**Online Mapping and Critical GIS**

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I was recently considering the ques-tion of why we make maps. Or, if you're not actually a prac-ticing car-tographer, why other people think it's worthwhile to make maps and visualize data.[1] Surprising as it may seem, cartography textbooks devote little or no attention to this fundamental question. There is plenty of discussion of *how* to make good maps, and the different types of maps that one could use, such as isarithmic or choroplethic, and what factors to consider, such as scale, projection, or data classification. But these discussions already tend to assume that it is worthwhile to make maps in the first place. Why?

On the face of it this is a strange question—after all the first record-ed map dates back nearly 5,000 years and no less an authority than Brian Harley has stated that maps may be more fundamental than writing. And it's true that the textbooks are not completely silent. Some textbooks, especially those that emphasize cartography as visualization—such as Terry Slocum's book (Slocum, 1999, a 2nd edition forthcoming), suggest that maps and scientific graphics help us make sense of numbers. This should easily be apparent to any-one who cares to compare the Atlanta Yellow Pages with a map of businesses in the Atlanta MSA. It will be the map that tells you—at a glance—that businesses agglomer-ate in the downtown area, the Mid-town and Buckhead areas, with scattered centers such as Little Five Points, Virginia Highlands and all the edge cities that make up the

Atlanta sprawl. The fact that busi-nesses form clusters is something we might already know from eco-nomic geography, but precisely *where* they cluster in Atlanta, how big they are and how they relate to each other, can be quickly seen from the map—or from years of living in Atlanta. (To make it more interesting, you could compare the Gay Yellow Pages or the Korean Yellow Pages to show up Midtown and Buford Highway.)

So why do we want to un-derstand the numbers and the patterns? Just for the sake of it? Perhaps I shouldn't ask a group of professional cartographers this question, but nevertheless how many people in this country come home from work and study maps? No, when we take up a map we do so in the context of an enquiry such as to find alternative routes to work that "beat the traffic" or find out where someone lives. For statistical or thematic mapping the reason is even stronger. I always tell my students that there's no point making a map that has no point…and after the puzzled look is erased they usually look a bit concerned because aren't maps supposed to be neutral? (This is one of the great contradictions of teach-ing cartography: students often come up with excellent topics such as the spread of AIDS or firearm deaths but then seem afraid to tell it powerfully.)

So the question "why make maps" and the answer that it pres-ents numbers clearly is miscon-ceived. The question is really why do we *use* maps?

Here we are on much clearer ground. If we look at why people use maps (rather than tables) it's not because they present the num-bers clearly (as the textbooks say) but rather to make decisions and to put decisions into effect. And this has been the case right from the be-ginning of modern thematic carto-graphy. In other words, thematic maps are inherently a political

process. (For my current purposes I will ignore general reference maps although they too are carried out for political reasons.)

A brief look at the history of thematic mapping highlights this point. Thematic maps emerged in the late 18th and early 19th centuries in Europe. France in particular can lay claim to a number of firsts. A French baron, for example, invent-ed the choropleth map in 1826. His name was Charles Dupin (1784–1873) and he already knew the power of "speaking to the eyes" as he put it. Dupin was a member of the Académie des Sciences and later a politician as well as Inspec-tor General of the Génie Maritime. Dupin's choropleth showed the ratio of educated (male) children to the population at large by *départe-ment* or region. In fact it was one of the first maps of "moral statistics" which addressed numerous char-acteristics of populations, such as birth and death rates, crime, early marriages, rapes, houses of ill–re-pute, attempts to hide abortions and so on. Forty years later Henry Mayhew would make a similar series of maps for England and Wales in his famous book *London labour and the London poor* (4 vols., 1861–2).

Moral statistics were collected, processed and mapped in order to govern the country. In this light it is worth recalling that the origin of the word "statistics" derives from the German *Statistik* or "state–is-tics". Dupin's goal in making the map was to relate the education of the population to the prosper-ity and wealth of France—a direct linkage between the health of the population and the health of the state. This link was nuanced by location to such a degree that Dupin's map was instrumental in a discourse of "la France obscure" and "la France éclairée" (unen-lightened and enlightened regions of the country). From the start, the modern choropleth map was es-sential to the state's efforts to eval-

uate and manage its resources and how these varied across its territory. Statistics, and their graphical depiction in maps, were essential aspects in the state's control and regulation of its population.

Dupin's maps were soon followed by those of D'Angeville (health and wealth choropleths, 1836), Balbi and Guerry (first multivariate crime maps, 1829), Minard (economic maps and great advocate of the study of political economy, whose map of Napoleon's march on Moscow was made famous by Tufte), and the Belgian statistician Adolphe Quetelet, on topics such as education, crime, cholera and disease, the production and transport of goods, sanitation and many other aspects of living conditions (Konvitz, 1987, Robinson, 1967, 1982). At the same time August Comte invented the term "sociology" Quetelet's proselytizing efforts on behalf of statistical science ensured that it would be founded on the idea that social facts are always statistical in nature.

Thematic mapping then was developed not by cartographers, but by social scientists and engineers on behalf of government for political reasons. And there's no doubt, in my opinion, that the same reason applies today: maps are made and used for decision–making and policy formation at many levels from the nation to the business to the individual.

This brings me to online community mapping and "critical GIS." Critical GIS is an emerging field perhaps best thought of as an outgrowth or component of the "GIS and society" debates that were hot in the 1990s (Schuurman, 2000). Critical GIS acknowledges the place of politics in mapping (and, if you excuse the pun, the politics of place in mapping). Critical GIS is not an effort to *insert* politics in cartography and GIS, but to say that mapping is essentially in itself a political act or practice. So critical GIS is not ideological

in the same way that propaganda mapping is.

If it seems odd to emphasize the political in mapping, I would argue that there is a far greater danger in failing to do so. When enquiry is not pursued politically it will fail politically. A story about a suburban county near Atlanta illustrates this point. The county school board recently decided to put a disclaimer in their school biology textbooks that states "evolution is a theory, not a fact." No other scientific theories in the science books were similarly highlighted—not even more controversial ones. The move followed a petition signed by 2,000 people, mostly Christian fundamentalists (Griffis, 2002). Science has clearly failed here—but it didn't fail scientifically (evolution is one of the best–proved scientific theories we have) it failed politically. The scientific community should be leading the public debate on this issue, not reacting to it.

It's the same in the mapping community (i.e., cartography and GIS). Maps are already used politically, whether it be for redistricting, enacting the census, risk assessment and inventorying in the face of threats, or making choropleth maps of your population's health in order to govern better. The question is, what kind of political debate and policy goals do we *want* to construct with mapping? Maps are never an end in themselves but are part of our political existence (whether at the national level or the personal level; what is called the "politics of the self"). Online community mapping of the type covered in this column is one example of this. In future columns we will examine more examples of community mapping carried out online.

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[1] Lecture "Why Visualize" given at the Center for Spatially Integrated Social Science (CSISS) workshop on Map Making and Visualization, Santa Barbara, July 2002.

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