Framework for Rough Draft 3

Color

* History of color of maps
  + Ehrensvard 1987, Art and Cartography: Six Historical Essays
    - In early maps the information was imprecise leading to map makers choose between pictorial and abstract representation of more accurate data
  + Semiology of Graphics, Jacques Bertin 1983 Book
    - Graphically showing the difference between entities by using color
    - Goal of giving the reader of a map a clear visual indication of what is happening on the surface of the earth.
* Modern Color Selection in Maps
  + ColorBrewer.org
    - Color Schemes need to be attractive but also support the message of the map and the nature of the data
    - Color blindness
    - Thematic map data color and race

Thematic maps through history have used color to communicate activity within a geography. With early maps the information was imprecise. The imprecise nature of maps led map makers to choose between pictorial or abstract representation of more accurate data[1]. Color in early maps was more colorful than in early production maps when printed color had limited selection of color mixes. By the 19th century printing improved enough to allow to expand the role of color again [1].

The start of modern color in thematic maps can be traced to Jacques Bertin’s 1983 Book “Semiology of Graphics”. Bertin presents the goal of giving the reader of a map a clear visual indication of what is happening on the surface of the earth [2]. One way this is accomplished is through using color to show the difference between entities.

ColorBrewer developed by Mark Horrower and Cynthia Brewer in 2003 helps in choosing appropriate color schemes for mapping needs. The authors point out that choosing color schemes can be very difficult when designing thematic maps. Most GIS software does have color schemes, but they don’t provide direction on the use of color.

When a thematic is displayed on a laptop LCD it may not print the same way. The ColorBrewer system suggest color schemes if an agency needs to have the maps available through multiple media types. There is a total of 35 color schemes or sets. They are divided into three groups: qualitative, sequential and diverging. Sequential work well for when order is needed in data from low to high. Diverging colors are good for separation variables. Qualitative color schemes use differences in hue to create a set that does not imply order [3].

Colors in thematic maps also need to take into consideration. Pastel like colors were found to be more confusing to color-vision impaired users than darker colors. This is an important consideration to take into account when in a group of 25 at least one person is likely to be color-vision impaired [4].

Finally, color selection needs to take into account considerations such unintended bias. When mapping crime data using a color scheme that may match skin tones could create a perception that areas may be more heavily populated by a specific ethnicity.

It’s important that the map maker make a careful and well-thought-out choice in the data colors that are displayed on a map. Failure to do so could lead to the user not gaining new information from the map.

1. Ehrensvard, Art and Cartography: Six Historical Essays, 1987
2. Bertin, Semilogy of Graphics, 1983
3. Harrower and Brewer, ColorBrewer.org: An Online Tool for Selecting Colour Schemes for Maps, The Cartographic Journal, 2003
4. Gardner, Vision impaired map users, Evaluation of the Colorbrewer Color Schemes for Accommodation of Map Readers with Impaired Color Vision, 2005

Interactivity

* Cartographic interaction is the use of a digital map by a user facilitated by a computer
  + Interactive maps allow users to explore scenes dynamically to focus on areas of interest. The user is able to vary scenes with changing their scale and location spatially.
  + High levels of interactivity can enhance the user’s engagement with the observed data with their exploration abilities. This results in both learning and understanding of content.
  + Cartographic interaction can be applied to other fields of study beyond geography and criminology

Growth in computer processing speed and Internet technologies have help lead the to the growth of interactive map availability, design and consumption. Cartographic interaction is the use of a digital map by a user facilitated by a computer. This creates a dialog between user and map.

Maps manifest themselves as knowledge from the mapmaker about the map’s variable of interest. The goal of a map whether successful or not is the transfer of geographic insight from the mapmaker to the map user [1].

1. Roth, Robert, Interacting with Maps: The Science and Practice of Cartographic Interaction, 2011, The Pennsylvania State University, PhD dissertation