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Review of *Soils in Archaeology: Landscape Evolution and Human Occupation* Vance T. Holliday

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BOOK REVIEWS

Soils in Archaeology: Landscape Evolution and Human Occupation. Vance T. Holliday, ed. Washington and London: Smithsonian Institution Press, 1992. Maps, photographs, glossary and references. xiii + 254 pp. \$39.95.

Soils in Archaeology consists of papers representing the proceedings of the Fryxell Symposium held at the annual meetings of the Society

for American Archaeology (SAA) in Phoenix during April 1988. This is a volume that deals with soil science applications to archaeology: the various papers discuss the application of soils science to reconstruction of past landscapes and their evolution, estimation of surface age and depositional episodes, and provide physical and chemical indications of human presence. The volume provides good examples of archaeological geology (geoarchaeology) as executed by four physical geographers, two geologists, an archaeologist and a soil scientist.

In the foreword, Holliday divides the papers into two groups. The first four exemplify the application of soil geomorphology to landscape reconstruction and age determinations. In the first chapter, Reid Ferring discusses soil development in the alluvial environment and how the archaeological record is interpreted in such a setting of variable sedimentation rates and water tables. Chapter 2, by Rolfe Mandel, describes two studies from Kansas that build upon the conceptual model presented in the previous chapter. By establishing the pedostratigraphy of alluvial sediments, Mandel was able to develop a predictive model for location of archaeological material within the alluvial fill. The chapter on the relationships among soil formation, time, and archaeology by Vance Holliday is an excellent companion to the first chapter; he discusses how the interpretation of buried soils is crucial to understanding an archaeological assemblage and its contemporary landscape. In Chapter 4, Art Bettis utilizes pedogenesis and other weathering information to differentiate among various alluvial units and to develop a model of distribution for alluvial units of three different ages.

The latter four chapters consider the interpretation of certain soil characteristics in the context of an archaeological site. In Chapter 5, Paul Goldberg discusses soil thin section analysis and its application to geographical research. In the following chapter, Bruce Gladfelter uses archaeological sites from the southern Sinai to illustrate the complexity of soil

development in alluvium and the problems of distinguishing carbonates of lacustrine and groundwater environments from those developed pedogenically. Julie Stein (Chapter 7) examines a problem inherent in most geoarchaeological studies—that of differentiating between organic matter introduced with sediments from that introduced by biomass associated with pedogenesis. The final chapter, by Jon Sandor, examines remnants of prehistoric agriculture and evidence for agricultural modification of soils.

Because of the interdisciplinary nature of archaeological studies in recent years, this volume is of considerable interest to individuals in a number of disciplines. Foremost, the North American archaeologist now has a source that illustrates the potential of soil science in the interpretation of archaeological environments through the use of well-documented examples. Although the volume has a slight midcontinental bias, the concepts are remarkably universal. Quaternary geologists and geomorphologists can learn a great deal from the case studies presented in that they deal with Quaternary stratigraphy and with evolution of landscapes. The advanced undergraduate and graduate student studying in archaeology, physical geography/geomorphology, Quaternary geology, and soil science will benefit from reading this volume, not only to realize the relationship between soils and archaeology, but also to be exposed to examples of carefully crafted research designs. *Soils in Archaeology* is certainly a benchmark publication in the field and an important addition to personal libraries.

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