Prehistoric Native Americans and Ecological Change:
Human Ecosystems in Eastern North America Since the Pleistocene

Delcourt, P. A. and H. R. Delcourt

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Review by Emily Lena Jones

Department of Anthropology, University of Arizona, Tucson, AZ

While interest in human impacts on the environment have long been of interest to archaeologists and ecologists alike, the late twentieth century saw a massive increase in the literature on this topic, beginning with the emergence of an environmental movement in the 1970s. Ecologists who are interested in the effects of prehistoric human impact on present environments, like Paul and Hazel Delcourt, often claim an even more recent genesis. Prehistoric human-environment interactions have, however, been a topic of scholarly attention for over a century, both in the ecological community and among archaeologists (for examples, see Grayson 1984). Despite this long history, the challenges inherent in interdisciplinary research have prevented the maintenance of a fused ecological/archaeological approach through time. An oft-repeated problem has been that attempts at this interdisciplinary approach made by individuals trained in only one of the two disciplines inevitably shortchange the discipline in which they are not trained; works by researchers trained in two disciplines, or by archaeologists and ecologists working in tandem, have been more successful.

Prehistoric Native Americans and Ecological Change embodies both the promise and the challenge of integrating archaeology and ecology. In this work, the Delcourts draw on a body of theory rooted in ecological studies resilience. The Delcourts propose the use of panarchy (Holling 1995) of complex adaptive systems as a paradigm to integrate what they characterize as conflicts between ecologists and archaeologists. While they are not the first to explore the application of resilience and panarchy to prehistoric human environments (Redman 2005), the Delcourts are among the earliest pioneers, and they apply this paradigm to the Southeastern U.S., where it has thus far not been much explored. In addition, rather than adopting panarchy theory and applying it while ignoring other theoretical trends in archaeology, they attempt to integrate panarchy with other, more traditionally archaeological bodies of theory.

The book begins with a description of panarchy, which, given its focus on change at different scales, the Delcourts suggest is an ideal tool to integrate archaeological and paleoecological data. Panarchy theory is not widely known in archaeology, but is increasingly of interest to researchers interested in the resilience of cultural-ecological systems. Panarchy looks at the interplay between hierarchies on different scales to explain system change through time. Holling (1995) defines panarchy as a cyclical process by which systems (whether ecological or social) grow, adapt, transform, and collapse, varying along three dimensions: potential, connectedness, and resilience. The Delcourts present these ideas, and then attempt to tie them to change in Holocene human systems of the Eastern Woodlands. They present a very basic overview of changing human systems through time in this region, and end by characterizing the Holocene as a period comprising the "transformation of natural ecological systems to human-managed ecosystems."

The second section, "Ecological Feedbacks and Processes," attempts to implement the research paradigm set up in section one. Cases are presented by scale—gene-level, population level, community level, landscape

level, and regional—rather than chronologically. The gene-level chapter focuses on the transition to agriculture in the Eastern Woodlands. Changes in settlement pattern from Paleoindian to Archaic times are used to illustrate population-level interactions, and the community-level chapter focuses on prehistoric humans as an intermediate-level disturbance in the Late Archaic and Early Woodland period. The landscape-level chapter continues this trend, looking at the environmental impact of agricultural systems and increasing human population densities. Paleoindians and Pleistocene extinctions are the subject of the regional-level chapter. This topical organizational method is admirable in that it escapes the rigid chronological structure that often ensnares archaeological works, and makes the point that systems operate on different scales. However, it also makes this section difficult to follow, a problem exacerbated by the varying quality of archaeological information in each of these sections. The summaries of late Archaic and Woodland times are far more in-depth than those of hunter-gatherer societies (not a surprise, given the Delcourts' long interest in the transition to agriculture in this region).

The third and final section is titled "Application and Synthesis," and it is here where the book shows its roots in the vast body of literature on human-environment interactions. In this last section, the Delcourts join the increasing number of researchers that claim that the "pristine" is a myth; that culture is a part of nature; that Native Americans impacted their environments; and that because of this, archaeological and paleoecological information must be crucial components of studies of human-environment interactions in North America. *Prehistoric Native Americans and Ecological Change* deserves commendation for its attempt to integrate highly divergent bodies of theory and scales of analysis into one work. In particular, the Delcourts bring attention to the importance of considering change at multiple scales of interaction, and relate their work to the study of complex adaptive systems, a field that is growing in importance. Panarchy, a paradigm thus far little known in archaeology (but see Redman 2005), may be an innovative way to integrate various scales and types of data into an analysis. Unfortunately, however, the use of multiple types of theory and scales of analysis makes *Prehistoric Native Americans and Ecological Change* difficult to follow. At the end, the reader is left with the feeling that integration is too difficult to ever be successful. How archaeologists might implement panarchy while maintaining rigorous analysis remains unclear.

An additional question concerns the applicability of this theory to highly mobile hunter-gatherers. While in theory panarchy should apply to any human system, thus far it has been applied primarily to state-level societies. The nature of archaeological data from hunter-gatherer groups may make it impossible to apply this highly complex theory to relatively scanty archaeological data. This point is illustrated by the relative weakness of the chapters on mobile hunter-gatherers in this work. Although the Delcourts do attempt to apply panarchy to foraging groups, the analyses in the population-level and regional-level interactions are weak. This may be more a reflection of the scanty data on Paleoindian groups presented in this work than on the applicability of panarchy to hunter-gatherers, but the question remains.

Related to this, just as many archaeological works dealing with ecology fail to present the ecological data adequately, the Delcourts' attempt to apply panarchy suffers from lack of depth in some of the archaeological data presented. In some cases, such as the discussion of Paleoindian settlement, a number of conflicting theories are presented without any synthesis, analysis, or summary. The presentation of the highly-contested "Solutrean origin" model for the origins of Clovis, with no accompanying critique or explanation, is particularly troubling. This juxtaposition of complex theory, sophisticated paleoecological description, and simplified archaeological data illustrates the difficulties inherent in interdisciplinary work.

Prehistoric Native Americans and Ecological Change is not a book for undergraduate students or even for the graduate classroom. It is both difficult and densely written. However, this work will be of interest to those

scholars concerned with ways of integrating archaeology and ecology. In many ways, the book raises more questions than it answers—panarchy theory may well be too difficult to operationalize to make a large contribution to the archaeology of human-environment interactions, and without detailed archaeological data, it is difficult to judge the success of the Delcourts' attempt. Despite this, the Delcourts have made a useful contribution to the ever-growing literature on human-environment interactions. The recognition that interactions need to be considered at multiple scales, and the application of resilience theory, are both significant advancements. At the end, however, we are left with the same old conclusion: for the integration of archaeology and ecology to go forward, archaeologists and ecologists either need training in both disciplines, or need to work together on integrated interdisciplinary projects.

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