Rosetta

Chapman, H. (2007) “Review of Conolly and Lake 2006. *Geographical Information Systems in Archaeology*. Cambridge Manuals in Archaeology”. *Rosetta* **2:** 64-66.
http://www.rosetta.bham.ac.uk/Issue_02/Chapman.htm

Geographical Information Systems in Archaeology, Cambridge Manuals in Archaeology, by James Conolly and Mark Lake
Cambridge University Press 2006, £55 (HB) £24.99 (PB), pp 358, 188 figures. ISBN 13 978-0-521-79330-8, ISBN 10 0-521-79330-0 (HB); ISBN ISBN 13 978-0-521-79744-3, ISBN 10 0-521-79744-6 (PB)

Reviewed by Henry Chapman

GIS and Survey Project Manager, Birmingham Archaeology

The use of GIS in archaeology is already well established and continues to expand. This growth has been reflected by the publication of various books in recent years outlining, in various levels of technical detail, how GIS can usefully be employed within archaeology. One of the more recent books on this subject is in the *Cambridge Manuals in Archaeology* series, written by James Conolly and Mark Lake, and published in 2006 by Cambridge University Press. *Geographical Information Systems in Archaeology* is an extremely comprehensive volume presenting vast quantities of useful information in a very accessible format.

According to the authors in Chapter 1, *Geographical Information Systems in Archaeology* aims to outline not just *how* to use GIS, but also to explain *why* different approaches are more or less appropriate. This is important since the results of any GIS analysis can vary greatly depending on the algorithms being applied. Since GIS creates new data, any errors can become compounded, and so knowledge of the principles behind the software is crucial. This book provides that grounding by explaining how the software manages, stores and analyses data, including the mathematics behind different procedures.

Like the majority of books on the archaeological applications and practice of GIS, this volume is structured around GIS procedure. This structure leads the reader from first principles through to high levels of technical detail how different data structures and procedures work, and how they can be applied within archaeology using frequent examples. The format is designed to be used as a text book which can be delved into to address a particular question. This format certainly works, and is augmented by numerous digressions from the principal

GIS themes of the text, which provide additional background to a particular area of GIS practice.

The first two chapters provide a useful background to GIS including an excellent outline of the theoretical issues involved in using the technology, addressing the overarching debate on the theoretical neutrality of GIS. It also contains useful background information on crucial elements such as cartographic principles and map projections which make it essential reading for those who wish to work internationally. In this and other cases throughout the book, the authors take time to move away from GIS to explain the broader geographical, mathematical and statistical details which would normally be contained in a separate volume. From a reader's perspective, this makes the book the more useful since it may be used as a stand-alone manual as the authors state on the first page.

The third chapter situates the book within the world of archaeology by providing examples of how GIS has been directly applied within different archaeological situations and to address specific archaeological requirements and questions. Whilst the authors do not suggest that this is an exhaustive summary, this section is perhaps the weakest part of the book and it fails to explore the vast range of archaeological applications of GIS that exist within the published literature. Many of these examples are mentioned in later chapters when discussing specific GIS techniques and procedures, but the cursory outline provided in Chapter 3 does sit in contrast with the comprehensive coverage throughout the rest of the book.

Chapters 4 and 5 explain how a GIS database is constructed and how different types of data can be obtained for use within the GIS environment. This is thorough and provides an excellent background to how GIS works. This is followed by Chapter 6 which explores themes of surface construction with excellent explanations of how different interpolators work, and extremely useful examples of the types of error and uncertainty that can be generated by using different methods. This is a very useful section of the book which should be read by anyone who is uncertain about the differences between the various methods.

The subsequent five chapters (7-11) explore different analytical functions of GIS. As with Chapter 6, these are comprehensive and move from theory and basics through to advanced analytical techniques. As in earlier chapters, themes such as statistics are explained in detail, with useful deviations from the strict GIS theme of the book. In each of these chapters, the

format allows readers to delve into a relevant section in isolation to address a specific need, and so the book provides an extremely useful manual for working with GIS analysis. The subject coverage is expansive whilst still providing a high level of detail, which makes it an extremely useful and useable manual.

The final two chapters provide outline the practicalities of working with GIS. The first of these explores map-making, which is unusual in a book of this type. This is a very pleasant surprise as it provides the foundations on how to present cartographic information which is normally only seen in books that specifically focus upon cartography. The final chapter explores the well-trodden subject of managing spatial data and the generation of metadata.

Geographical Information Systems in Archaeology is an extremely detailed and rigorous technical manual, and sensibly focuses on the procedures of GIS making it an ideal companion when working on GIS projects. In addition, it also contains an excellent and comprehensive glossary. It should be seen as a standard in the GIS literature and will be of great use to anyone using GIS from very basic levels through to post-graduate and professional users. The technical detail is very welcome and does not make it any less accessible. I would recommend any archaeologist who uses GIS to obtain a copy of this book.