

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.

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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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,

books, and articles. The insightful comments of Guy-Harold Smith (1928) (see also Fawcett 1935), and the 1938 and subsequent papers by John K. Wright, among others, demonstrated the need for research in the field.

It was the wartime effort and postwar global politics, however, along with the technological advances associated with military mapping, that promoted new perspectives. "Geographic Cartography", the last chapter of *American Geography: Inventory & Prospect* [James and Jones 1954, 553-577], captured the situation just as cartography became a research-based discipline; before the advent of computer-supported mapping systems, and a decade before the implementation of the first Geographical Information Systems.

During the past half century, Arthur H. Robinson's *Elements of Cartography*, first published in 1953 and continued through six editions, adapted to the shift from analog to digital cartography and became, as Robinson anticipated with concern in the first edition, an encyclopedia. In comparison, other textbooks in cartography have been relatively ephemeral (note, for example, Keates). As this sub-discipline of geography emerged and grew, it filled the void that had developed when it became obvious that the technical production of maps was no longer within the interests and capabilities of the average geographer.

The cartographer thus became for the geographer what the engraver had been for mapmakers and cartographers several centuries before: salvation! Here was technical expertise and a growing understanding of the concepts and processes involved in map conception, development, and production that could be applied to maps explicating concepts in physical and cultural geography, to the descriptions of regional geography and the reports of field expeditions, and for the explanations of models and the portrayal of systems.

Some cartographers were (and are) simply practitioners; no more than technicians who, with little basic knowledge of geography, mathematics, cartography, and graphic design, produced unimaginative and, too often, inappropriate maps. At the opposite end of the spectrum, other cartographers tied the practice of production to their academic research agenda and making every project, every map, a research project. As a project developed, the cartographer became a subject specialist in whatever was being mapped, be it the Russo-Japanese War, Mongolia, trails across the Great Plains, or genocide. Sometimes authors (transformed into clients) found that they had to reconsider what they had requested simply because what had been proposed for the content and the structure of the map was wrong. The cartographer, like it or not, became an integral component of the research process.

However, one person's salvation can be another person's purgatory. From some perspectives, cartographers became "the map police", and, like other groups

of dialecticians and grammarians, they came to be regarded very negatively as exerting too much control over the map. With the new freedom from technological constraints provided by Geographical Information Systems, cartography as a profession came, in too many quarters, to be viewed in the same way that many appraise lawyers, used car salesmen, and politicians! When GIS made it possible for anyone to make maps, the middle man was gone.

Returning to the nature of the cartographic process and the role of the textbook ...

Cartographers generally have a textbook on which they rely (a type of personal security blanket). Even more likely, they have a small library, including a "morgue" (the collection, from many sources, of insightful and incite-full maps) that can be consulted for ideas and information about design, graphic structure, symbolization, and the many other aspects of the cartographic process that are considered when producing a map.

It is obvious that the utility of a textbook lies in two areas: first, how it will work in the traditional class-laboratory setting as a vehicle complementing the other components of the academic process, particularly the instructor. Second, how it will serve as a guide for those who, lacking the opportunity to use it in an academic learning venture, will refer to it as a guidebook for making maps or designing better maps. The question in this case is how well will it function as a map design and production process reference: as a cartographic encyclopedia?

The missions of these two books are:

Brewer: "This book is intended as a basic guide for people who want to improve the maps they make. ... [It] describes a subset of the basic knowledge taught in introductory cartography courses." Further, "the text and figures for this design book began as material for an online course ..." [ix-x]. At the end of the volume, "Content in this book is complemented with ArcMap exercises in the ESRI Virtual Campus course *Cartographic Design using ArcGIS 9* by Cynthia Brewer" [203].

Krygier-Wood: "[shows] exactly how maps should be if they are to meet your goals ... including instructive examples of both good and poor design choices, the book covers everything from locating and processing data to making decisions about layout, map symbols, color, and type" [cover]. "I wanted good examples to show why map design matters and how it works ... and I wanted to promote creativity – fundamental to good map design" [JK personal communication].

Krygier-Wood has approached the entire carto-

graphic process (from initial idea to completed map) in an innovative and captivating way. Chapter by chapter, Krygier-Wood goes from "Why Are You Making Your Map" to "Finishing Your Map": from intention to evaluation. "Maps are visual, so make the book visual ... to promote visual thinking and creativity ... focus each page on maps and arrange text around the maps." It is a good and useful approach and one long overdue. Unfortunately, some parts of the work lack conceptual and operational depth. Further, some of the illustrations, both "good" and "poor," are not effective.

Brewer, on the other hand, has chosen to deal in depth with only a subset of the mapmaking process (principally typography and color). There are many components that receive inadequate consideration, including map projections and layout. Graphic design involves significantly more than balancing blank spaces.

Further, in both books there is a failure to recognize that there is a user at the end of the process. Both volumes also ignore major issues with respect to the capabilities and limitations of the human visual information processing system. The authors should perhaps have examined their products as did Kosslyn, a cognitive psychologist, when, in 1985, he reviewed five volumes on statistical graphics and mapping (including Bertin, Fisher, and Tufte). His staged information processing approach fits reasonably with the process approach taken by Krygier-Wood and could well have been employed.

The bibliographic resources provided are not very substantial. Actually, in the Brewer volume, they are ridiculous: ten books and four journals! Krygier-Wood is much better, dealing with references chapter-by-chapter. In some cases, however, the "More Information" section tends to be elusive in terms of advice. That Brewer does not include an index is a problem, while the Krygier-Wood index would be more helpful if it were more detailed.

In the first edition of *Elements of Cartography* [1953, vi], Robinson pointed out that

A definite attempt has been made to restrict the textual presentation of the various elements to a minimum in order to promote the indispensable classroom and laboratory discussion. It is expected that the instructor will supplement the text with lectures fitted to his particular group of students and the type of course he wishes to teach. Specific instruction on varieties of methods ... and the more complex techniques ... have been held to a minimum, for they can better be demonstrated and discussed in the freedom of the classroom or laboratory than on the pages of a book.

While this situation has not changed, other aspects of the classroom-laboratory situation have, and what Brewer and Krygier-Wood are trying to accomplish requires the "freedom" (well, salvation) of the com-

puter-supported solution. More important, however, is the "guide": a teacher or coach who will merge the text with the software (if necessary, step-by-step) to promote success in the learning process.

To accommodate the "home-schooled student", however, requires a very different book, and a very different approach, than is offered by either of these books. With GIS, the software is supposed to be the guide: see the manuals and the Help menus. The question is whether there is enough information and advice in these resources, supplemented by either or both of these books, to allow you to go beyond the software and become a good designer, even an innovative one.

Both books are useful and should, when used with the necessary support, be effective. In terms of the total picture, Brewer is the more limited, but Krygier-Wood has its limits as well. Each of these two books contain good (and bad) examples (by design!).

While either of these volumes will work in a classroom-laboratory setting, their effectiveness will in large part derive from the degree of support provided by the instructor. In the same way and for the same reasons that the twentieth-century mapmaker had to be familiar with the tools and toys of the trade, the twenty-first century cartographer will be dependent on an ability to use the software that will be employed to produce the map; and that in turn raises a whole new set of issues and concerns.

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