

Thoughts on Two New Map Design Texts

Designing Better Maps : A Guide for GIS Users

By Cynthia Brewer
ESRI Press, 2005.

Making MAPS: A Visual Guide to Map Design for GIS

By John Krygier and Dennis Wood
Guildford Press, 2005.

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The difference a verb can make

Both Cynthia Brewer's book on map design and the book on making maps by John Krygier and Denis Wood cover the same pedestrian areas of layout, font size, scale, and color balance: the practical issues of mapping. They are distinguished, however, by very different views of the nature of maps and the goal of the mapmaker.

Brewer is interested in map *design* and the application of a visual aesthetic that is both its own reward and a means of maximizing the map as a medium of communication. "I encourage you to push the software to make maps more readable and beautiful," Brewer says at the end of her introduction. She sees herself as the inheritor of "map design principles [that] have been fairly stable over time," and she wants everyone using new GIS technologies to know how to implement those "fairly stable" principles in the color maps they make.

"Maps are a powerful way of thinking about the earth," begin Krygier and Wood, and they present an Ojibwe birch map of historical migration as an example of the thinking a people do about their history in space over time. Krygier and Woods' interest is in the rhetoric of maps^a: the potential of the medium to present a point of view. In writing about Abraham Verghese's maps of AIDS in the United States in the 1980s, published as crudely simple dot maps in a scientific journal, they write approvingly that, "the maps Verghese made . . . may not be much to look at, but the thinking they inspired was rich" (p. 10-11).

Cynthia Brewer is *designing*; Krygier and Wood are *making*. For Brewer the mapmaker works with the thinker to present the best possible map that will carry that thinker's argument onto the map plane and to the reader. Krygier and Wood make maps to advance an idea: an authorial point-of-view. For Brewer, the map aesthetic exists both as a quality on its own and as a means of communication. For Krygier and Wood, map aesthetics serve (where they serve at all) to enhance

the clarity of the argument put before the reader in its graphic form.

Making Maps

That is not to say Krygier and Wood don't share many of Brewer's interests in aesthetics. They do, but for them that interest is subservient, second-order. Nor is this to suggest Brewer is wholly uninterested in the subject of her maps. It *is* to insist, however, that her principal goal is not map *thinking* (the generation of arguments in a two-dimensional, geographic medium), but the aesthetic virtues inherent in the professional presentation of arguments and ideas developed by others who seek a designer to make their work look good. For Krygier and Wood, by contrast, the map *is* the argument: its virtue stands or falls on the ideas it presents.

The essence of Krygier and Wood's argument is exemplified in their map of Luke Helder's two-week bombing spree in the United States in 2002. Each bombing was part of a planned series whose result would be an insipid "smiley face" written across the Mid-western states. The resulting map is not beautiful in the way Brewer urges us to beauty. It is, in fact, a grotesque whose argument is bombs exploding across the landscape over time. Like all maps, the authors imply, this map articulates a relationship among physical events in space that the map declares. While Krygier and Wood craft the result with loving care the execution is secondary to the idea. The real-time argument of Helder unfolds, as map geography becomes map geometry, a relation across the two-dimensional map plane.

Geo-Smiley Terror Spree

Luke Helder, a university student from Minnesota, went on a two-week spree of bombings throughout the Midwestern U.S. in an attempt to create a giant smiley face across the nation.



Figure 1. Krygier and Wood's map of Luke Helder's bombing spree makes their argument. Understanding the pattern of Helder's attacks is in the landscape, an argument in the shape of the "smiley face" it marks on the land.

Designing Better Maps

Brewer is a craftsperson and artist who makes maps for others. Her client list includes the U.S. Census Bureau, National Center for Health Statistics, National Cancer Institute, and National Parks Service. She is not, however, a demographer, an oncologist, an epidemiologist or a forest ecologist. Brewer transposes the work of experts (clients) into maps that meet an aesthetic standard that, at least in theory, best presents the conclusions of the demographer, oncologist, epidemiologist, ecologist, etc. Like many before her, most notably Arthur Robinson^b, she is a guardian of the geographic frame in which the researcher's data is placed in a manner that meets the standards of a design aesthetic.

The problem with that focus is that it keeps us from thinking about the limits of the data being mapped. Brewer, for example, includes several versions of a map of "Child Mortality and Accessibility," that argues "that mortality increases as access to [health] markets decreases." In the maps, "percentage of children dead before age 5" is represented by colored dots while "accessibility" is symbolized as a color ramp that changes, map to map. We are told to prefer the map in which the color ramp of accessibility is "inverted", with the darkest color showing greatest accessibility, rather than with a lighter color at the peak of the ramp. Maybe, but neither map is clear to me.

The real problem lies not in its presentation, however, but in the data the map presents. We don't know what "markets and infrastructures" means in this map. Are they hospitals, presumably required to treat all patients in crisis, or private offices and clinics from which sick persons legally can be turned away? What distance is being described (Euclidian, taxi distance,

walking distance, what?) and how does that distance effect infant mortality? In fact, what constitutes a high mortality—and what is "acceptable"?—and what does the accessibility index ramp mean? If the issue is childhood mortality, what about socioeconomic elements the broader literature insists are responsible, like poverty? And since the map is of infant mortality in Burkina Faso and Mali, what is happening in healthcare there: what is the critical context in which the relation between mortality and proximity to the "market" occurs?

"A successful map," Brewer instructs, begins with knowing why the map is being made." The knowing to which she refers is about client interests, however, not the broader critique of preventable childhood mortality in a post-industrial world. It's about map *design*, not map *thinking*. Krygier and Wood's *Making Maps* opens the door to the thinking that goes into the argument the map will hopefully reveal, and therefore, necessitates a critique of the data and methodology that will be distilled in the map. One may not like the Smiley Bomber's argument but one sees it clearly.

Publishers

At the annual meeting of the North American Cartographic Information Society (NACIS) in 2005 the University of Victoria's Peter Keller argued Brewer's book was somehow tainted by its publisher's position as a division of ESRI, the company that markets and sells ArcGIS software. Keller did not suggest Brewer advanced ESRI software over that of other providers; he simply judged it unseemly that a software producer is also a book publisher.

Distaste for the commercial is as old—and as useful—as the Letraset rub-on symbols and Leroy letter-

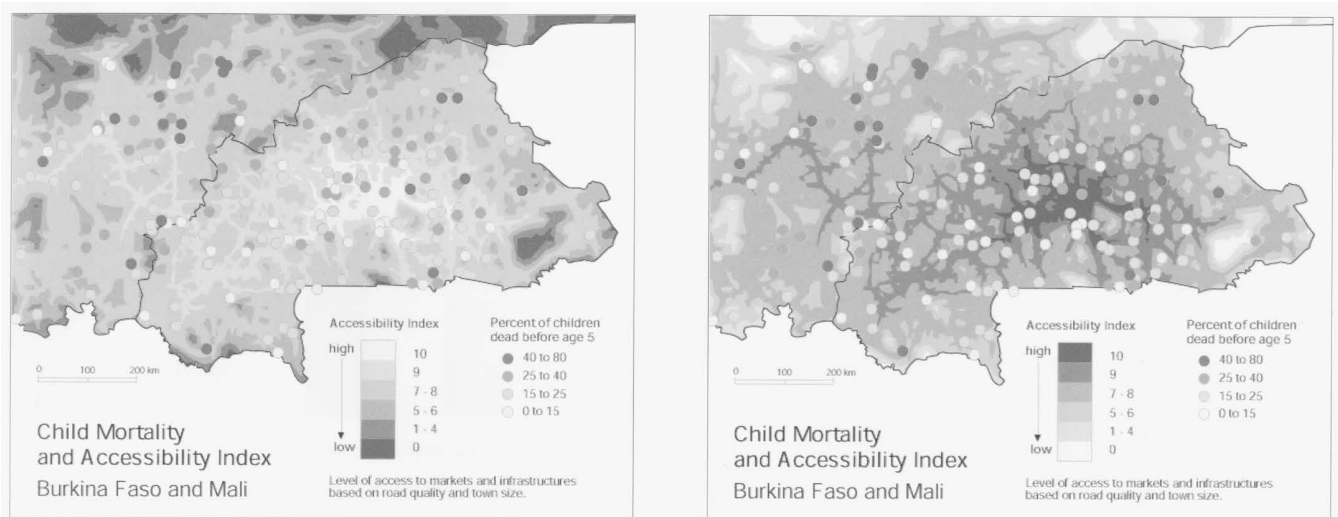


Figure 2. Two different maps prepared by Brewer to show methods of presenting a relationship between childhood mortality and accessibility to the health "market". The left-hand map is supposed to be better than the right-hand map. Brewer, C. *Designing Better Maps*, p. 117. Courtesy: ESRI Press.

ing templates of old style map production. All publishing is commercial; Guilford and Oxford presses no less than ESRI's produce books in hopes of making money. That ESRI Press is part of the greater software corporation means it can afford to subsidize the scores of color maps Brewer presents while Guilford Press was forced to limit severely the amount of color that Krygier and Wood could include in their book. Somebody is going to pay; somebody hopes to make money. ESRI's support of Brewer's project strikes me as appropriate and responsible.

Conclusion

I like these books. What I really like is having both on my shelf. Rhetoric needs aesthetics if its argument is to be carried forcefully. Aesthetics needs a point of view if the result is to be anything but vacuous. The map is argument. It is also image. Brewer holds the line as a craftsman, the old tradition of the designer. Krygier and Wood open the door to a critique of the ideas presented rather than simply the design of their presentation. Together these books promise another book that we can hope for, a book that begins with the argument a map will make and then considers the most forceful way that argument can be presented in the two-dimensional map plane. That's what I wanted these books to be. Together they take us halfway there.

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Endnotes

^aDenil, M. Cartographic Design: Rhetoric and Persuasion. *Cartographic Perspectives* 45, Spring 2003, 8-67.

^bCook, K. S. A Lifelong curiosity about maps. *Cartographic Perspectives Commemorative Issue* 2005, 45-55.

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In 1938, when Erwin Raisz produced the first American textbook in cartography, he pointed out [vii] that ... when we look for literature on the science and art of map making, we find that surprisingly little has been written. ... Most of the American books ... are written from the point of view of the practical draftsman. There are a number of works on map projections ... We find also a few treatises on historical cartography. Finally there are some excellent books for use in military schools. There is, however, no American book which collects the scattered material in a manner satisfactory to the student of geography in our colleges.

Raisz' *General Cartography* joined the stream of other types of cartographic literature that had swollen in the late nineteenth and early twentieth centuries with dozens of new map projections, journal articles applying innovative cartographic methods to the explication of geographic processes and regions, many maps and atlases (the first national atlas, that of Finland, appeared in 1899), and a wide variety of technical manuals. Quarterly issues of the principal American professional journals (*Geographical Review*, *Economic Geography*, and the *Annals* of the Association of American Geographers) often included an article on cartography, which had become a very dynamic part of geography. Beyond these, *National Geographic Magazine* added monthly to its outstanding repertoire of maps.

There were, in the first third of the century, a great number of publications, but, as Raisz pointed out, many were manuals; ranging from the task-specific volumes of the U. S. Coast and Geodetic Survey (e. g., *Elements of Map Projection with Applications to Map and Chart Construction*, Deetz and Adams 1945) to elementary guides such as *Maps and Map Drawing* (Elderton 1890). The first courses in academic cartography lacked textbook support.

The array of activities requiring cartographic problem-solving that preceded the Second World War led to the production of the first 7.5-minute quadrangles (1:24,000) of the U.S. Geological Survey, the founding of the American Congress on Surveying and Mapping (1941), and the publication of even more atlases,