Remote Sensing in Archaeology: An Explicitly North American Perspective
Jay K. Johnson (editor)
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Remote Sensing in Archaeology: An Explicitly North American Perspective, edited by Jay K. Johnson, offers valuable analysis of the state of remote sensing applications in archaeology and argues persuasively for a greatly expanded use of geophysical tools in archaeological practice. In 13 engaging and accessible chapters, the volume contributors press the case that, as Johnson writes in the introduction, remote sensing will almost always lead to better results in the field. At no point, however, does the book become as a paean to the technology. The contributors carefully walk a line. They are obviously true believers in the potential of remote sensing but are also realistic about its limitations.

The book is conceptually divided into three sections. Johnson’s introduction thoughtfully reviews the literature on archaeological remote sensing and provides an interesting discussion of the volume’s origin and justification. J. J. Lockhart and Thomas J. Green argue in chapter 2 for expanding the use of geophysics in cultural resource management. Johnson and Bryan S. Haley take that argument further in chapter 3 with a cost-benefit analysis of a hypothetical CRM project, with and without geophysical tools. Any CRM professional considering taking up geophysics would benefit from a quick glance at the bottom line, which, in this case, shows a potential savings of more than $180,000.

The second section, comprising chapters 4 through 9, is the heart of the volume. Each chapter discusses a specific type of remote sensing tool and includes case studies that show the tools in action. The case studies are particularly useful to the geophysically uninitiated, as they show what kinds of data each tool can reveal and what sorts of interpretations can follow from that data. In addition, the authors of each of these chapters are careful to note the limitations of their methods.

In chapter 4, Marco Giardino and Haley discuss airborne sensing, both by satellite and by aircraft. R. Berle Clay includes a succinct list in chapter 5 of strong and weak points of electrical conductivity survey. That method’s mirror image—resistivity survey—is the topic Lewis Somers takes up in chapter 6. It is especially well illustrated, with images developed from surveys of five sites. In chapter 7, Lawrence B. Conyers presents successful applications of ground-penetrating radar, which is notable because ground-penetrating radar has a reputation as a particularly difficult type of geophysical tool to use well. Rinita A. Dalan discusses magnetic susceptibility in chapter 8. She notes that although susceptibility is less widely used than other geophysical methods, it has the potential to reveal things that others cannot and proves the point through case studies. Finally, in chapter 9, Kenneth L. Kvamme gives an overview of geophysical magnetometry. He goes into detail about the human causes of magnetic variation belowground as well as the different types of magnetometers on the market.

The four chapters of the final section deal largely with the steps of a geophysical investigation that follow data collection. In chapter 10, on data processing and presentation, Kvamme gives examples of several techniques of packaging data and explains what common errors in data collection look like as well as how to fix them. Chapter 11, by Kvamme, Johnson, and Haley, provides five case studies in which multiple geophysical methods were used to reveal different aspects of each site. It reads as a convincing argument for pairing different tools because one tool might catch features that another might miss. In chapter 12, Michael L. Hargrave discusses the importance of ground-truthing and, in a valuable reminder to anyone using remote sensing, notes several common mistakes to avoid. Finally, Johnson closes with a chapter comparing the different remote sensing applications discussed in the volume. Chapter 13 offers the best example in the book of the
theme that remote sensing must be applied with care. Certain methods are best suited to detecting certain types of features, in certain types of soils, under certain field conditions. An enclosed CD with 153 pages of high-resolution color and grayscale images in PDF format completes the package, giving the reader a better idea of how remote sensing tools and computer applications can image archaeological data.

It has likely become clear by now that the volume’s title is a bit misleading. A remote sensing purist might object that most of the book’s attention is focused on geophysical methods, with little attention paid to the truly remote approaches of satellite and aerial imaging. Johnson briefly addresses this in the introduction, noting that buried features are by definition remote from the observer and concluding that satellite imaging is still largely inapplicable to most archaeological investigations. Those points are well taken, but one wonders why “geophysics” could not be substituted for “remote sensing” in the title. Of course, this objection is a minor one and should not detract from the value of the volume.

Engagingly written, full of practical advice, and well illustrated (thanks especially to the enclosed CD), Remote Sensing in Archaeology: An Explicitly North American Perspective is a valuable addition to the field. CRM professionals, in particular, should take note. It is hard to argue with Johnson’s conclusion that remote sensing’s potential payoffs, especially on the bottom line, should earn it a place in all phases of CRM archaeology.

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