reviews

World Atlas of Epidemic Diseases
By Andrew Cliff, Peter Haggett, and Matthew Smallman-Raynor
New York: Arnold, London, and distributed by Oxford University Press, Inc. 2004. ISBN 0-34076-171-7

Reviewed by Tom Koch, Department of Geography, University of British Columbia

First and foremost, *The World Atlas of Epidemic Diseases* stands as a beautiful and rich statement of contemporary knowledge about, and mapping of, epidemic disease as it exists and has existed over time. It is also, less evidently, a status report on the relation between human populations and the viral or bacterial colonies embedded in various communities and geographic regions. Its chapters on the mechanics of disease transmission, the methods of study (and mapping), and "Changing patterns of disease" suggest the means by which we understand epidemic and pandemic disease, and the degree to which socioeconomic changes and population patterns contribute to the evolution of disease and its introduction to various populations.

The *Atlas* also serves as a departure point in the history of atlases in general, and especially medical atlases as they are currently developing in an era of inexpensive, four color printing capable of incorporating a voluminous, shared library of digitally stored and easily reproducible maps, pictures, and medical images. While printed and published as a library resource—at a cost of $225 U.S. it is beyond the reach of most casual readers—its layout, use of color, and clearly written text has the feel of an Internet Atlas with its links to medical databases, microbiological image libraries, and social histories of disease. What distinguishes it from that genre is the clarity and depth of its writing and thinking about the subject it attempts to present.

The oversize (10 ¾ x 14.5"), 212-page *Atlas* surveys 50 epidemic diseases in chapters distinguishing classic plagues (plague, cholera, smallpox, etc.), persistent scourges (tuberculosis, syphilis, typhus), children's diseases (Rubella, chickenpox, diphtheria), seasonal ailments (influenza), tropical diseases, vaccine-preventable diseases, and newly emergent diseases (Legionnaires' Disease, HIV, Lime, etc.). Its introductory chapter is a short course in the history and practice of disease studies, the problem of data collection and the techniques of epidemic disease analysis, including mapping. It's final chapter, certainly its most riveting, considers a broad conceptual frame within which one can begin to understand the emerging epidemics that currently confront humankind.

To understand the *Atlas* and its place in the genre, and the genre's place in the greater body of medical mapping and writing, it is useful to compare it with Cliff and Haggett's classic 1988 A*tlas of Disease Distributions: Analytic Approaches to Epidemiological Data* (Blackwell). That *Atlas* was unabashedly methodological, including detailed descriptions of the techniques used to analyze outbreaks and the history of specific, largely classical outbreaks as subjects of scientific, and specifically cartographic discourse. In it the diseases addressed were largely incidental, the methodological issues were the focus. The diseases used as teaching examples were those the authors had themselves studied in pioneering work on disease diffusion: measles, influenza, and in its early chapters, cholera.

That Atlas, now out of print, remains perhaps the single best book on approaches to a rigorous and broadly constructed mapped analysis of epidemic disease. It was, for its day, lavishly illustrated with black and white images, including maps. The result was a brilliant primer of the methodologies of medical mapping. The section on cholera, for example, included images from newspaper archive, maps, statistics and in technical sections, equations that laid bare the state of the medical-statistical art of disease mapping up to that time.

The Atlas of Disease Distribution was based in part on its authors' work in Iceland and elsewhere, and their focus on the incidence and diffusion of classic epidemic diseases like measles and influenza. It premiered at the same time that Peter J. Gould's now iconic series of color maps of the progression of AIDS in the USA was garnering great attention, a series whose sophisticated algorithms projecting the progress of that pandemic were less discussed than the visually stunning result. Cliff and Haggetts' work laid bare the practical mechanics of work whose endpoint became the color maps by Gould; theirs was the foundation for the next step in sophisticated, predictive spatial mapping his work represented.

In 1988 the popular belief, one encouraged by many officials, was that uncontrolled epidemic disease, with the notable exception of AIDS, was a largely historical phenomenon. Modern medicine and modern science could and would control the traditional scourges. Drug resistant tuberculosis, Legion-naire's Disease and the Human Immunodeficiency Virus were anomalies that would be quickly brought under control. One might therefore study the mechanics of disease mapping without urgency and without attention to urgent contemporary epidemiology.

By 1992, in part thanks to Gould's pioneering work, AIDS was being acknowledged as a pandemic with widespread international ramifications. With Cliff

and Haggett, Smallman-Raynor authored the *London International Atlas of AIDS* (London: Blackwell), a volume that attempted to both summarize the state of knowledge to that time and through its maps to present an understanding of AIDS's pandemic spread.

The World Atlas of Epidemic Disease follows both the 1988 and 1992 atlases. Most importantly, perhaps, it takes epidemic disease as a contemporary reality rooted in social and socioeconomic patterns of land use and behavior. In each of its cases attention is paid to the environmental and ecological determinants of the disease. Its theoretical stance is understated, except in the first and especially its last chapter, but the message is clear. Epidemic disease is no longer something others must worry about. If it ever left epidemic and pandemic disease are back in a variety of bacterial and viral forms we encourage in a variety of ways. AIDS is not an anomaly. It is simply an example, one of several, of an historical pattern brought into the present by processes more or less well understood.

Unlike the two earlier volumes, both conceived by the authors and then submitted to a publisher, "the new atlas came from an initiative by the publishers," Peter Haggett informs me. "They already publish a series of atlases (the first was 'Desertification') and so this atlas was simply another in the series." The size, format, and design were set and the authors then invited to create their atlas of epidemic diseases within the series format.

The publisher's general series signaled the growing public interest in the Atlas as a form, one that permitted the broad survey of a subject through maps and other images. As a form this incarnation of the atlas is based on electronic maps and images that can be easily reproduced on the page and stored electronically. The publisher's invitation to create a volume on epidemic disease for their series argued as well a growing popular interest in and awareness of epidemic and pandemic disease as real, urgent, and exigent. The result is designed to sell, the traditionally marketable if expensive atlas revitalized by a four-color printing technology facilitating complex layouts of photos, maps, portraits, and scanned pictures.

The resulting mix is too often a recipe for vacuity, a wealth of maps and pictures that hang without a coherent theme, skin without a skeleton to give it form. Fortunately, however, this volume is different. What distinguishes this atlas is the ease with which the authors write authoritatively but in plain, straightforward language about a range of complex diseases. The images serve the text in a fashion that is encyclopedic rather than atlas-based. Indeed, the ratio of text to images, and non-map images to maps, makes this more an encyclopedia than an atlas that assumes the maps are the thing that will tell the story.

Most infectious disease specialists in North America will have at best only a passing acquaintance with, say, *Leishmaniasis*, a disease caused by single-celled parasites and transmitted by sandflies either directly to humans or through an intervening animal vector. Once common to parts of Africa, the Middle East, and India it has spread through much of the world, including Central and South America and much of western Europe. The description of the disease includes nine maps of the global distribution of the disease, photographs of both the agent and its vector, of patients with characteristic, cutaneous lesions, and finally, charts describing the agent's passage from animal reservoir (the picture of a gerbil is included) to sandfly vector to other animals and to humans.

Together, the images and the text present the portrait of a local or regional disease that has spread, as the last map shows, to well behind its historical boundaries. It exemplifies a formerly regional disease whose diffusion has been assured not through animal migration but the intense globalization of international trade and migration. It thus stands as an example of the relation between economic development and a pattern of disease diffusion discussed, albeit briefly, in the final chapter.

The result would equally serve the medical resident in an Illinois hospital examining room faced with a condition he or she has never seen but suspects is imported, the epidemiologist seeking to understand the diffusion of a formerly limited parasite with a severely local vector, and the medical geographer interested in the general diffusion pattern of parasitic diseases. For those who work in this field the consistency of the text, disease by disease, and the wealth of its presentation (images of bacteria or virus, maps of diffusion and disease intensity, photographs of patient lesions and animal vectors abound for each), the result is not simply praiseworthy but wholly admirable.

In this encyclopedia cum atlas, maps are a tool that with a range of others—physical (microscope, camera, etc.) and conceptual (statistical analytics) promotes an understanding of both the nature of an epidemic disease and of such diseases as a class. It thus is distinguished from the majority of mapped atlases that are map rich but short in thinking or authoritative text. Implicit in this *Atlas* is the message that mapping is not the answer but a part of its grammar, a tool of understanding not the endpoint of our knowledge.

I would have preferred the book be organized chronologically with older epidemics (plague, cholera, smallpox, yellow fever) antecedent to more modern diseases. That would have permitted more thinking about the methodologies of mapping and medical statistics, a la the 1988 *Atlas*, and perhaps, more on the relation between epidemic disease patterns, their socioeconomic contributors, and the effect of anthropogenic land change on some of the more recent diseases

included here. It would have been a meatier piece of work.

And I find it curious the Atlas contains a number of maps lifted from the authors' previous works, maps done first in black and white, but here colored without any authorial comment on the changes made to those earlier maps. Comparing a map from the *AIDS Atlas*, 1992, to its colorized version in this *Atlas*—the first black and white and the second color—says much about coloration that is important. At the least, it would have been honest to note when changes were made. To read about why the authors decided to colorize their older maps, about the benefits and drawbacks, would have been useful.

These concerns are not, however, fatally limiting flaws. They may be missed opportunities but even so, the result is greater than its individual chapters. The 2004 *Atlas* shows what can be done within a publisher's commercial template when intelligent, informed authors seek to develop a text with maps that serve public understanding of a subject that is complex and whose science is clearly incomplete. As a general resource for those who are not specialists in infectious disease the resulting volume is without peer. As a first reference—for a library or a medical geographer/cartographer's home library, it is that rare *Atlas* that is worth its price, and perhaps a little more. For the young epidemiologist or public health expert, it is a resource he or she will turn to again and again over the next few years.

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Mapping the News: Case Studies in GIS and Journalism

By David Herzog
Redlands: ESRI Press 2003
148 pages, with full-color illustrations throughout
$19.95 softcover
ISBN 1-58948-072-4

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The Case Studies Series from ESRI Press provides actual accounts of Geographic Information System (GIS) use by and for many professions, including transportation, law enforcement, education, and government. GIS is helping these individuals to plan transportation corridors, analyze crime patterns, inform the public, and provide emergency response scenarios worldwide. In my own province of civil engineering, GIS technology monitors utility infrastructure systems, manages tax assessment data, directs emergency personnel, aids in the development and planning of neighborhoods, and provides a variety of municipal mapping services.

Mapping the News describes the impact of GIS technology on the field of journalism, and focuses on its use in newspaper reporting. Whether using GIS maps to illustrate an article or performing a complex GIS analysis for an investigative report, journalists across the country are taking advantage of this technology to enhance the storytelling process.

The author of this book is a former investigative reporter who currently teaches journalism, so he is able to tackle this subject as both participant and instructor. He begins with an overview of GIS mapping technology and describes some of its general uses in the public and private sector. Maps have been used in journalism for many years to show us where the headline stories occur, or to provide color-coded comparison studies of different areas. Maps have also been used to help readers better understand the concept of place. Even a simple relativity query, such as establishing the distance between two locations, becomes an abstract proposition without a map to guide us. A good map provides a source of visual reference that is virtually unsurpassed by any other means.

But GIS takes mapping one step further by linking digital maps to tables of related data that pertain to the geographic features appearing on the computer screen. Each line of information stored in these tables is referred to as an attribute. Attributes regarding a geographic location can include demographics, topography, or in-depth government information, such as tax assessment or housing data. Because GIS maps are created in a layered format, the user is able to look at a single geographic element in an area, such as flood