BOOK REVIEWS

MILLENNIAL LANDSCAPE CHANGE IN JORDAN: GEOARCHAEOLOGY AND CULTURAL ECOLOGY, By Carlos E. Cordova. Tucson: University of Arizona Press, 2007.

In Millennial Landscape Change in Jordan, Carlos Cordova provides a groundbreaking synthesis of the interplay between environment and culture in Jordan, beginning with the Stone Age and continuing through recent times. As such, the volume provides an essential introduction to the archaeology of Jordan, albeit from a geographical rather than a material culture perspective. It is abundantly illustrated with photos, line drawings, charts, and tables, and includes a glossary and an appendix of Latin, English, and Arabic plant names.

The book is organized implicitly into three basic sections of differing lengths and detail. After a brief introduction, Chapters 2-4 (2. The Physical Scene; 3. Endowed Landscape: Woodland; 4. Encroaching Drylands: Steppe and Desert) provide a detailed description of the modern geography of Jordan, including geology, topography and physical geography, climate and environment, vegetation communities, and fauna. These chapters comprise about half of the book and although there is little original research in the synthesis, there is much to be learned in this well organized, well illustrated, and thorough review. Like its western neighbors, Israel and Palestine, Jordan is geographically complex, with both north-south and east-west environmental gradients, and numerous patches of varied microenvironments, each with its own special features, and each with its own implications for human adaptations. This section could serve well as a basic background to research or for courses on the geography, history, archaeology, or anthropology of Jordan and, indeed, is well suited as such for archaeologists given its constant references to major sites and issues.

The second section, comprised of Chapter 5 (Paleoecological and Geoarchaeological Records: Current Status and Prospects) is a brief review of the methods of environmental archaeology. It covers the primary means by which ancient environments and climates are reconstructed, including isotopic studies of several kinds and at different scales, studies from the living world (fauna, pollen, phytoliths, tree rings, and macrobotanical remains), and geomorphological analyses (soil studies, alluvial fills, lacustrine deposits, and wind blown sediments). Of necessity these are short, but Cordova's personal expertise in palynology and geomorphology and the use of

examples from Jordan render these discussions of interest to anyone who has not reviewed these materials in detail. The chapter ends with a discussion of the problems of chronological correlation, the primary technical problem facing scholars attempting juxtapose between cultural and environmental histories.

Chapters 6 and 7 (6. Patterns of Millennial Landscape Change; 7. Interpreting Millennial Landscape Change) comprise an overview of environment and its interrelationship with human societies from the Pleistocene through recent times in Jordan. The enormous time span, and the complexity of the issues, render the brevity of the discussions (the entire section is less than 50 pages long) problematic. While long term climate changes and environmental tendencies can be traced relatively easily in charts, tables, and diagrams, especially considering that the primary trends have to do with expansions or contractions of desert, steppe, and woodlands, issues of impact on societies, cultural responses, and social causality are not explored in enough depth, but only sketched briefly. The interested reader is left wishing for the benefit of Cordova's expertise and some critical discussion, for example, of the relationship between climatic change at the 8,200 years bp event and the collapse of the Pre-Pottery Neolithic megasite system in Jordan. One gets the feeling that the debates on the subject were simply summarized, and that Cordova has distanced himself from the discussion, with no real critical insights or comments. It is, perhaps, unfair to ask that he be the master of the entire environmental history of the region, but this "neutrality" stands in sharp contrast to his discussion, for example, of the terminal third millennium urban collapse, focusing on his own work at Khirbet Iskander. Here he illustrates beautifully the interaction between climatic and environmental perturbations, and human responses. One wants more of this kind of thing.

The inability to be the master of all can also be seen in minor errors of fact which pop up occasionally, and which are always a plague to anyone engaged in interdisciplinary studies. Thus, for example, in reviewing the Paleolithic, the Mugharan Complex, situated between the Acheulean and the Mousterian, is not mentioned. Even if not explicitly studied in Jordan, it is present in Israel, Lebanon, and Syria. If ultimately it is demonstrated to be absent in Jordan, an unlikely event, this in itself would be significant and it should be been present, at least in charts and tables. Similarly, the chronologies are occasionally a bit askew. The early Mousterian has been well dated to between 170,000 years and 200,000 years bp, not the 120 ka bp indicated in Figure P.2, and the Timnian spans a longer time frame than only within the range of the Ghassulian (Figure 6.1). These are, of course, quibbles, but they require comment since they again reflect the true difficulties of interdisciplinary work, especially over such a long historical range.

A book about landscape change and culture in Jordan automatically invites comparison to similar work in Israel and Palestine (the geographic terms are political landmines, as Cordova indeed points out). For obvious reasons, many of the trends are identical. On the other hand, the deep desert of Jordan is not the Negev, or for

that matter Sinai, and the patterns of human-environment interactions are indeed different. In spite of the greater intensity of work conducted in Israel, and Cordova, of necessity, draws on materials such as pollen diagrams from the Kinneret, Israeli Dead Sea analyses, and Israeli isotope data from cave speleothems, the Jordanian materials presents a crucial counterbalance and complement to those from Israel. This is seen, for example, in the fundamental differences in the nature of desert pastoral adaptations in Jordan. The Jordanian desert is simply much larger than the Negev, and this has genuine effects on desert societies in such basic features as the nature of the seasonal round.

Finally, it should be noted that in adopting a truly longue durée approach, Cordova has attempted a perspective only rarely seen in Levantine archaeology, usually focused on historical events or at least specific periods. Few studies integrate both prehistoric and historic times, and even fewer encompass both deep prehistory as well as modern times. If one loses detail in such an approach, there is nevertheless a sweep of change conveyed over the long term which is well worthy of consideration. Cordova is to be lauded for this groundbreaking work.

Steven A. Rosen
Ben Gurion University of the Negev

COMPLEX ARTIFICIAL ENVIRONMENTS – SIMULATION, COGNITION AND VR IN THE STUDY AND PLANNING OF CITIES, Edited by Yuval Portugali. Berlin: Springer–Verlag, 2006.

Yuval Portugali is among the first geographers to give serious sustained thought to the relationship between geography and models of artificial environments. This book which he edited is a collection of essays that are the outcome of a three-day international workshop on the study of complex artificial environments that took place on the island of San Servolo, Venice, during April 1-3, 2004. Each contribution is a thoughtful and caring expression, due to Portugali's inspiration, of the researcher's interests on models of artificial environments. The notion of complex environments refers to theories of complexity and self-organization, as well as to artifacts in general, and to artificial environments, such as cities, in particular, which for many years has been the main academic and research interest of the editor.

The theories of complexity and self-organization originated in the "hard" sciences and by reference to natural phenomena in physics and biology. The study of artifacts, in contrast, as Portugali indicates, has traditionally been the business of the "soft" disciplines in the humanities and social sciences. The notion of complex artificial environments thus implies the supposition that the theories of complexity and self-organization, together with the mathematical formalism and methodolo-