MAP COMPOSITION

Composing the Display
The Purpose of Map Composition

1) To organize the graphic material into a visual whole to:
   a) stress the purpose of the map.
   b) direct the map reader's attention.
   c) coordinate the base and thematic elements of the map.
   d) maintain "sound" cartographic conventions.
   e) foster creative design solutions.
Composing maps: A few things to consider:

- How are each of the map elements related to each other?
  - What is the relationship of the four maps? How they should be placed on the paper in an arrangement that makes intuitive sense to your reader?
  - If you have a scale bar and north arrow, to what map(s) are they referring?

- Where are the appropriate places to place each of the map elements?
  - What you have learned about how people read maps?

- How can color be used to tie the elements together into a cohesive whole?

- How can the fonts and text size be varied for the importance of the various elements?
Basic Elements of Map Composition

- Cartographic Communication – The Geographers Craft

- http://www.colorado.edu/geography/gcraft/notes/cartocom/section4.html
Visual and Conceptual Organization

- Visual Organization
  - Making visual contact
    - Directing readers attention to the information
    - Graphic relationships reinforce cartographer’s intentions

- Graphic Hierarchy
  - Figure-Ground
  - Recognizable figures and inconspicuous background
The medium is the message

- Paper
- Film
- Mylar
- Monitor
- Projection
- Broadcast TV

- THE DISPLAY IS PART OF THE SYMBOLIZATION
Figure-Ground

- Contrasting Graphic Variables
  - Value contrasts
  - Texture contrasts
  - Orientation Contrasts
  - Color Hue
    - Use value to reinforce differences
      - Yellow – Navy, White - Blue
      - Complementary colors difficult to discriminate (red-green)
Figure-Ground

- Crisp edges - Outline
  - “Good Contour”

- Interactive, Dynamic maps
  - Movement
  - Change
    - Tend to group objects together – seen as one figure
Color Logic

- Multivariate Map Concept
- Select a critical value –
  - Zero, Mean, Median, National Average
- Use Bi-directional ordering instead of unidirectional (ordered sequentially)
  - Break point
  - Treat as two numerical variables
- Hue difference makes sense
- Value difference within each hue depicts numerical ranges
Multivariate Maps

- Balance
- Two portions of a whole
  - E.g. % male, % female; % persons of color, % white
- Do you want to emphasize the extremes?
  - Where one dominates the other.
- Or the midpoint?
  - Where similar proportions exist.
Map Composition

- VISUAL BALANCE
  - Map Symbolization
    - Visual and conceptual Logic
  - Optical Center
    - Geographical context
    - Relative focus of importance - Local/Regional

- Scale / Layout
  - Emphasis – Zoom In
  - De-emphasis – Zoom Out
  - Locational Inset
MARGINAL INFORMATION

- Indicators of scale, orientation, legend
- Titles and Labels
  - Place, time and general topic
  - Source and date of data
- Directional information
  - Scale bars and representative fractions
- Legends
  - Contiguous or non-contiguous data
  - Data range and frequency
  - 3D “Natural Legends”
TEXT – Typology and labeling

- **Symbol**
  - Literal,
    - Naming - Morgantown
  - Locative,
    - Position, areal extent - APPALACHIAN MTS
- **Nominal**
  - Design attributes assign class to features
    - Italics, slant, serif/sans serif, color
- **Ordinal**
  - Type size rank according to size (Eg. cities)
Figure 7.2 Some cartographic label placement conventions. Points: right and above preferred with no overlap. Lines: Following the direction of the line, curved if a river. Text should read up on the left of the map and down on the right. Areas: On a gently curved line following the shape of the figure and upright.
TYPOLOGY - Typeface

TYPE STYLE
- Serif  Sans serif
- Classic Roman CAPITALS (carved in stone)
  - Classic, Modern (200+ years old)

TYPE FORM
- UPPERCASE/lowercase
- Upright  slanted
- Roman/ Italic
- Script
- OLD ENGLISH (Text)
Type SIZE

- Legibility

- Symbol Function
  - *Monongahela River*
  - CAPITAL CITY, Metropolitan Center, County Seat, Small Town

- lowercase
  - X-height a, c, e, m, n, o, r, s, u, v, w, x, z
  - Ascenders b, d, f, h, k, l
  - Descenders g, j, p, q, y

- CAPITALS – ALL SAME HEIGHT
TYPE SIZE

POINTS height on printed page
- 1 point = 0.35mm (1/72”)

Choice of font size
- Balance and design
- Space available
- Viewing distance

Size differences of less than 15% not recognizable
- TAHOMA 20 Point TAHOMA 18 Point

Differences of 25% between sizes – desirable
- GARAMOND 28 Point GARAMOND 21 Point

6 – 15 points difference of 2 to 2 1/2 points
- ARIAL 8 point, ARIAL 10 point, ARIAL 12 point, ARIAL 14 point
Imhof's basic rules of label placement

- names on maps should:
  - be legible
  - be easily associated with the features they describe
  - not overlap other map contents
  - be placed so as to show the extent of the feature
  - reflect the hierarchy of features by the use of different font sizes
  - not be densely clustered nor evenly dispersed
Visual center

Landscape

Portrait

5% of height

5% of height
Eye expects (1) balance and (2) alignment
GUIDELINES (Robinson p.416)
- Bad practice / Good practice
  - p. 417, 418
- Semi-automated
- Automated
DESIGN LOOP

- It is difficult to get a good graphic first time around
  - mobilize every graphical element, perhaps several times over, to show the data
  - maximize data density and the number of data entries shown, within reason

- Trial and Error
  - Play with your ideas and the tools

- Nature of the data may suggest the shape of the graphic, Vertical or horizontal format
  - otherwise, prefer horizontal graphics
  - about 50% wider than tall
CARTOGRAPHIC DESIGN LOOP

- Map concept
- Consider graphic elements
- Apply principles
- Construct map
- Review critically
- Revise map
  - Trial and error
  - Incremental improvements
PRI NCI PLES OF GRAPHICAL EXCELLENCE

- Some very broad principles apply to the design of graphics

- **Graphical excellence**
  - gives the viewer the greatest number of ideas, in the shortest time, with the least ink, in the smallest place
  - maximize the data/ink ratio
  - erase non-data ink
  - erase redundant data-ink

- Revise and edit the graphic
Multimedia Map Design

SUMMARY

- Legibility
- Purpose
- Form follows Function
- Creativity and artistic expression
- Takes time!!!!