

each unpick the design process of another cross-disciplinary project, the preparation of the map-centred *Cultural History Information System of the Western Himalaya* Web site (www.univie.ac.at/chis), and the multiple notions of usability it involves.

It is difficult to conceive that any reader would find everything in this volume of interest. It would certainly be more attractive had it been more carefully proofread, and its prose more rigorously edited. I am not sure that I ever found in it the answer to the larger questions that Cartwright's paper prompted, but – in the sheer variety of endeavour it records – there is clearly a sense that they are being grappled with. There is much in *Mapping Different Geographies* to reward the reader prepared to encounter a body of work still very much in progress.

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MAKING MAPS: A VISUAL GUIDE TO MAP DESIGN FOR GIS, 2nd ed. / John Krygier and Denis Wood New York: The Guilford Press, 2011. 256 pp.: illus., maps, index. ISBN-13 978-1-60918-166-6 (paper), US\$50.

Krygier and Wood start the second edition of *Making Maps* with a preface graphically outlining an entertaining story of using maps to contest road changes in a neighbourhood. In this story are 10 different goals that the neophyte map-makers should consider when fighting said changes. There follow 11 chapters dealing with the aspects of map design, set in a variety of vignettes.

Chapter 1, "How to Make a Map," starts with a map co-produced by Krygier and David DiBiase in 1987 depicting the non-stop flight of the Voyager around the world. The map is first shown unadorned (pp. 2–3) and then depicted with annotated questions and pointers (pp. 4–5), in which Krygier and Wood address questions about its design for the reader to consider. The focus on this map, which was used in a map-design course, is the biggest and most significant change from the first edition. The authors return to this map several times throughout the book to effectively examine and question separate design concerns applicable to many mapping projects. Here, they follow with two pages of thought-provoking questions about maps, map data, and map design. The authors then present a depressing map of radioactive contamination, by Richard Miller, as an example of responsible map-making, which precedes Stephen Holloway's manifesto on "Right Map Making." This chapter concludes with a page of cartographic references, including selected books, journals, and Web sites, plus a note identifying the "map police."

Chapter 2, "What's Your Map For?," begins with a humorous map of Paris, along with its description, by Mark Twain. There follow several important questions, including, *But do you really need a map? Who's your map for?*

and *How are you going to show it?* These questions are critical for any cartographer considering whether or not a map is appropriate, the intended map-viewing audience, and the medium for the final map display. In addition, the authors discuss the issue of printing black-and-white versus colour maps (i.e., are the latter really necessary?). A minor typographical error occurs when they evaluate a colour map of a portion of Mars by Bob Craddock (p. 28): Craddock is identified with NASA, but in fact works for the National Air and Space Museum (NASM). Regardless, Krygier and Wood wisely advise their readers to critique their maps before finishing, to use documentation with the map, and to conduct formative and impact evaluations of the map (i.e., how to make it better and to note potential controversies, respectively). The chapter concludes with a rehash of the Voyager map, plus recommendations of publications devoted to unusual maps for ideas outside of traditional cartographic methodology.

Chapter 3, "Mappable Data," offers examples of the differences between individual and aggregate data, continuous and discrete data, and creating and getting data. In the section titled "Interpreting Data," the authors provide a prime example of interpreted landscape data with a portion of a map by Erwin Raisz. Later, under "Transforming Data," they give as an example the number of tweets generated for an earthquake in the San Francisco area, while intelligently advising readers to standardize the data by mapping the percentage of tweets per total population. In the section title "Time and Data," they show that animation is not really necessary, using as examples changes in the ice thickness over Greenland and tsunami time travel across the Indian Ocean after the Indonesian earthquake. The chapter concludes with discussions on digital data, including the issues of copyright and "copyleft" (a term referring to issues of attribution and sharing of spatial data through "an array of licensing options encouraging reuse, reproduction, distribution of, and modifications to creative works within certain parameters"; p. 57).

Chapter 4, "Map Making Tools," starts with a discussion on the evolution of J.R.R. Tolkien's map for *The Lord of the Rings*. Needless to say, Tolkien did not use a computer, and the authors intelligently point out that neither did anyone else. While old-school mapping tools are no longer in use, sketch maps are still common and can empower the map-maker with new discoveries. Meanwhile, Internet users can make maps from the Web or on the Web using statistical data (remember to check its accuracy) or static maps. Further, map mashups through Google, Yahoo, and so on enable mappers to see new spatial arrays. Whether making maps with GIS or with graphic design tools (unfortunately, none are mentioned), one must note that "no single software package can do everything!" (p. 71).

Chapter 5, "Geographic Framework," deals with the critically important theme of map projections. Krygier and

Wood present several projections for the reader to think about the tearing, peeling, and flattening of the three-dimensional Earth to two-dimensional paper or computer screens. They discuss how area, shape, distance, and direction are affected by different projections, and these features are displayed on most of the maps in this chapter by overlaying Tissot's circles. On page 97 the authors declare that "one degree of latitude is always 69 miles or 111 km." Not exactly: my old copy of Robinson and others (1984) indicates that latitude varies between 110.5673 and 111.6993 km. While that may not be a large difference, the authors' absolute statement cannot go unchallenged.

Chapter 6, "The Big Picture of Map Design," covers five different annotated versions of the Voyager map. These figures encompass reviews of North versus South at the top of the map; the arrangement of map pieces for balance; the visual arrangement of the map; plus the elements of graphical excellence as defined by Edward Tufte (2001). Chapter 7, "The Inner Workings of Map Design," begins with a map of Luke Helder's terror spree in 2002, based on a giant smiley face mapped across the United States. From this point on, the authors focus on figure-ground and visual differences, giving 11 examples related to enhancing those differences. The Voyager map is displayed twice more, to show the benefit of constructing a map of black and white with grays as opposed to simple black and white.

Chapter 8, "Map Generalization and Classification," starts with a map of "places where there are more than 30 people per square mile" (p. 145); but, since no continental or oceanic areas are shown, the map assumes that the readers have a certain degree of geographic literacy. Regardless, Krygier and Wood discuss the questions that cartographers should ask about the concepts of map generalization and classification, selection, dimension change, simplification, smoothing, displacement, and enhancement. The Voyager map is again revisited with these topics in mind. Unfortunately, some dropped type shows up on page 150, where the authors note that "Other countries are not relevant to this part of the story and are." My guess is that the sentence should finish with "not identified at all." Krygier and Wood then provide pointers on data classification (both quantitative and qualitative) in terms of points, lines, and areas. They conclude by encouraging the reader to *Think!* with thoughtful notes on different classification schemes.

Chapter 9, "Map Symbolization," presents "Ways to Think about Map Symbols," including resemblance, relationship, convention, difference, standardization, and unconviction. The authors then address the issues of whether *symbols are graphic marks tied to concepts* or *symbols are concepts tied to graphic marks*, and how different approaches for each must be considered carefully. Visual variables are considered next, with suggestions for matching quantitative and qualitative data to shape, size, colour hue, colour value, colour intensity, and texture. The Voyager map is revisited from

the point of view of these features. A section titled "Symbolizing Aggregate Data" follows, analyzing the characteristics of choropleth, dot, and graduated symbol maps; cartograms; and surface or isoplethic maps. While Krygier and Wood consider low values at the top of legends to be unconventional, I was taught the opposite, since graduated symbol maps have a top-heavy look when higher values are placed on top.

In chapter 10, "Words on Maps," the authors properly point out that such words are not merely toponymy, since the implications of particular place names are important in and of themselves. Nonetheless, pointers on font and point size are given, with cautions against using more than two typefaces or more than five to seven categories of data symbolized by type size. The Voyager map is presented for the last time, with notes on style, size, upper and lower case, weight, and black versus grey type. Additional advisory notes are given in the sections "Arranging Type on Maps" and "Typographic Minutiae," including kerning, letter spacing, line spacing, and alignment. Readers are also directed to investigate Borden Dent's book *Cartography* (Dent, Torguson, and Hodler 2009) and to Cynthia Brewer's typebrewer.org Web site.

In the last chapter, "Colour on Maps," the authors wisely point out that colour is not always needed. That said, they provide 10 suggestions from Tufte (1990) for graphical excellence with colour on maps. Beyond these thoughts, they address visual variables and colour, as well as how colour is seen on maps, whether on paper, projected onto a screen in a meeting, or on a computer monitor. They also cover how colours are created on maps through predefined (Pantone) or perceptual (Munsell) colours for both the computer and the printed page. Lastly, they consider the complications of colour on maps, including simultaneous contrast, viewer's age, colour-blindness, and symbolic and cultural connotations.

Overall, this book serves its purpose (stated, oddly, as a postscript rather than a preface): "*Making Maps* was designed for a smart, general audience who want to understand and engage in map making" and "for use in courses on mapping, cartography, and GIS at the introductory or advanced level" (p. 247). But given its unconventional layout, I think it is most likely to be used as a supplementary text to thoughtfully complement other books and articles on cartographic design. Further, while additional references are provided in the "More..." section at the end of each chapter, these are easily missed, and there is no comprehensive bibliography in the text.

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JOHN NORDEN'S *THE SURVEYOR'S DIALOGUE* (1618): A CRITICAL EDITION / John Norden, ed. Mark Netzloff. Surrey: Ashgate Publishing, 2010. Pp. 223. ISBN-13 9780755641278 (hardcover), £60. ISBN-13 9781409403753 (ebook), £39. Available from: Ashgate Publishing Ltd., Wey Court East, Union Road, Farnham, Surrey GU9 7PT England. Tel. +44 (0)1252 736600; Fax +44 (0)1252 736736; Web <http://www.ashgate.com/>

In a recent issue of this journal, Matthew Hatvany, referring to the pre-eminent writings of Brian Harley, observed that “at few times since the origins of cartography itself has the overt and ‘hidden’ power of the cartographer been more puissant than in the great age of European exploration and colonization overseas” (Hatvany 2010, 77). In this context, Mark Netzloff’s recuperation of John Norden’s *The Surveyor’s Dialogue* represents a valuable addition to the flourishing field of cartographic studies. Working during the period Hatvany identifies as the high-water mark of the cartographer’s “puissance,” Norden was a prolific topographer, tireless surveyor, and influential figure in the development of mapping in late-sixteenth- and early-seventeenth-century England. As Frank Kitchen observes,

[Norden] can be credited not only with key innovations in English cartography such as marking roads, administrative units and hierarchies of place, a grid-reference system, and the characteristic table, but also with producing enduring images of English landscape that must have shaped the views which generations had of their homelands. (2008)

Furthermore, several of the maps produced by Norden were included in two of the most significant cartographic texts of the early seventeenth century – William Camden’s *Britannia* (1607) and John Speed’s *Theatre of the Empire of Great Britain* (1611).

Variouly described as an educational tract for “landowner and tenant in the usefulness and trustworthiness of his profession” (Kitchen 2008); a book on farming (Ditchfield 1974, 201); and a study of “surveying and mapping” (Bruckner and Poole 2002, 620), the *Dialogue* is an oft-quoted source for many scholars in the area of early modern cartography. However, as Netzloff observes, the literary “qualities” of this significant text have frequently been ignored, and the *Dialogue* is often reduced to “a historical document, and [therefore] plumbed for its referential content” (p. xx). In seeking to address this conven-

tional critical approach, Netzloff has focused primarily on the readability of Norden’s work, stating explicitly that one editorial decision – the updating of the orthography – was shaped by the “intention, first and foremost [...] to produce a copy of [the *Dialogue*] that will extend its reception to a wider audience” (p. xli).

Netzloff’s attempt to improve the general readability and, indeed, availability of the *Dialogue* is worth emphasizing, particularly in light of its publication history. Since its first appearance in print in 1607, the *Dialogue* has gone through four separate editions; but of those four editions, three were published in the seventeenth century (1607, 1610, 1618) and the last, and most recent, in 1853. Consequently, access to Norden’s text has for the most part been restricted to library special collections. The practical difficulty of such access was further compounded by the local difficulty of actually reading the text: as Netzloff notes, the 1618 edition in particular is inconsistent in its spelling and, as is to be expected of a book printed nearly 400 years ago, often difficult for the modern reader to decipher.

Such problems had, to an extent, been resolved before the publication of Netzloff’s edition. The inclusion of the *Dialogue* in the excellent online database Early English Books Online (EEBO) means that scanned images of every page of the seventeenth-century editions of Norden’s work can be readily accessed. And yet, while vastly expanding the availability of the *Dialogue*, and indeed of many other early modern texts, access to this database is, much like access to hard copies of the text, in itself restricted. An invaluable resource to anyone endeavouring to increase the understanding early modern English culture, EEBO is available only through academic institutional purchase or subscription; for general readers, electronic access to texts such as the *Dialogue* is limited to a small number of public libraries.

Netzloff’s stated intention of increasing the availability of the *Dialogue* to a general readership is therefore to be commended, and this goal is in many respects successfully achieved. Of particular note is the aforementioned revision of the text’s orthography. The 1618 version of the text is marked by idiosyncratic and variable spelling of technical and toponymic terms. In updating and synchronizing these variations, Netzloff introduces a clarity and consistency that augments the coherence of the text for general and academic readers alike.

Included alongside the six books of the *Dialogue* is a variety of editorial apparatus. First and foremost is an introduction, substantial in length, wide-ranging in scope, and rigorous in its analysis, as the editor brings to bear his considerable knowledge of the complexities of early modern English land ownership and its socio-economic structure. Divided into two parts under the headings “Surveying and Social Dialogue” and “The Country and the City,” the former containing a subsection titled “Manorial