

soil conditions and logistical constraints faced in the field. Experimenting with several sampling methods is a key way to ensure you walk away with an intact block. While this may seem prohibitively expensive, most approaches use tools which can be found in dollar stores or salvaged from the local dump (think of it as urban archaeology). The reality is that micromorphology is not expensive, nor is it difficult to produce meaningful results regardless of your skillset. Unfortunately, most instruction is only accessible via other specialists with experience removing, processing and analysing the samples, which has rendered archaeological micromorphology a sort of trade-secret, and one obviously vulnerable to unfair speculation. It is my hope that along with other guides like this one, we may begin debunking the myths that surround this valuable heuristic tool.

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Aaron is a recent graduate from Simon Fraser University's Department of Archaeology, who claims "the only thing he enjoys more than looking at shell middens is looking at them under a petrographic microscope."

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## BOOK REVIEW:

### *Mining Archaeology in the American West: A View from the Silver State*

Donald L. Hardesty. University of Nebraska Press and the Society for Historical Archaeology, Lincoln, Nebraska. xvii+220 pp., 108 illus., 19 tables, 10 figures, bibliog., index. ISBN: 978-0-8032-2440-7 (hardcover). \$45.00. 2010.

Donald Hardesty, a professor of anthropology at University of Nevada, Reno and author of *Ecological Anthropology* and *The Archaeology of the Donner Party*, has been conducting historical archaeology in the Great Basin since the 1970s and exploring the archaeology of Nevada's mining frontier at sites such as the Comstock Lode, the Cortez Mining District, and Virginia City since 1980. In *Mining Archaeology in the American West*, an updated edition of his 1988 SHA Special Publication *The Archaeology of Mining and Miners: A View from the Silver State*, he draws from archaeological and documentary sources to make sense of the technological and social processes of mining and creates a co-evolutionary model of adaptive change for the region.

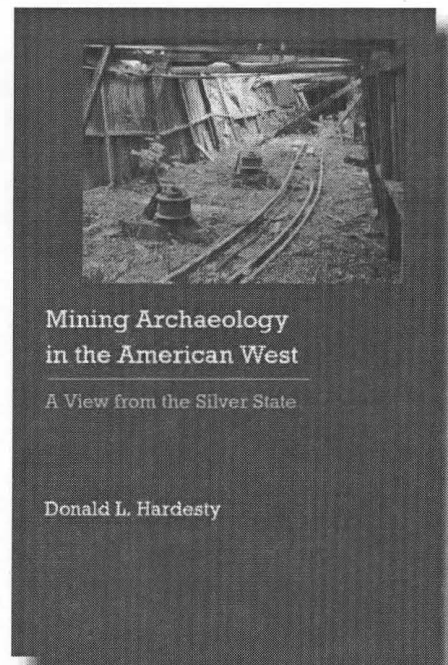
*Mining Archaeology in the American West* is divided into four chapters. In the first, Hardesty outlines the historical and archaeological lines of evidence used to study mining sites, then applies in the second and third chapters these sources to the examination of their technology

and social structure. In the final chapter, he applies ecological anthropology and evolutionary theory to the information previously presented to create his co-evolutionary model.

Hardesty begins by reviewing the various resources that can be utilized to learn about Nevada's mining past in order to illustrate the utility of historical archaeology's multifaceted approach. Historical documentation for the region exists through photographs, maps, company and government records, newspaper and professional journal articles, and personal journals. Information is also contained in mining landscapes, which are described as "the material expressions of the history of human-environmental interactions" (8). Mining architecture, including the buildings, structures, and objects used for resource extraction, transportation, power, and communication systems necessary for mining operations, provides an additional line of evidence. Finally, archaeology supplies another means for studying the past. Hardesty devotes several pages to

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describing how mining sites look in the archaeological record, how archaeological features fit into larger feature systems, and how mining sites are located. For anyone beginning mining site-related research, this chapter provides an excellent list of potential sources of information.

In the next section, Hardesty divides his discussion of the technology associated with mining to examine the steps in the processes of extraction, beneficiation, and refining separately. Each of these steps is considered a technological subsystem within the sociotechnical system

of mining. For each, he describes what techniques and equipment are used, how it changes over time, and what typically remains in the archaeological record. Mining sites often contain the remains of several types of the same technology, representing the discarding of older methods in favour of newer ones. In order to make sense of the archaeology of a mining site, he recommends first identifying the technological subsystems present. I found the extensive use of photographs in this book especially helpful in this chapter, where they are used to clarify his detailed explanations of equipment and machinery.

In the third chapter, Hardesty details the social structure, layout, and demography of mining towns and camps. He uses the Cortez and Bullfrog Mining Districts to illustrate how mining settlements are linked together through district-wide sociotechnical systems. The archaeology of two towns within these districts, Shoshone Wells in the Cortez and Gold Bar in the Bullfrog, are discussed in detail. Settlement patterns, construction types, and household make-up are all examined. The relationship between occupation length, assemblage size, and the various types of living arrangements among miners is considered.

The section on social structure is concluded with a discussion of the place of Nevada's mining communities within world systems, and it is interesting to see how mining sites fit in at different levels with the world around them. Mining islands, the locations where a mine grew up around an ore deposit, were part of a larger structure of economic, social, and transportation systems that tied them into one another and into global networks. Supply networks linked mining islands to both the East and West coasts of the United States. Population records indicate the multiethnic nature of mining communities, demonstrating that Nevada's miners were part of a larger population network. Finally, the telegraph linked mining islands into larger information networks that conveyed everything from knowledge of new mining techniques to Victorian cultural values.

Each chapter in this book includes an introduction to the topic of discussion that lays out the author's key points, but no summary is provided at its end. While I hardly noticed this when reading the previous two chapters, I would have found

it useful at the end of this section. After completing it, I found myself referring back to the introduction so that I could relate the information back to the opening discussion of settlement-systems.

In the final chapter, Hardesty incorporates ecological and evolutionary theory into an explanation of the processes of variability and change seen in mining frontiers. He presents Nevada's mining frontier as an ecological theatre characterized by its network of mining islands and its boom-bust cycles. Mining is viewed as an adaptive process, and, drawing from Patrick Kirch's model of cultural adaptation on islands, Hardesty identifies two types of coping strategies employed by miners and uses them to explain variability in mining sites. Opportunistic strategies are those that are employed to exploit resources and move into new ecological niches. These strategies tend to result in reduced behavioural variability because the participants will choose to adopt the most efficient strategy. Resiliency strategies are those that ensure survival in an unpredictable environment. These strategies tend to result in increased behavioural variability as they may be dealt with by a number of creative solutions. Hardesty describes examples from the Comstock Lode to illustrate each type of strategy.

Hardesty closes his final chapter with a discussion of ecological and evolutionary theory that is used to create a co-evolutionary model of adaptive change for Nevada mining communities. While a short discussion of the applicability of ecological theory to mining sites is provided, I found the explanation behind some of the reasoning dissatisfying in its brevity. A high degree of familiarity with the concepts would be beneficial when reading this section.

Hardesty's co-evolutionary model is built to incorporate the individual into our understanding of sociocultural change. According to his model, the individuals who most successfully adapted to their particular ecological theatre were able to reproduce the adaptive behaviour that ensured their success and continued to do so as long as their circumstances remained the same, creating a feedback loop in which individual behaviour both created and was a product of those adaptations. Evolutionary change in Nevada mining society in the nineteenth century was

catalyzed by events including the invention of new technology, the discovery of new ore deposits, price changes in the precious metals market, and the spread of ideologies such as Victorianism. Such events resulted in new ideologies, which in turn created new ecological theatres, resulting in the need for new adaptations.

Hardesty demonstrates his model by applying it to the Comstock Lode. In the 1850s, the Comstock was dominated by individuals or small groups working placer mines. The way of life created an ecological structure described by Hardesty as a "prospector structure," characterized by low capitalization, non-industrial technology, low mine yield, and relatively isolation of communities. In this structure, there was little difference between the fitness of individuals due to the relatively level playing field. The discovery of the Comstock Lode in 1859 created a new ecological structure, the "corporate structure," characterized by high capitalization, mining-specific industrial technology, high mine yields, a centralized structure, and the interrelation of communities to larger world networks of trade, transportation, and communication. This structure created an increasingly widening gap in fitness between those in charge and those under them. Thus the rules of society were dictated by those in control, perpetuating the social structure. By the 1880s, the main body of the deposit had been removed through mining, creating another new structure, this one focused on placer mining.

In *Mining Archaeology in the American West*, Hardesty presents a wide-ranging, detailed overview of the history and archaeology of mining in Nevada in a clear, straightforward way, and this volume would be of use to anyone wishing to better understand western American mining sites. He effectively demonstrates how archaeological and historical sources can dovetail to create a fuller picture of the past than either can provide alone. He provides a variety of examples to illustrate his points. In the book's conclusion, Hardesty is able to tie together the variety of sociocultural issues presented by the study of life within the mining frontier of Nevada with a model that elucidates the processes of change within mining social systems.

Michelle Lynch is a Master's candidate in Archaeology at Simon Fraser University. Her interests include historical archaeology, mining archaeology, the fur trade, and the early contact period on the Northwest Coast. Her thesis research examines the role of Western material culture in early contact situations between Indigenous peoples and European societies, and how that role changed in missionization situations, using collections from the Old Bella Bella-Fort McLoughlin site.

## BOOK REVIEW:

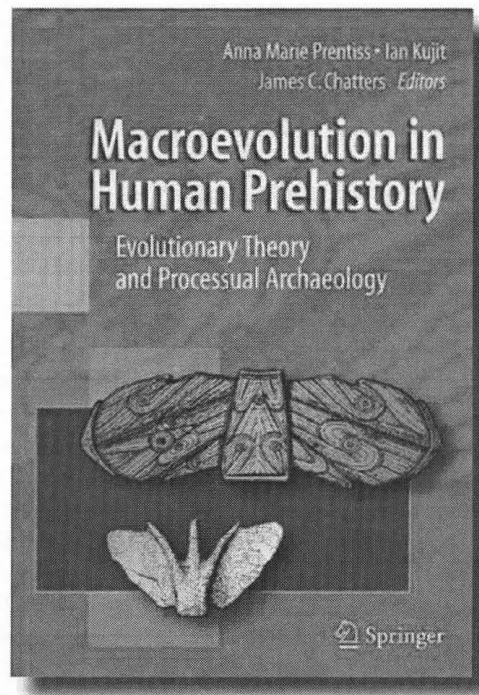
### *Macroevolution in Human Prehistory: Evolutionary Theory and Processual Archaeology*

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 macroevolutionists 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 address 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 mak-



ing 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.