reviews

BOOK REVIEW

Flattening the Earth: Two Thousand Years of Map Projections
John P. Snyder. Chicago & London: The University of Chicago Press, 1993. 365 pp., 170 figures, 6 tables, 500 notes, 800+ references, index. $45 Cloth (ISBN 0-226-76746-9).

Reviewed by Mark P. Kumler
Department of Geography
University of Colorado at Boulder

To call *Flattening the Earth* a detailed history of map projections is akin to calling a dictionary a list of words. *Flattening the Earth* is almost certainly the most exhaustive, detail-packed, well-written, and well-illustrated compendium of information on the origin and use of map projections ever published. This work was originally intended for inclusion in the History of Cartography series, conceived by David Woodward and the late Brian Harley and edited presently by Woodward. The four chapters in this book were written to accompany the planned volumes 3 through 6 of the *History of Cartography*, and thus correspond to the time periods 1470-1669, 1670-1799, 1800-1899, and 1900-1992. In the preface Snyder thanks Woodward for suggesting that the chapters be published now as a single work, and later in the *History* in a condensed form. The University of Chicago Press agreed to this arrangement and everyone benefits by having this information available today in a single piece, and by soon having it in the *History* as well.

Chapter One opens with the classic story of the challenge of representing the round earth on a flat surface. Snyder breezes through the symbolic T-O maps and launches quickly into the equirectangular (plate carrée), the trapezoidal, and the three projections devised by Ptolemy. The pace remains brisk through the classical orthographic, gnomonic, and stereographics, and the chapter finishes with the new projections developed during the Renaissance—the heart-shaped cordiforms, ovals, Mercator's and the sinusoidal. Just as the reader begins to wonder how all these projections will be kept straight, Snyder comes to the rescue with a timeline and a table summarizing all the projections mentioned so far. The first chapter is atypical in the sense that every mentioned projection is accompanied by an illustration; in the latter chapters the sheer number of projections discussed precludes illustrating every one.

Each of the remaining chapters is divided into two major sections: the first section reviews uses of projections developed previous to the time period of the chapter, and the second describes every new projection developed in that period. In story form, Snyder provides the details of the development of every known projection, including the originator, the construction technique, the projection's properties, the dates of first and significant subsequent uses (for both the spherical and ellipsoidal projections), independent rediscoveries, and how other projections are related. Snyder's command of the lineage, and the mathematics, is masterful. Each chapter concludes with a table summarizing the projections in the chapter. The table includes columns for the figure number (if illustrated), the inventor and date, and a few words on the design.

Flattening the Earth also includes the mathematics for projections. Trignometric functions, logarithms, differential calculus, Cauchy-Riemann equations, complex algebra, and elliptical integrals have all been critical to the development of certain projections, and they are discussed in *Flattening*. To fully appreciate the entire history of each projection a reader must be comfortable with the mathematical terms, but even those without the patience or background will be entertained by the remaining prose. In many cases the forward formulas are provided to convert latitude and longitude coordinates into Cartesian units for the benefit of those intending to program their own projections of coordinate data.

All the "big issues" in the history of projections are covered in this book: the reasons behind the Mercator, the significance of different projection properties, Tissot's indicatrix, the development of Gall's Orthographic and its rediscovery and propagandizing by Peters, Goode's homolosine, the extensive use of the Van der Grinten by National Geographic, and the recent acceptance of the Robinson for most new world maps.

The book also includes many small gems. There is the Foucaut stereographic equivalent that looks a bit like a cinched sinusoidal (p. 114), the Berghaus star projection that is still in use as the logo of the Association of American Geographers, retroazimuthals that look like melted French curves, Raisz' orthoapsidal "armadillo" projection, and cartograms by Raisz and Tobler. Proper pronunciations are provided for both Peirce ("purse") and Raisz ("raw' ess"). There is even the often-whispered but rarely documented story of how many United States Geologic Survey topographic quadrangles published since the late 1950s portend to be on a polyconic

projection but in fact on the projection used for the local State Plane Coordinate System (either Lambert's conformal conic or a transverse Mercator) (p. 173).

The numerous figures are carefully executed. The majority are simple base maps showing continental outlines and graticule at 15° intervals. How Snyder managed to persuade the editors to run a transverse cylindrical equal-area to within two millimeters of the page edges (Figure 2.15, p. 88) mystifies this reviewer, but Snyder deserves praise for providing such a great collection of projection examples. This collection of illustrated projections makes a fine supplement to the other outstanding collection of projections, *An Album of Map Projections*, by Snyder and Voxland (1989).

References to five hundred endnotes are sprinkled liberally throughout the text. Most of the notes are full citations to the supporting references, but several include additional explanatory information, such as a discussion of the disadvantages of patenting or copyrighting a projection (note 96 in chapter 3) or additional information on the "Peters" projection (notes 29-33 in chapter 4). This reader would have preferred a mix of endnotes (for references) and bottom-of-the-page footnotes (for explanatory information).

The pleasant typeface, frequent illustrations, and careful attention to formatting all make for a pleasant read. Overall, this book constitutes a superb addition to the literature on map projections. Snyder has secured his reputation as the foremost authority on the history and use of map projections, to the extent that one wonders what more could possibly be written. This book belongs in every college and university library, and in the personal libraries of all scholars interested in map projections or the history of cartography.

References

Snyder, J. and Voxland, P. 1989. *An Album of Map Projections*. U.S. Geological Survey Professional Paper 1453, Washington, D.C.: U.S. Government Printing Office. ❑

BOOK REVIEW

Things Maps Don't Tell Us: An Adventure Into Map Interpretation

Armin K. Lobeck. Chicago & London: University of Chicago Press, 1993. 159 pp, $17.95 paper (ISBN 0-226-48877-2).

Reviewed by James E. Young
Department of Geography
& Planning
Appalachian State University

This edition of *Things Maps Don't Tell Us* is a reprint of a book originally published in 1956, with the addition of a forward by Dr. Mark Monmonier. The book is an excellent example of older, high quality, publications that have not been widely available to recent generations of geographers and cartographers. Although the book is almost forty years old, it still is a valuable source of information to current students of natural landscapes.

The title, *Things Maps Don't Tell Us*, is misleading. The author has used many examples of maps, from simple to complex, to show how much maps really can tell us about the world. In his original introduction to the book, Lobeck claimed that many facts on maps remain hidden to map readers, but that careful map interpretation can uncover a wealth of information. He makes a distinction between map reading (gathering simple geographic facts from a map, such as distances and location) and map interpretation (drawing inferences and conclusions from a map).

A series of 72 case studies comprises the core of the book. Lobeck studied landform features in 71 of these examples and focuses on a cultural landscape (the layout of Paris) in only the last example. Each case study uses a two page layout to ask and answer questions about a place. Although a few examples require more than two pages, Lobeck was able to pack a lot of information about the landscape into two well organized pages. The left-hand page of each example has a simple map showing geographic details of the place under consideration. The text calls attention to specific details of the mapped landscape, setting up a problem that can be solved by careful map reading and interpretation. The right-hand page provides an explanation of the landscape in the form of additional maps and printed comments. For example, the second case study from the book examines coastline projections and protuberances along the Gulf of Mexico. The left-hand page contains a map of the coast in the southern United States and text that draws the reader's attention to bulges and indentations along the coast. The right-hand page has a map highlighting the large rivers that flow into the Gulf of Mexico. The text material discusses the creation of deltas at the mouths of each of the rivers that cause the conspicuous bulges along the coastline.

Although the case studies focus on physical geography, Lobeck managed to work in ideas about human settlement, economic activity, and even the science of cartography. For example, the first case study describes distorted coastlines on a map created in 1589. Lobeck discussed the