Practical and Theoretical Geoarchaeology


Reviewed by 112.2
Joseph Schuldenrein

Over the past 25 years, the subfield of geoarchaeology has attained a position of critical significance in archaeological practice, theory, and interpretation. Archaeologists, irrespective of regional or methodological orientation, have recognized that ancient environments, landforms, geology, and soil science are pivotal in site reconstructions. The demand for this expertise has spawned a growing “how to” literature; several textbooks have been published since 2000. However, a glaring deficit in these volumes is the failure to treat anthropogenic sediments, specifically the components of the site deposit that are dominantly of cultural origin and/or modification. This volume addresses that void in the most comprehensive manner to date. The authors also review more standard themes, including landform reconstructions and site preservation, targeting the volume, if somewhat ambitiously (see below), to a broad audience ranging from undergraduates to practicing professionals.

This book should hold unique appeal to AJA readership because of its lucid presentation of case studies centered on the Mediterranean basin, greater Europe, and the Near East. Goldberg and Macphail are both pioneers in the field and they offer contrasting but complementary perspectives on landscape reconstruction and site formation. Goldberg’s background is in arid to semiarid environments of the Levant, and he provides examples of Paleolithic sites and caves as well as tells and open-air sites. Macphail has specialized in the temperate environments of the United Kingdom and northwestern Europe as well as in early agricultural and buried urban sites. Their interests converge on site-formation processes and the ubiquitous potential of micromorphology—microscopic identifications of disaggregated human debris—for unraveling the human contribution to sediment. The authors are to be commended for compressing site-specific examples in offset “boxes,” or snapshots, laid out in an integrated graphic and table-based format. These summarize site-type histories (i.e., tell formation in Turkey and Israel; brick-earths in Roman London) and landform sequences (i.e., estuarine chronologies in Essex; Paleoindian alluvial chronologies in Texas).

The volume is organized into three sections: part 1, Regional Scale Geoarchaeology; part 2, Nontraditional Geoarchaeological Approaches; and part 3, Field and Laboratory Methods, Data, and Reporting. The volume concludes with an appendix, whose main contribution is a protocol on micromorphological sampling, recording, description, and interpretation; its utility is limited to specialists.

Part 1 is the most standard section, outlining general principles of late Quaternary geomorphology characteristic of the physiographic divisions that sustain archaeological sites. Chapters on sediments, soils, and stratigraphy are a prelude to treatments of the range of depositional and weathering environments: slopes, stream and lake settings, aeolian landforms, coasts, and caves and rockshelters. Archaeological contexts are interpreted with an eye toward landscape transformation. Emphasis is placed on documenting the passage from stable (soil forming) to depositional (dynamic) environments and linking these transitions to the archaeological record. The most compelling chapter addresses aeolian process (ch. 8), drawing on classic works about loess and dune process, sources not widely referenced by geoarchaeologists. A classic example is the long-term model of dynamic deflation, weathering, and Paleolithic–Bronze Age site preservation in the Negev-Sinai deserts (box 6.1).

Part 2 is the signal contribution of the volume. It is structured by themes concerning human impacts on the landscape and their archaeological manifestations. Chapter 9, for example, demonstrates how land clearing practices are recognized stratigraphically in features (pits, tree throws) and disruptions to sequential soil mantles. Tell profiles, beginning at the natural
landform interface and systematically modified through laterally zoned and vertically stacked occupations and intermittent erosion, are deconstructed in detail using examples from the Levant (box 11.1); this is almost a road map for interpreting tell stratigraphy. A detailed discussion of experimental geoarchaeology at Butser Farm (Hampshire, U.K.) affords insights into the aging and processual vectors from a complex array of stabling activities and microstratigraphic horizons spanning the Iron Age–Roman periods. Geochemical analyses of residues are proxies for the magnitude and pattern of animal activity in stables, when linked to the microstratigraphy (ch. 12). Finally, a provocative, but brief, section on forensic geoarchaeology may be a harbinger of future uses of earth science expertise at crime and disaster scenes, where sequential stacking of (recent) cultural residues in natural strata may be critical in reconstructing short-term timelines.

Part 3 is an updated review of field methods (ch. 15), lab procedures (ch. 16), and reporting (ch. 17). The field methods section acquaints the reader with the advanced mapping strategies—geological maps, remote and digital imagery—that must precede fieldwork. It also reviews the latest subsurface testing strategies (backhoe testing, coring) and equipment. The laboratory section is concise and makes appropriate references to standard geological and pedological analysis techniques. It points up the need to understand the research question before proceeding on a line of (often costly and unproductive) laboratory analysis. Chapter 17 offers a blueprint of how reports should be prepared, underscoring the need to streamline the effort to the specific project scope. Here again, it is necessary to address objectives effectively and to direct efforts to the research questions at hand.

This volume signals a new direction in geoarchaeological applications. Goldberg and Macphail recognize that the demand for earth science expertise is veering increasingly toward an empirical emphasis. This is the first volume of its kind to stress the discipline’s applied venues and the general movement toward heritage management and cultural resource planning.

My main criticisms are twofold. First, the emphasis on micromorphology may be a bit overdone. In placing the accent on detail, it obscures larger (regional) contexts. Moreover, that subdiscipline is so specialized (it has a lexicon of its own) that there is a risk of losing a major portion of the readership. Second, micromorphology notwithstanding, the presentation assumes a more than rudimentary familiarity with the subfield. Even the most eclectic and experienced practitioners will find various sections difficult to digest. Nevertheless, the book’s broad scope, coupled with its thorough treatments, renders it most suitable as a reference work and highly useful to practitioners. It can and should be consulted at more junior levels, even by postgraduate students, with an eye to a specific research interest.

Classical archaeologists are referred to the index for their thematic objectives. They will find relevant sections well written and instructive to the point of knowing exactly what questions they would like answered by their specialists. This marvelous synthesis on the state of contemporary geoarchaeology will serve as a benchmark in the field for years to come.

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Practical and Theoretical Geoarchaeology provides an invaluable overview of geoarchaeology and how it can be used effectively in the study of archaeological sites and contexts. Taking a pragmatic and functional approach, this book presents: a fundamental, broad-based perspective of the essentials of modern geoarchaeology in order to demonstrate the breadth of the approaches and the depth of the problems that it can tackle. The rapid advances made in the area in recent years, but also gives the reader a firm grasp of conventional approaches. Covers traditional topics with the emphasis on landscapes, a