Image from NASA: https://commons.wikimedia.org/wiki/File:Earth_Western_Hemisphere_transparent_background.png#filelinks

Digital Cartography

Maps as Communication

WV VIEW

AmericaView
Empowering Earth Observation Education
AmericaView.org - Est. 2003

This short module serves as an introduction to the course and an overview of how maps are used to communicate.

Module Topics

1. Visual hierarchy
2. Map design for an intended audience
3. Map elements
4. Resources

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These are the topics covered in this module.

Audience

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Visual Hierarchy

- A map's purpose determines which of its elements are the most important and should be displayed most prominently in the visual hierarchy
- Map design is largely a process of deciding how prominent to make each element of your map layout
- Hierarchy is established by an element's:
  1. Position in the map layout
  2. Size
  3. Amount of open space around it
  4. Contrasting colors, line weights, and line details

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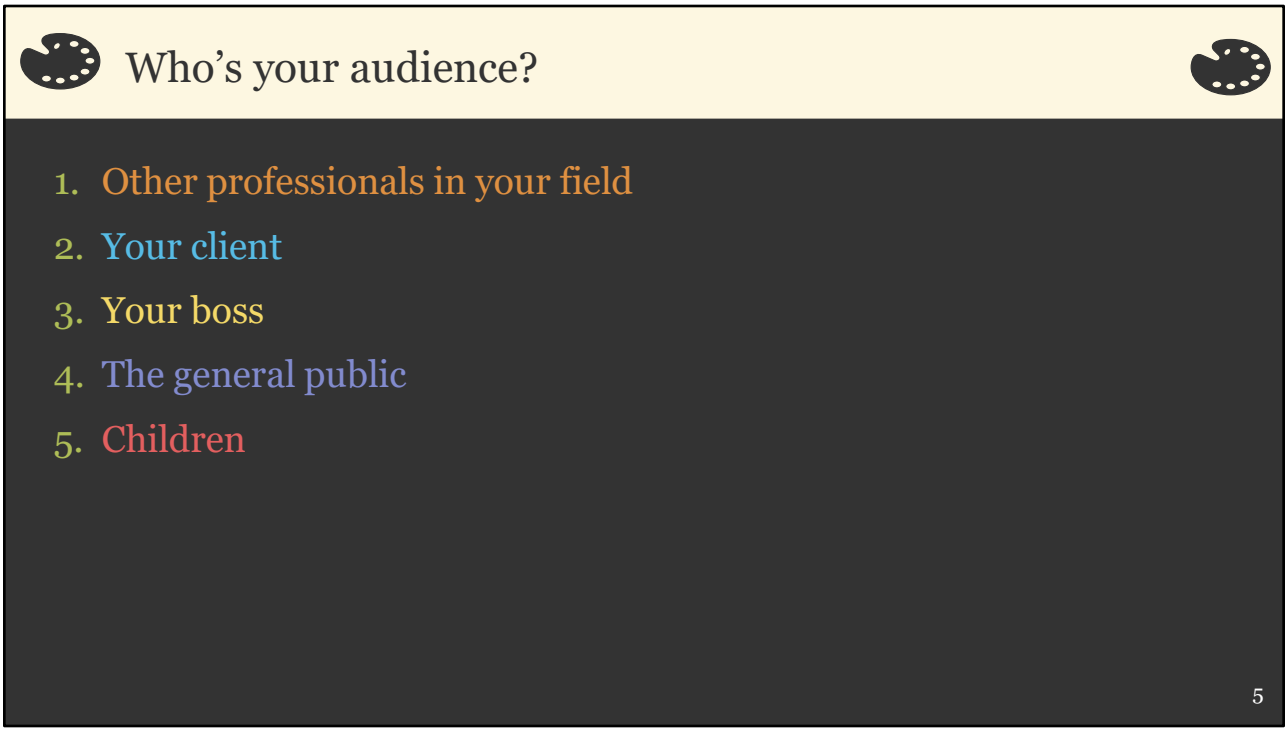
A map's purpose determines which of its elements are the most important and should be displayed most prominently in the visual hierarchy.

Map design is largely a process of deciding how prominent to make each element of your map layout.

Visual hierarchy is established by an element's position in the map layout, an element's size, the amount of space around an element, contrasting colors, line weights, and line details.

The best way to learn how to establish visual hierarchy in your maps is to practice.



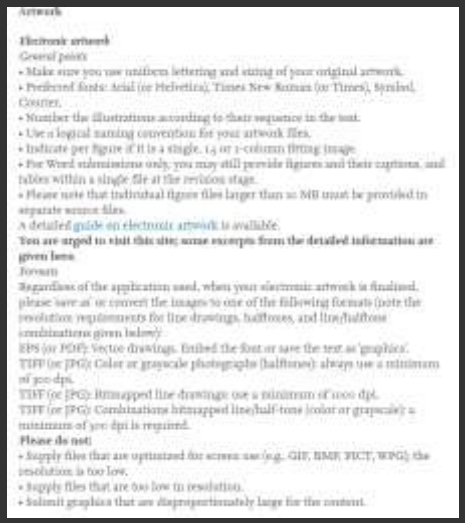
You should always design a map with an audience in mind.

A map produced for professionals in your field should be different from a map designed for the general public.

If you are presenting the same information, it is generally best to create different map layouts for different audiences as opposed to a single, all purpose product.

Considering the audience is key to a good map.

In what format will it be presented?



Artwork

Electronic artwork

General points

- Make sure you use uniform lettering and sizing of your original artwork.
- Preferred fonts: Arial (or Helvetica), Times New Roman (or Times), Symbol, Courier.
- Number the illustrations according to their sequence in the text.
- Use a logical naming convention for your artwork files.
- Indicate per figure if it is a single, 1.5 or 2-column fitting image.
- For Word submissions only, you may still provide figures and their captions, and tables within a single file at the revision stage.
- Please note that individual figure files larger than 10 MB must be provided in separate source files.

A detailed guide on electronic artwork is available.

You are urged to visit this site; some excerpts from the detailed information are given here.

Formats

Regardless of the application used, when your electronic artwork is finalized, please 'save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):

EPS (or PDF): Vector drawings. Embed the font or save the text as 'graphics'.

TIFF (or JPG): Color or grayscale photographs (halftones): always use a minimum of 300 dpi.

TIFF (or JPG): Bitmapped line drawings: use a minimum of 1000 dpi.

TIFF (or JPG): Combinations bitmapped line/half-tone (color or grayscale): a minimum of 500 dpi is required.

Please do not:

- Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); the resolution is too low.
- Supply files that are too low in resolution.
- Submit graphics that are disproportionately large for the content.

1. Color print
2. Black-and-white print
3. Academic journal
4. Newspaper
5. Trade journal
6. White paper
7. Large format
8. Computer screens
9. Projectors
10. Presentations

Guide to Authors: Applied Geography (https://www.elsevier.com/journals/applied-geography/0143-6228/guide-for-authors)

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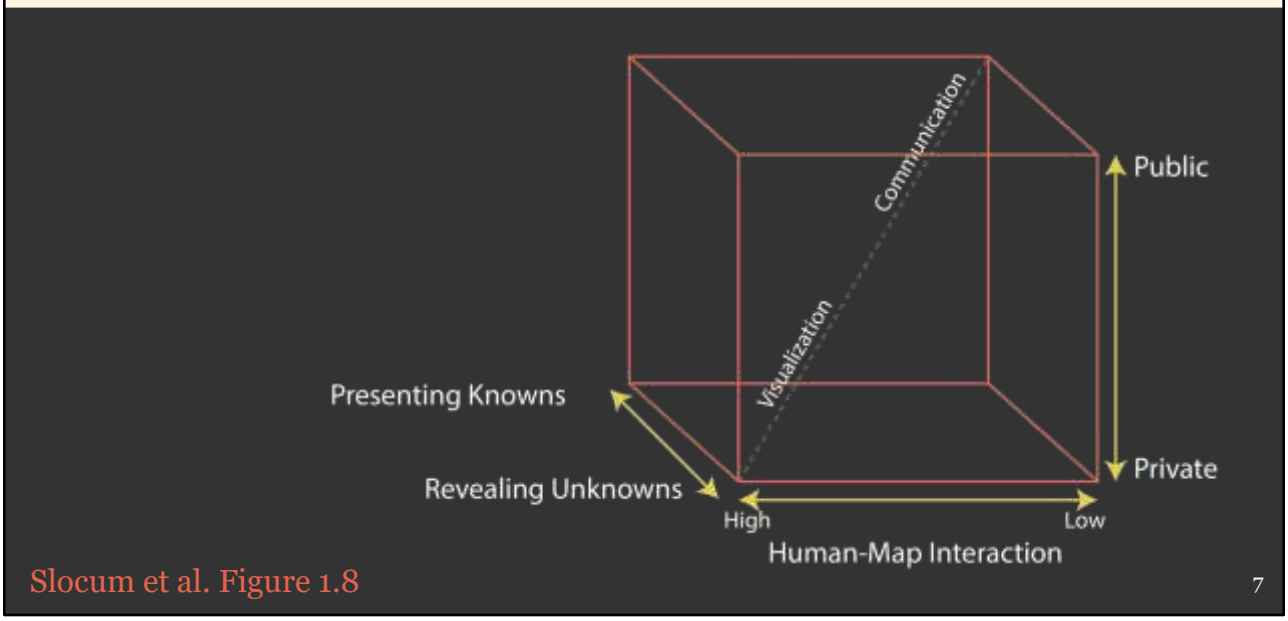
It is also important to consider the medium of presentation for the map.

This can have an impact on the color space used, the required resolution, sizes of symbols and text, and whether to use color or black-and-white.

Maps as Communication



Slocum et al. Figure 1.8

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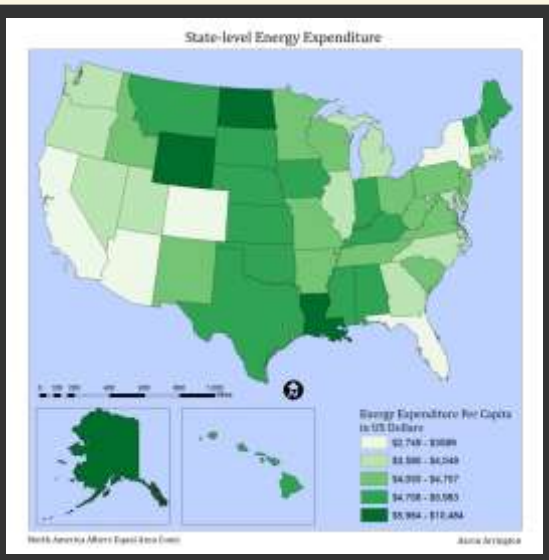
This image after MacEachren (1994) conceptualizes the use of maps as a form of data visualization and communication. When designing a map, it is important to think through how it will be used. Are you trying to present known information or reveal unknown patterns in your data? Will there be a high level of interaction between the reader and the map that requires specific knowledge? Will the map be used privately or made available to the public? Maps that are used to visualize data and reveal unknowns tend to require more human-map interaction and are primarily designed for private use or potentially to share with other content-area professionals. In contrast, maps that present known information and are primarily used to communicate tend to require less human-map interaction and may be developed for the general public. In short, it is important to think through the purpose of your map and the intended audience so that you effectively achieve your goal of visualizing or communicating data and information.

Map Elements



1. Map area
2. Title
3. Map text
4. Inset maps (multiple data frames)
5. Scale
6. Orientation
7. Graticules
8. Coordinate Grids
9. Legend
10. Credits
11. Frames and neat lines
12. Graphics

Map by Aaron Arrington

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This slide provides examples of some of the common map elements used in map layouts.

Throughout this course, you will learn to appropriately design these different components to make effective maps.

Resources

Textbooks

Thematic Cartography and Geovisualization

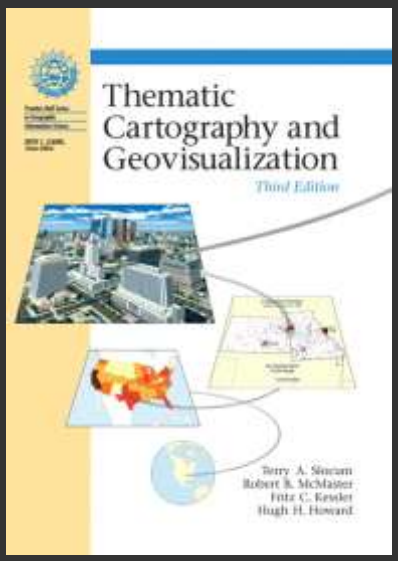
Terry Slocum

Robert B. McMaster

Fritz C. Kessler

Hugh H. Howard

https://www.pearson.com/us/higher-education/program/Slocum-Thematic-Cartography-and-Geovisualization-3rd-Edition/PGM94810.html



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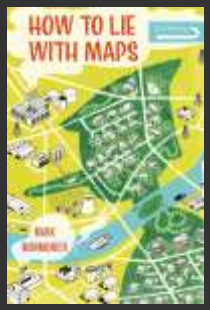
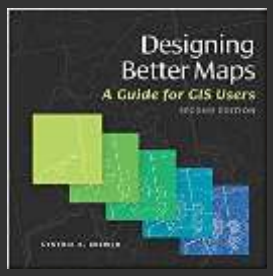
This textbook by Slocum et al. is the primary text referenced in this course. It provides a detailed and academic treatment of cartography and geovisualization.

Textbooks

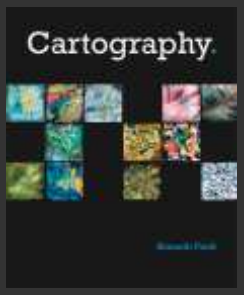
https://www.amazon.com/Some-Truth-Maps-Symbolization-PUBLICATIONS/dp/0892912146



https://press.uchicago.edu/ucp/books/book/chicago/H/bo27400568.html



https://esripress.esri.com/display/index.cfm?fuseaction=display&websiteID=293&moduleID=0



https://esripress.esri.com/display/index.cfm?fuseaction=display&websiteID=342&moduleID=0

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These are other texts that I have found useful. If you are interested in books on this topic, have a look at these options.

In this class, we will use both GIS software and graphics editing software. ArcGIS Pro will be our primary GIS software tool; however, the exercises can be completed using QGIS, which is a free, open-source alternative. In order to edit maps as vector graphics, we will use Adobe Illustrator. Inkscape is a free, open-source alternative to Illustrator.

This is the end of this lecture module.

Please return to the West Virginia View Webpage for additional content.

Thanks! Hope you found this useful.