
Book Reviews

Archaeological Survey. E.B. Banning, 2002, *Manuals in Archaeological Method, Theory, and Technique*, Kluwer Academic/Plenum Publishers, New York, xxi + 273 pp., \$80.00 (hardcover).

E.B. Banning's *Archaeological Survey* is a volume I would recommend to any geoscientist who wants, and perhaps even needs, to better understand what an archaeologist means by the word "site." The book surveys the methods, technologies, and theoretical approaches that archaeologists use to find, record, and analyze archaeological sites. A central theme of the book is that sites, as recorded manifestations of past cultures, do not exist independently of the surveys that find and document them. The kinds of inferences that can be drawn from sites depend on the methods, techniques, and theoretical frameworks that led to their discovery by archaeological survey.

Chapter I organizes the literature on archaeological survey into nine "models" that have historically been used as guiding principles for archaeological surveys. With the exception of the Earthwork and Monument models, which merely focus attention on particularly obtrusive or spectacular classes of archaeological features, the models are, in essence, models of site-formation processes. They model how and why human activity, in concert with natural processes, produce artifacts and features that are distributed in nonrandom patterns across the land. The Distributional ("Nonsite"), Place, and Paleolandscape models will perhaps be of greatest interest to geoarchaeologists, since they involve searching for sites within the context of the landscape. The other models, however, are no less important. Once acquainted with the "Uniform Distribution," "Bulls-Eye or Fried-Egg," "Palimpsest," and "Off-site" models, the geoarchaeologist will have a better appreciation for the complex and variable construct that comprises an archaeological site.

Chapter II, "The Goals of Archaeological Survey," demonstrates how archaeological surveys can be designed for different objectives, with the choice of survey methods and sampling techniques tailored to the survey's purpose. How one goes about searching for sites determines the kinds of questions that can be answered from the data once the survey is complete. A survey designed to estimate the density of sites, for example, will not necessarily yield results useful for estimating the proportions of different types of sites.

Chapter III discusses methods for detecting archaeological sites and the factors that influence detectability. Methods include surface survey by visual inspection, subsurface surveys involving small excavations or augering, geophysical and geochemical surveys, and underwater surveys. Detectability is, in part, a function of intrinsic factors, such as the site's size, geometry, and physical properties, which affect its visibility or obtrusiveness. Other factors that influence detectability are extrinsic to sites, and can, therefore, be directly controlled by the archaeologist, including the intensity of survey effort, the resolution of survey coverage (i.e., transect or shovel test intervals), and the survey crew training, experience, and motivation.

Among the intrinsic properties of sites dealt with in Chapter III are postdepositional factors that affect the spatial patterning and preservation of archaeological remains. Geoarchaeologists will find the two pages devoted to this topic disappointingly brief, with few useful references to an extensive literature on the subject. On the other hand, most geoarchaeologists would benefit from the chapter's discussion of sampling grids. The spacing and orientation of core holes on grids, for example, can be explicitly designed, using statistical techniques, to optimize the probability of detecting buried phenomena of a given size. Although in Banning's examples the phenomena are sites or features within sites, in geoarchaeological applications, they might be geologic features, such as paleochannels on a floodplain or crevasses and splays on a levee.

Chapter IV considers archaeological sampling, emphasizing how survey results can be influenced by presurvey decisions regarding survey boundaries and sampling units. Selecting the boundaries of the area to be surveyed is a decision that, in the cultural resource management (CRM) world, is often determined for archaeologists, but it should also be considered as potentially constraining the kinds of problems the survey data will be able to address. Survey design also requires that decisions be made about the size, geometry, and arrangement of sampling units (e.g., quadrants or transects). In this chapter, and throughout the book, Banning presents survey design as a decision-making process with important consequences for the validity and utility of survey results.

The next three chapters apply methodological principles from the preceding chapters to particular kinds of survey objectives. Chapter V discusses methodologies for statistical surveys, where the objective is to estimate parameters of the archaeological record, such as site density, or proportions of sites by time period or ecological zones. Chapter VI deals with “purposive survey” or “prospecting” (p. 133), which Banning defines as survey strategies that build upon prior expectations about where sites, or specific kinds of sites, will be found. Chapter VII is about survey designs that seek spatial patterning in site location and distribution, such as site catchments, rank-size, and network analysis.

I found Chapter VI the most intriguing in the book. A consideration of survey strategies that take advantage of existing knowledge is a timely topic for those areas of the world, such as North America, where enormous amounts of survey have been accomplished. At a time when budgets are declining and threats to sites accelerating, archaeologists must not fail to make full use of existing knowledge to design informed and cost-effective surveys. Computer technologies such as Geographic Information Systems (GIS) vastly enhance our ability to analyze regional site distributions, as Banning illustrates in an informative summary of GIS-based predictive modeling. He also provides a fascinating review of Bayesian approaches to establishing search patterns and determining the optimum allocation of survey effort required to identify the expected sites. These discussions draw, in part, on mathematical methods that have been tested and widely applied in a variety of nonarchaeological applications since World War II, including search-and-rescue and geological prospecting. This part of Banning’s book deserves widespread and serious consideration by archaeologists. Before going to the field, we should “do the math” to ensure that the methods we plan to employ have a reasonable chance of success.

Chapters IX–XI deal with the practicalities of doing survey. Among these are the professional, regulatory, and business environments of today’s surveys. Practicalities also include project-by-project and day-to-day concerns about what kinds of data to record, how to record it, and how to evaluate the results obtained from a survey. The discussion of practical issues carries over into a useful appendix that is a checklist of considerations that help ensure that survey crews are well trained and well equipped, with appropriate safeguards for health and safety.

The book is very readable. Banning’s discussions of statistical methods, in particular, are clear and concise, with suitable references to more extensive treatments of the topics. Few geoarchaeologists, however, would recommend *Archaeological Survey* for use as a stand-alone field manual or textbook. Despite occasional references to the subject, the book fails to recognize the importance of a geoarchaeological framework for conducting surveys, especially in areas such as alluvial valleys, where much of the archaeological record may be deeply buried. For such settings, Banning says, “A sensible approach to prospecting for materials that...are likely to be buried is to search out places where [erosion] has exposed buried deposits” (p. 138). Most geoarchaeologists would view such an approach as opportunistic at best and misguided at worst. Gully and cutbank exposures often expose only the most recent (and in many cases modern) sediments even though the valley itself contains alluvial fills of different ages and depositional environments. When seeking buried sites, there is no substitute for geological fieldwork. The final chapter, entitled “Surveying the Future,” states that the detection of buried archaeological deposits is an approach that “will require further development of theory and method specifically devoted to this problem” (p. 230). This statement will certainly come as a surprise to the readers of *Geoarchaeology*, which has been publishing papers on this very topic for over two decades.

The book’s cover illustration is a photograph of four individuals, spaced a meter or so apart, pacing slowly across a field, their eyes glued to the plowed ground at their feet. The landscape surrounding them is suspiciously flat, and one can only hope that it is not mantled by a meter of modern alluvium. Unfortunately, *Archaeological Survey* contains little in the way of theory, method, or technique that would prevent them making such a blunder. I would recommend *Archaeological Survey* for geoscientists seek-

ing to better understand their archaeological colleagues' paradigm. I would not recommend it to archaeologists without a supplementary reading list on geoarchaeological methods, such as Michael Water's *Principles of Geoarchaeology*.

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Published online in Wiley Interscience (www.interscience.wiley.com). DOI:10.1002/gea.20018

Lithic Technology in the Middle Potomac River Valley of Maryland and Virginia. William Jack Hranicky, 2002, Kluwer Academic/Plenum Publishers, New York, xiii + 300 pp., \$121.00 (hardbound).

There is in archaeology, as in every field, a considerable gap in knowledge and understanding between professionals and laypeople. As Elaine Dewar (2001) complained, most archaeological findings in North America are hidden in the gray literature, which is all but sealed off from the general public. W. Jack Hranicky tries to help solve this problem with his new book. One of his main goals is to make information derived from years of amateur study of lithic artifacts, most of which were collected by avocational archaeologists, available to a wide audience. In so doing, he hopes to show that such collections can make a significant contribution to archaeological knowledge even when they were collected unscientifically. I think most archaeologists will welcome the attempt as a much-needed antidote to the problem, but I am disappointed by the book's poor writing, organization, and editing, and I am not convinced that it makes a significant archaeological contribution.

The book focuses mainly on the Potomac River Valley of Maryland and Virginia, but occasionally draws on examples from other areas. The term "Lithic Technology" is applied to a broad array of topics including: chronology; subsistence; settlement patterns; adaptation; the environmental, social and spiritual contexts of tools; the how and why of culture change—in short, everything that, in his view, one can learn by studying stone tools. The book's 300 pages are filled with text in a font size so small that some pages contain nearly 1000 words (depending on subheadings and illustrations). The illustrations are numerous, black and white, and small. Almost all artifact illustrations are photos rather than line drawings. The one map is a very simple line drawing of the Middle Potomac River Valley (MPRV).

Instead of chapters, the book is divided into eleven unnumbered "sections." These are titled "Introduction," "MPRV Environment," "Prehistoric MPRV Chronology," "Toolmaking Technology," "Projectile Point Typology," "Projectile Points," "MPRV Flakes as Tools," "Bifaces as Knives," "Artifact Caches," "Miscellaneous Tools/Implements," and "Experimental Archaeology." These sections are preceded by a forward by Richard J. Dent, a "Tribute to William Henry Holmes," and a preface. A list of references and an index are at the back of the book.

The "Introduction" is a smorgasbord of archaeological topics loosely organized around three main themes: lithic technology; the value of amateur collections; and Hranicky's theoretical focus. This last is based on four "study basics." First, certain environmental, climatic, and geological conditions attracted and affected the MPRV inhabitants. Second, prehistoric groups were all related by their "Panindian nature" or "psychic unity," whereby they all possessed a complete knowledge of all the possibilities of lithic technology. This gave rise to a "technological continuum," which, he says, means that the products made by any given group reflect a deliberate selection out of the entire universe of possibilities. Third, oral history is a valid source of data on prehistoric lithic tools. Finally, the size of the artifact population overcomes the significant sampling biases in amateur collections. These study basics are employed in six basic focuses of study: sourcing raw materials; tool function and structure; classification; tool maintenance; tool "useability" and lifecycles; and "expention" (tool manufacture, use, and exhaustion). This section also dis-

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cusses geoarchaeology, geology, watersheds, the physiography of the Potomac Estuary, the history of MPRV archaeology, major MPRV sites, and current MPRV research topics.

The second section, "MPRV Environment," briefly discusses the study of past environments, the chronology of the Holocene, the physiographic subdivisions of the MPRV, and the geology of the MPRV. This is followed by several pages on MPRV lithic raw materials, including a tabulation of lithic types. Hranicky mentions radioisotope identification as a means of sourcing, and briefly describes his efforts to source rhyolite and jasper in the region using neutron activation analysis. This is followed by an exploration of quarries before a return to the subject of environments.

"Prehistoric MPRV Chronology" summarizes the prehistory and archaeology of each major period in the MPRV. It also includes demography, temporally diagnostic projectile point styles, and the timing of the first people in the region. In "Toolmaking Technology," Hranicky begins with some general observations about toolmaking and tool analysis before moving into a much more detailed how-to discussion, which quotes heavily from flintknapping handbooks, such as Callahan (1979). The remainder of the section discusses the various kinds of bifaces, tool hafting, inferring knapping skill, lithic tool analysis, projectile point analysis, and use-wear. "Projectile Point Typology" sets out some principles of typology as a method, in which Hranicky makes it clear that he believes types are real entities, not heuristic devices. The bulk of the section is taken up by in-depth discussions of style, function, and structure.

Each of the following five sections focuses on a specific category of artifact, and the titles are self-explanatory. Of these five, two are highly typological: "Projectile Points" presents the history, technology of manufacture, temporal and spatial distributions, function, and other information on 80 point types; while "Miscellaneous Tools/Implements" presents about 60 classes of artifacts not treated by other chapters. The latter section also includes a lengthy table with data from the author's study on broken bannerstones. From this study, Hranicky concludes that "the bannerstone was probably a life-time personal object presumably for male Indians.... The killed bannerstone is the result of a stone having bad magic and/or the death of the owner" (p. 222). The sections entitled "MPRV Flakes as Tools" (subtitled "Native American Stone Debitage and Its Use for Work"), "Bifaces as Knives," and "Artifact Caches" all offer varied information about their respective subjects. The book's last section, "Experimental Archaeology," considers methods, provides guidelines and safety tips, and touches on the replication of lithic and nonlithic artifacts and dwellings.

I found the book both refreshing and frustrating. I disagree strongly with many of Hranicky's ideas, but I think that considering alternative viewpoints can be a productive exercise and it was refreshing to read ideas about archaeology that are rarely discussed in professional circles. There are data and photographs in the book which many will find useful, such as the data on raw material sourcing. Some sections, such as the summary of projectile point types, will serve as a good introduction for some and as a useful reference for others working in the region. Also, I found Hranicky's presentation on the pros and cons of experimental archaeology to be nicely balanced and thoughtful.

Unfortunately, these good qualities are outnumbered by the book's many problems. One of the earliest to become noticeable was the author's failure to clearly identify his target audience. On the one hand, it seems aimed at interested laypersons. This is the only way to explain the rudimentary treatment of so many topics, such as "What is a flake?" and "Do we need artifacts?" Yet, at other times, the approach is quite detailed and many technical terms are never defined. The verbose, detailed text and the unexciting illustrations will make it even more inaccessible to amateur archaeologists and casual readers. I have the curious impression that the book is intended only for serious avocational archaeologists in the Potomac Valley of Maryland and Virginia.

I appreciate the desire to extract some value out of the millions of artifacts that have been unfortunately collected by nonarchaeologists, but Hranicky fails to substantiate his belief that such collections have scientific value. His reasoning is, in effect, that "[a]ny point in the collection can be replicated a thousand times over" (p. 30), and his faith in these collections is based on the assumption that "the size of the artifact population overcomes sampling biases" (p. 6). To me, this makes little sense. Surface-collected artifacts have valid uses (e.g., Broster and Norton, 1990) and clear limitations, but Hranicky does not explore this issue in any depth.

The author's treatment of geoarchaeology presents a major contradiction. Although he claims that geoarchaeology is an organizing principle in the study, I could find no examples of the use of geoarchaeology in the book. Moreover, the heavy reliance on surface-collected artifacts would seem to give a

geoarchaeologist little to work with. To his credit, Hranicky clearly recognizes that the surface-collected artifacts he studied have serious limitations, but after acknowledging this, his discussion goes no further. On a more minor note, I found it very odd that his discussion of geoarchaeology heavily cited a paper by Hranicky himself and listed as “to be published,” but did not cite any of the widely read authorities on geoarchaeology.

The author also seems uninformed in other areas. For example, I was surprised to read that “[f]ood-stuff data are lacking in the MPRV because archaeological analysis of food remains have not been performed due primarily to the lack of skilled archaeologists in paleoecology” (p. 50). He sometimes struggles with explanations, such as this one concerning paleoclimatic studies based on ice and/or deep ocean cores: “Other factors are the remains (trapped or changes) for elements in the atmosphere, such as oxygen, carbon dioxide, nitrogen, and ozone. Varying amounts of any of them cause changes in the weather” (p. 52). Hranicky also seems strangely unconvinced that prehistoric stoneworkers used heat treatment to improve the fracture properties of stone.

The book is poorly written and poorly organized, and lacks unity and coherence. Too often I could not understand what the author was trying to get across. He often introduces a topic briefly and references further discussion elsewhere in the book, but the referenced discussions are very difficult to find. There is much redundancy, which makes the book more difficult to follow, and the topics follow no clear order. Hranicky’s preference for terms that are made up clumsily and unnecessarily, such as *expention*, *projectiling*, *toolmakage*, *stone benification*, *sedimentarism*, and *technoclovisty*, makes reading the book even harder going, as do the many typos and technical errors. The single map in the book is not very informative; more maps are badly needed. Although the book’s rich content may prove a good reference for some readers, it is not set up to be used that way. In particular, the table of contents and the index are not very useful.

It is not the author, who obviously has made an earnest effort to bring his data to a wide audience, that I blame the most for these problems. Rather, I blame those who should have done, but did not do, a thorough job of editing and proofing the book. I would not recommend this book for most professional archaeologists, but parts of it will be useful to those with a vested interest in the prehistoric artifacts and the lithic raw materials of the Middle Potomac River Valley.

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Published online in Wiley Interscience (www.interscience.wiley.com). DOI:10.1002/gea.20019