



Web-Based Mapping— Now Possible without Troublesome Cartography!

Martin von Wyss

It's not a new tale, really. Technology simplifies a task and in the process puts a craft in the hands of the creative if somewhat unskilled. Though more manuscripts exist today since word processors made it simple for the amateur to put ideas down in a neat document, the budding novelists still need editors. Similarly, just because publishing maps on the Web is easy we shouldn't ignore map design.

The Modern Language Association (MLA) of New York recently published its Language Map (http://www.mla.org/census_map). It is terrific, and one of the best of the many interactive, Web-mapping applications based in GIS. The Language Map contains fantastic but complex data and makes them understandable by an interactive data viewer. Unfortunately, map design was given hardly a thought. This seriously undermines the effectiveness of the map.

The Language Map is a choropleth map, or one that uses map area to show both land area and data. Such maps shouldn't distort either land area or shape, but the Language Map unfortunately uses a rectangular map projection that distorts the states' shapes. Such rectangular projections are the default in most mapping software packages, probably because they are computationally easy and maybe also because our computer windows are rectangular. One of these rectangular projections, the Plate Carée, might usurp the Mercator projection as the most common and the most commonly misused projection. While even television's *The West Wing* has weighed in on misuses of the

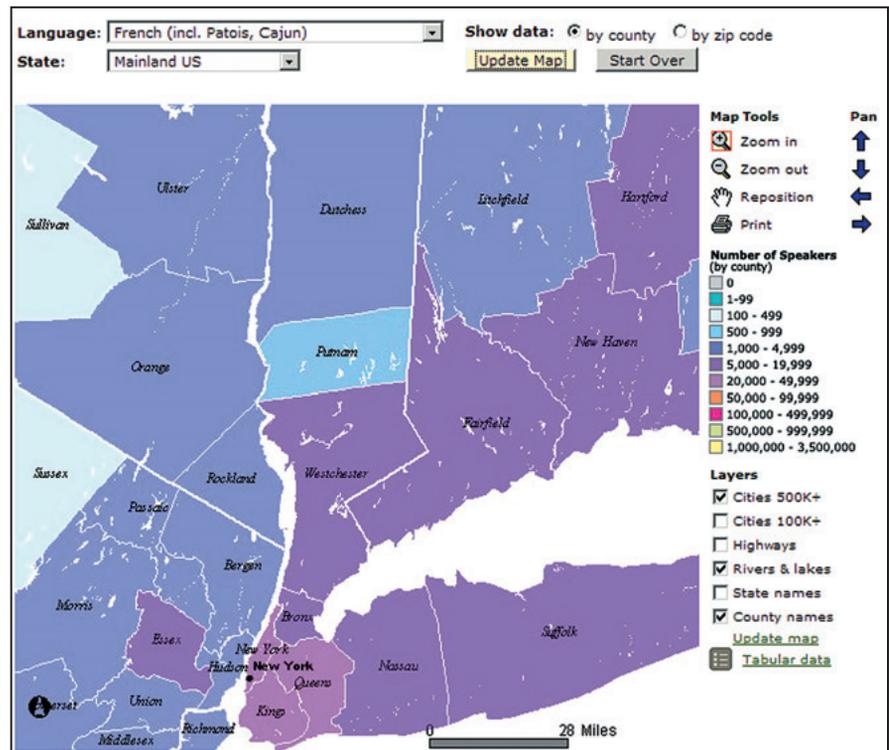


Figure 1 Above is a typical choropleth map of data that wasn't but should have been normalized. It fails to show the trend of French-speakers, telling us about the population as a whole. Naturally Manhattan, Brooklyn, and Queens are in the highest class of the map: they are the three most populous counties of New York State!

Mercator, the Plate Carée is not discussed often. When it is, it is often incorrectly referred to as “unprojected” or as “geographic coordinates.” How could the nearly spherical earth be represented on a flat piece of paper or computer monitor if it wasn't projected? Or how can something on a map *not* be geographic?

Although it is seldom mentioned by name, Plate Carée is common because it displays latitude and longitude units as having equal lengths in both the north-south and east-west directions. Since this unique property makes the math

easy, many GISs have Plate Carée as their default. National Geographic's “Map Machine” and the U.S. Department of Housing and Urban Development's “Enterprise Geographic Information System,” both made in partnership with ESRI, use Plate Carée. This projection and its areal distortion are sadly ubiquitous and for no reason other than it simplifies data structure and expedites screen redrawing. It and other rectangular projections are rarely appropriate for a map of the United States, such as the Language Map.

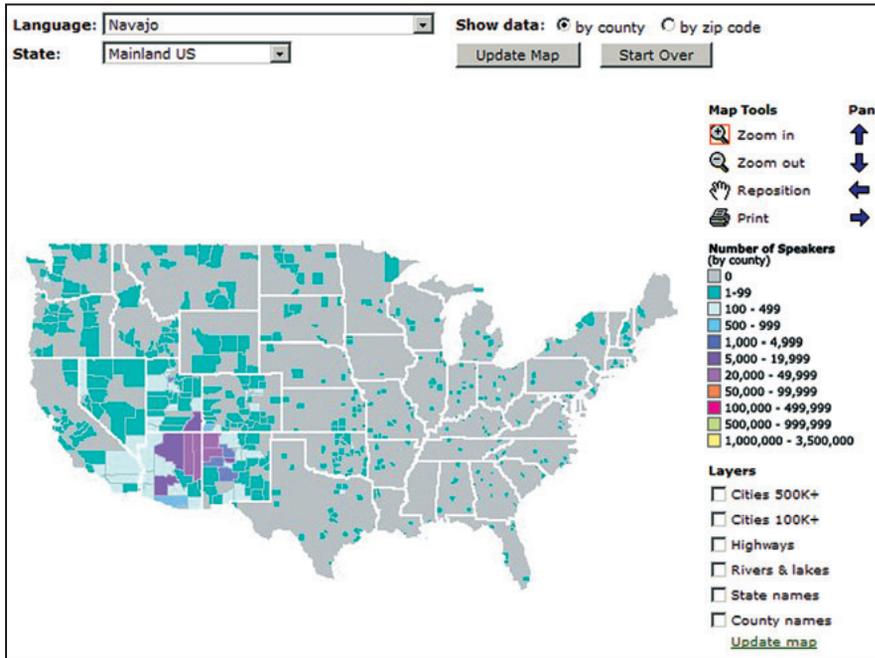


Figure 2 Populations in geographically large but sparsely populated counties are favored in this rectangular projection.

The map designers could have left the viewer with a more meaningful and more accurate representation of the information had they normalized the data. (Figure 1) Since the MLA chose to show absolute numbers instead of *densities* of people, the Language Map gives inappropriate emphasis to sparsely-populated counties that are large in area. Figure 2 shows that most of the nation's 178,014 Navajo-speakers reside in four counties in the southwest. The Navajo-speaking population is cartographically over-represented because its concentration, depicted by the pink areas, covers about 1.2% of the map, whereas that population only makes up less than a hundredth of a percent of the total U.S. population on the map. Similarly, the *proportion* of people who speak a certain language would be more informative than raw numbers. Three interesting but discrete facts have been lumped together: that these counties are large in area, that their population is sparse, and that the population has a high proportion of Navajo-speakers. Through muddled design, the unique meaning has been lost.

A third major problem with the map is that the color scheme is inappropriate.

Although GIS software often cleverly promotes sensible and intuitive color schemes, bright, vivid colors can seduce

those for whom information comes second to glitz. The result turns map reading from an informative, easy task, into a garish exercise in comparing the map to the legend. (Figure 3)

Perhaps as the number of Web maps increases, so will readers' sophistication. But just as Microsoft Word doesn't yet have a button that generates the perfect poem, the publishable paper, or the best-selling novel, Internet map software needs cartography to make honest, meaningful, easily understood maps. 🌐

About the Author



Martin von Wyss of vW Maps, Inc. (www.vwmaps.com) has more than ten years of experience in map making and cartographic consulting. He has produced maps for a variety of different media including books, magazines, software, and a big rock in a park.

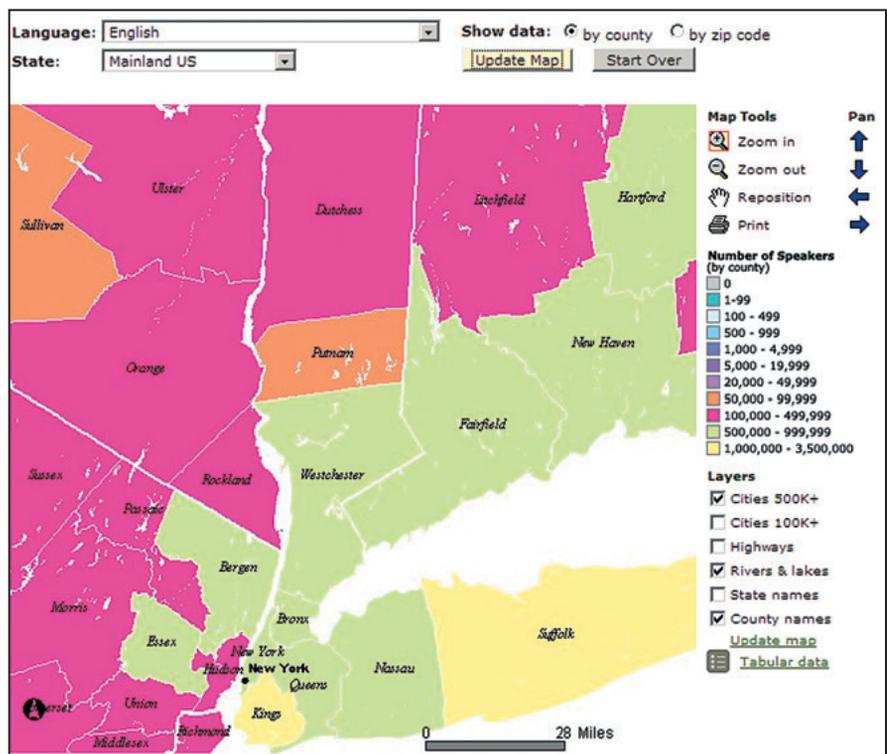


Figure 3 Which colors do you notice first? The startling pink in this map is not for the counties with the highest populations being mapped, but for the lowest. This counter-intuitive color scheme shows the distribution of English speakers who, again, are concentrated in the counties that comprise New York City and surroundings.