REVIEWS

Anne Kelly Knowles (ed.), *Placing History: How Maps, Spatial Data, and GIS Are Changing Historical Scholarship* (Redland: ESRI Press, 2008), xx, 313pp; with a digital supplement edited by Amy Hillier.

I agree with this book's sub-title but its main title is a little misleading: it provides a luxuriously presented but partial view of the contribution of Geographical Information Systems (GIS) to historical research, especially if we take GIS as embracing all computerised systems for organising geographical knowledge, rather than the products of one particular company. It is right that the sub-title prioritises 'maps', then 'spatial data', leaving 'GIS' to bring up the rear, because the main focus is on how GIS software can assist in the interpretation of historical maps. The quality of the case studies presented here, and especially the content of the 'digital supplement' (an accompanying CD) means the book will be an essential purchase to anyone seriously interested in historical GIS, and enormously useful to anyone teaching a course in the field. However, the emphasis on maps as sources, and consequently on a particular technical approach to *doing* historical GIS, may lead mainstream historians coming new to the field, concerned mainly with the interpretation of textual sources, to wrongly conclude that GIS has little to offer them.

The book has ten chapters plus a short conclusion, but some are general: Knowles's introduction, Churchill's extended endorsement of GIS as a component of a liberal arts education, Goodchild's discussion of how developments in data modelling are affecting temporal rather than historical GIS, and Bodenhamer's essay on history and GIS. The meat is in the seven case studies, and six of these are very much source-driven reconstructions of historical contexts: Bol on Chinese administrative geography; Hillier's use of diverse maps of mid-twentieth century Philadelphia in the second half of the chapter with Churchill on 'Teaching with GIS'; Cunfer on the dustbowl in the southern Great Plains; Donohue's intricate reconstruction of land holdings

and transfers in seventeenth century Concord, Massachusetts; Talbert and Elliott's masterly dissection of the fourth century Peutinger map; and Knowles's focused investigation of 'what could Lee see at Gettysburg?'. The discipline of historical geography began in the nineteenth century with reconstructions of 'the geography behind history', and several of these pieces are classics of the genre. The other case study is Gregory's discussion of spatial statistics, and although this is illustrated by studies of the Irish famine and of mortality in nineteenth century England and Wales, the focus is clearly methodological. Given how much historical research using GIS is national in scale, demographic and related to debates on population and health, maybe more such studies should have been included. Knowles, Bol, Hillier and Cunfer also include much material on the CD including Powerpoint presentations, animated maps and three actual working GIS systems.

This is a beautifully produced book, with no apparent limitations on the inclusion of full colour reproductions of maps and other sources; that in itself would tempt most of us to focus on historical maps and leave our discussion of necessarily monochrome texts, statistics and gazetteers for more parsimonious publications. For anyone teaching a course in historical GIS, the 'digital supplement' is easily worth the asking price by itself. This is made possible by the book being published not by a commercial publisher but by an arm of ESRI, the world's leading supplier of conventional GIS software; the acknowledgments note support from Jack Dangermond, the company's founder. The book is in no way marketing for ArcGIS, ESRI's primary product, against similar products such as MapInfo; ESRI's dominance there is anyway pretty much established. What the book does do is both draw sustenance from and further nourish the ecosystem surrounding ESRI's products. Similarly, much university GIS teaching up to and including Masters-level is effectively ArcGIS training.

What historians new to GIS need to know is that, just as Microsoft now utterly dominate the market for office software but are arguably being out-competed by Google, ultimately an advertising agency, ESRI face at least three linked threats which challenge their whole approach; and that means the approach presented in this book. Firstly, while ESRI require us to re-organise our information around the map, we can now spatially enable our existing databases. As Gregory puts it (page 124), 'A GIS is a kind of database management system that links each item of data to a coordinate-based representation of its location, such as a point, line, polygon, or pixel'; but why privilege location in this way, especially in historical contexts where it is often the least certain part of our knowledge? Goodchild's chapter discusses the emergence of object-oriented databases without mentioning specific products, but the main commercial large-scale relational databases (dB2, Oracle and SQL) all now offer object-based spatial extenders. This means we no longer have to organise our data around ESRI's data model and can design our own.

Secondly, ESRI and similar companies have extended their monolithic software to *web-enable* existing GIS data structures, but very different approaches have been developed elsewhere to *geographically enable* the mainstream web. The best known elements of this are Google Maps and Google Earth, but there is now a whole alternative ecosystem of streamlined and open-source ('free') software components like PostGIS, MapServer and OpenLayers, developed to be mixed and matched. Although the book lists a set of historical GIS-based web sites on page 15, the only one of those projects actually discussed in the book is the China Historical GIS, and Peter Bol's chapter is very much a historian's discussion of his sources with nothing about their web presence. More personally, I was surprised to read (page 14) that 'the Great Britain Historical GIS was the first to be completed', given the work we currently have in hand, while neither of the two URLs given for the GBH GIS was created by us, or created in the last ten years; try instead *www.gbhgis.org* or *www.VisionofBritain.org.uk* It is a long time since I read a publication focused on technology and scholarship which contained so few URLs.

However, the deepest challenge to traditional GIS comes from the assimilation of the theoretical end of *geographical information science* – ultimately a bunch of geographers – into the mainstream of *information science* – a mixture of computer scientists and high-tech librarians. This means that we can now build information structures which, like the majority of historical sources, are primarily semantic, about words and their meanings, but are geographical when necessary and when the sources allow. The other two trends already mentioned greatly assist here: the emergence of extensible object-oriented databases enables us to organise our data as we choose, rather than how a software vendor dictates; and specifically to add geographical capabilities to formal ontologies, a type of knowledge organisation system developed for the semantic web. We started rebuilding the Great Britain Historical GIS as a geo-spatial ontology in 2002, and the most recent version is implemented entirely on open source software. Other applications of these ideas in or adjacent to historical research are the development and use by Wendy Thomas and the US National Historical GIS of the Data Documentation Initiative framework, the work of Linda Hill and the Alexandria Digital Library on digital gazetteers, and Greg Crane and the Perseus Digital Library's geographical enabling of a vast literary corpus via place-name encoding.

The projects just listed are some of the largest in the humanities, with sizable staffs and an internal division of labour including computer and information scientists as well as GIS technicians. Conversely, this book is very much the product of individual historians pursuing personal research, sometimes assisted by a single research assistant with GIS training, often in association with teaching, and with students helping on data entry. Although historians new to the field may assume the latter approach is more relevant to them, this is

arguably less and less true except for the most local of case studies. Researchers concerned with nations, states and regions should increasingly find that what they need has already been assembled by the major national projects like the NHGIS and GBHGIS, not represented here, and is available for download. Further, while 'on-line collaboration' currently mainly means Wikipedia and Facebook, in the long-term the major national GIS systems will support more focused and structured communities of practice directly interacting rather than doing individual downloads; but there is no sense of that future here.

What most disappoints me, however, is the complete lack of engagement with researchers other than historians and historical geographers, and with almost anyone at all outside the academy. Churchill's argument of GIS training within liberal arts education sometimes reads like the English public school justification for teaching Latin – it trains the mind. Almost the *only* other justifications given for the research presented here is the better understanding of specific historical settings, as with Donohue (page 164): 'The object of the Concord research was to construct a map of landownership'; or understanding of specific sources, as with the Peutinger map. To me, historical GIS has both a capacity and a moral obligation to contribute to debates about our current society and the future of our environment, so some of the current funding for the GBHGIS comes from a 'Healthy Aging' research programme and we are working with the UK Environment Agency; the analytic outputs do not appear in historical journals. We have also shown that, properly presented, historical maps, old gazetteers and even old statistics can reach an audience measured in the tens and potentially hundreds of thousands of readers *per month*. Conversely, little is said here about how the case study research was funded, and almost nothing about why. Oddly, the clearest statement about practical application other than as a teaching aid is from Donohue who seems to have had no funding at all: he helped the National Park Service lay out an interpretative trail. Historical GIS research, defined broadly, has a much greater potential than that.

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Ian N. Gregory, and Paul S. Ell, *Historical GIS: technologies, methodologies and scholarship*, Cambridge studies in historical geography, 39 (Cambridge, UK, and New York: Cambridge University Press, 2007), xi, 227pp.

The age of academic specialization has led History and Geography, the study of change over time and variation through space, to grow ever further apart. The