to explain significant transitions within groups, e.g., state formation and hunter-gatherer foraging strategies. The major problems inherent in this theoretical stance include disregarding the preferences and actions of individuals in favor of the group, lack of consideration of factors which influence or cause cultural change, limitations of the archaeological record in terms of its representational sample, the failure of this perspective to consider the equifinality of the archeological record, and the underlying assumption that all human groups are unconsciously striving to reach an idealized socioeconomic climax. Although this book is a significant and impressive contribution to evolutionary studies of cultural change, it propagates rhetoric inherent in this rigid perspective on dynamic variables like human behavior and the environment.

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References

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