

variety of display media and some suggested solutions for problems encountered when moving from one media form to another.

Each chapter includes a brief summary and endnotes. Illustrations, a real strength of the book, are in black and white and in color. The book concludes with a bibliography and a short list of suggestions for additional reading.

In his preface, MacEachren writes: "The purpose of *SOME Truth with Maps: A Primer on Symbolization and Design* is to introduce existing and potential users of computer-mapping and GIS software to cartographic symbolization and design issues, problems, and approaches." At this he has more than succeeded. This book is very well-crafted; he easily guides the reader through some of the most fundamental issues of map use and design with carefully constructed illustrations, explanations, and real-world examples. Cartographers, GIS practitioners, policy makers, or anyone concerned with the visualization of information will find that this book fills an important gap in the literature. It is an elegant little book that adeptly outlines the questions that must be considered when using or designing maps and provides the reader with a conceptual framework that addresses and solves those questions.

Reference

DiBiase, David. 1990. Scientific visualization in the earth sciences. *Earth and Mineral Sciences* (Bulletin of the College of Earth and Mineral Sciences). The Pennsylvania State University 59(2): 13-18. □

BOOK REVIEW

Boundaries of Home: Mapping for Local Empowerment

Doug Aberley, editor. Gabriola Island, BC and Philadelphia, Pennsylvania: New Society Publishers, 1993. The New Catalyst Bioregional Series v. 6. 138 pp., 37 maps and diagrams. \$34.95 USA cloth (ISBN 0-86571-271-9), \$9.95 USA paper (ISBN 0-86571-272-7), \$11.95 Canada paper (ISBN 1-55092-207-6).

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This book is a cartographic text written for the bioregionalism movement. It is the sixth book in the Bioregional Series of the Canadian magazine *The New Catalyst*. The goal of bioregionalism, as summarized by the editor, Doug Aberley, is "to wed dynamic human populations to distinct physical territories defined by continuities of land and life. The promise is that these bioregions will be inhabited in a manner that respects ecological carrying capacity, engenders social justice, uses appropriate technology creatively, and allows for a rich interconnection between regionalized cultures."

The purpose of *Boundaries of Home* is to explain how mapping is a potential tool for bioregionalists (or "reinhabitants," as they call themselves) to use in the pursuit and expression of their environmental agenda. For Aberley, cartography promotes three of the goals of bioregionalism. First, it allows a graphic visualization of the boundaries, patterns, and relationships of the bioregion, or home place. Second, the act of making a bioregional map

encourages the mapmakers to more deeply experience and become more involved in their home place. Third, the unique level of information provided by bioregional maps gives reinhabitants the power they need to act on the problems that they perceive. The map is thus the vehicle "to take our aspirations for social justice beyond the realm of desire into the terrain of empowerment and practice."

Implicit in Aberley's bioregional view is that institutions that represent the "status quo" are responsible for environmental destruction and thus must be "reformed and ultimately replaced." Professional cartography, as a part of that status quo, is symptomatic of the problems that bioregionalism seeks to confront and overthrow. "In our consumer society," Aberley writes in the introduction, "mapping has become an activity primarily reserved for those in power, used to delineate the 'property' of nation states and multinational companies. . . . The result is that although we have great access to maps, we have also lost the ability ourselves to conceptualize, make and use images of place—skills which our ancestors honed over thousands of years." Beyond Aberley's intention to teach mapping skills to people without a background in cartography, he seeks to fill them with a sense of outrage at their cartographic disenfranchisement.

Aberley begins his book by presenting his philosophy and the reasons why we, as readers/reinhabitants, should map. This introduction is followed by a discussion of aboriginal mapping and a collection of case studies. These essays are intended to spark readers' imagination and inspire them into thinking about how to map from bioregional principles. The maps used to illustrate these

principles are maps of and by indigenous peoples and maps created by specific bioregional groups. The last half of the book includes a primer on how to produce a bioregional map, the issues involved, and suggestions for further reading.

In the discussion on aboriginal mapping (Section Two, "Eye memory: the inspiration of aboriginal mapping"), Aberley presents native (or, in Canadian terminology, aboriginal) mapping as encompassing exactly those qualities which he envisions for a reinhabitant cartography. "Mapping as conceptualized and executed by aboriginal peoples," he writes, "is at the heart of what reinhabitants need to discover. How did societies that were rooted in place, that were wedded irrevocably to the land, use perceptions of time and place to provide order to their actions?" He criticizes academic interpretations of native maps for having historically denigrated native maps as "primitive" or "undeveloped" mapping, as well as for discussing the maps as objects apart from their ecological and cultural context. Aberley qualifies his own intentions toward indigenous mapping by asserting "This is no romantic quest. What we seek is inspiration from the best attributes of those who remain close to the land-rootedness, spirituality, and the ability to live in complex harmony with another life."

Aberley then moves on to testimonies from bioregional mapping projects in North America and England (Section Three, "Mapping the experience of place") from people who "walk the mapping talk." Of the eight reports in this section, two are from urban bioregions. Beatrice Briggs describes mapping the Wild Onion Bioregion, Chicago, and Whitney Smith discusses mapping the Oak Ridges Bioregion,

Toronto. Three are rural mapping projects: Doug Sheriff and Eleanor Wright on the Yalakom Watershed, British Columbia; Kirkpatrick Sale on the Dart Watershed in England; and Angela King on Common Ground's Parish Mapping Project, also in England. The last three reports document bioregional GIS projects: Freeman House on the Mattole Restoration Council, California; Kai Snyder on the Yuba Watershed, California; and Jonathan Doig on Friends of the Earth biodiversity projects.

The case studies reveal shared ideals and problems through different approaches to bioregional maps. Although a bioregion may have many forms, all of the case studies (with the exception of the Parish Maps Project) base their maps on watershed boundaries. Watersheds seem to carry a primary significance as visualizing and defining the boundaries of a home place. Other common threads in the map projects include a concern for financial cost and the technicalities of locating and manipulating source material.

In the fourth and fifth sections, Aberley turns the responsibility of mapping to the reader. Section Four ("New terrain: current mapping thought") includes an essay on cartographic design from Stuart Allen of Raven Maps and Images. Seth Zuckerman and David McCloskey discuss the difficulties of overlapping regions and boundaries. George Tukul provides a reminder of the importance of GIS in bioregional planning. Aberley states that the section is intended to be a grassroots interpretation of cartographic thought rather than more "obtuse dialogue between egghead scientists or isolated academics." This suspicion of professional cartography/geography as situated within the status quo is echoed in Gene Marshall's essay. In Marshall's words, "We

cannot turn our mapping task to some professional geographer. Maps which are super-imposed on us from 'higher authorities' or 'scientific theorists' mean nothing to us personally unless data from such sources resonate with our personally felt sense of place." In the fifth section, Aberley presents his step-by-step guide, "How to map your bioregion: a primer for community activists." Here, he walks us through his experience mapping his bioregion in Northwest British Columbia. The mapping process begins with the compilation of a basemap to help determine bioregional boundaries. Aberley explains how to locate and use a map library and how to trace overlays of geographic information which define the character of the bioregion.

The reader is first encouraged to use this compilation for interpreting information, such as the derivation of microclimate profiles, computation of river discharge cycles, and plotting human settlement patterns. Next, the reader is guided briefly through the process of composing an "economic history" of the mapped region. This exercise consists of analyzing mapped data (such as fishing, forestry, and mining activity) for the appropriate bioregional response. Thus, Aberley stresses not only the creation of the map but the application of the map's information towards achieving bioregional goals. At the end of the primer, Aberley has provided a list of further readings and resources on a range of geographical, cartographical, and bioregional subjects.

We found the overall theme of *Boundaries of Home* to be provocative. Aberley suggests that most people don't believe they can make their own maps or wouldn't know how to go about doing it if they wanted to. Cartography is seen as a kind of controlling force

in people's lives, describing one vision of space without allowing responses. Aberley seeks to reverse this situation, imagining a future world in which "reinhabitants will not only learn to put maps on paper, maps will also be sung, chanted, stitched and woven, told in stories, and danced across firelit skies." The use of maps for local empowerment that Aberley advocates deserves attention.

The difficulty we have with Aberley's book, however, lies in the extremeness of his bioregional philosophy and the inherent contradictions and inconsistencies which are pervasive throughout the text. He is not calling for a multiplicity of maps but for a specific, bioregionally appropriate kind of map. Mapping is supposed to help reinhabitants locate where the status quo has control over the environment and how that control may be undermined. Maps of reinhabitants and native people are good and have value, and those of the status quo are evil and of value only to the extent that they may be appropriated to create bioregional maps. Likewise, the "natural" environment is good and should be protected, and the artificial, built environment is harmful (the only essay which doesn't seem to adhere to this is the section on "Common Ground mapping"). Technology is good only when it is in "the right hands." Further *a priori* assumptions exist with regard to data and its interpretation (Aberley, throughout the mapping primer, tells us how we should be feeling while making our maps) and the route of action that must be taken when the maps are made (as demonstrated by an activist interpretation of the gap analysis technique).

What makes Aberley's agenda particularly frustrating to read is that he simultaneously advocates projects and philosophies which

directly contradict his bioregional dogma. For example, all of the mapping projects rely on either government base maps, professional cartographers, or GIS experts for their mapping needs; in other words, the same egghead scientists against whom Aberley has warned us. When Aberley bemoans the "specialists who wield satellites," then lists an atlas of satellite imagery in his compilation of inspirational texts, we are left wondering what to think.

These types of contradictions are most prevalent when the subject is GIS. Both Snyder and Doig mention specifically that they are working with ESRI products for their GIS. This strategy seems particularly antithetical to the bioregional philosophy because it requires high-end and expensive hardware and software. The contributors do not seem to make the connection that the industrial infrastructures that they seek to replace, the "incessant development juggernaut," are the same institutions which have made GIS possible and continue to support it. Further, the maintenance of a GIS does not always encourage immersion in the bioregion: Snyder reports in the Yuba Watershed study that Arc/Info comes with a watershed boundary definition tool. If Arc/Info is defining the extent of the bioregion, who is doing the mapping in this project?

Despite these criticisms, *Boundaries of Home* fills a need for cartographic information in the bioregional movement, and in this task, it is successful. It promises to be an inspiration for some interesting mapmaking. For those of us outside bioregionalism, it remains a thought-provoking book. Obviously, this is not the first time that cartography has been brought to task for its oppressive nature, and it probably will not be the last. It is, however, one of the few instances in which the charges have

come from outside the academic walls. We as cartographers should consider seriously the charges levied against us. How can we make mapmaking more accessible, less intimidating? How can we encourage people to define their own cartographic voices? How do we find our own?

At the same time, Aberley's book might have some unintended consequences. The maps which Aberley inspires may portray other versions of reality: complexities of responsibility and connection that were once believed simple, shades of gray where formerly only black and white were perceived. The lines of power and disempowerment may turn out to be as difficult to disentwine as the lines determining the bioregions, and the web that supports the status quo may lead, unsettlingly, to every bioregional doorstep. □

BOOK REVIEW

Visualization in Geographic Information Systems

Hilary M. Hearnshaw and David J. Unwin (eds.). Chichester: John Wiley and Sons. 1994. 243 pp. Cloth, price \$89.95. (ISBN: 0-471-94435-1)

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Visualization in Geographic Information Systems is an explicit attempt to link developments in cartography and visualization to geographical information systems (GIS). The editors define visualization as a mental process as well as a set of methods which aid the process of visual data analysis. Cartography serves as a precursor