Geography 360
Cartography

April 14, 2006

Outlines

- ## 9:30-9:40 Choropleth map
  - What is it?
  - Issues to consider
  - When to use
- ## 9:40-9:50 Cartographic design
  - Cognitive principles behind cartographic design
  - Organizing map elements
  - Achieving visual hierarchy
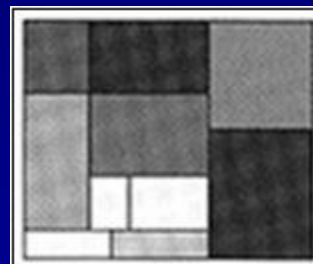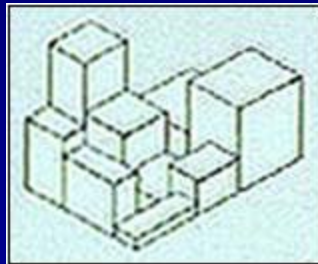 - Achieving balance
- ## 9:50-10:20 In-class discussion

Part I. Choropleth map

Choropleth map

- Value by area (choro=area, pleth=value)
- Focus on "typical value" collected for enumeration units
  - Lec_W3W\USPD.jpg
  - Lec_W3W\2USPopChange.jpg

Choropleth map

- Conceptually similar to prism map
- Data value is portrayed as if it has no variation within enumeration units

What are consequences of not standardizing data value?

- Compare Figure 4.8 A and B (p. 67)
- Seattle population map Lec_W3W\SeattlePop.mxd
  - One is normalized by area
  - The other is not
- Which is correct portrayal of data value given Figure 4.7A (p. 67)
  - Figure 4.7 B or Figure 4.7 C?

Standardizing data value

- Adjust to varying areal size (e.g. density)
  - e.g. population density

- Adjust to total (e.g. proportion)
  - e.g. Percentage of Hispanic, Mortality rate, Per capita income

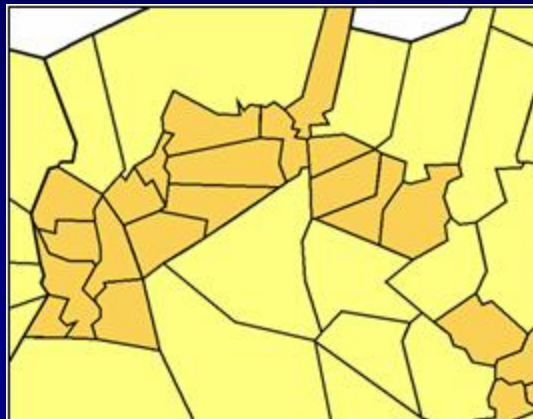Not total count, but rather derived value!

When to use choropleth map?

- Consider models of geographic phenomenon (Figure 4.1)
- <u>Continuous</u>
  - Data standardization transforms discrete phenomenon (e.g. population, income total) to continuous surface (e.g. population density, per capita income)

- <u>Abrupt</u>
  - The spatial distribution of the phenomenon mapped should ideally coincide with the boundaries of enumeration units (even though it is rare in reality)
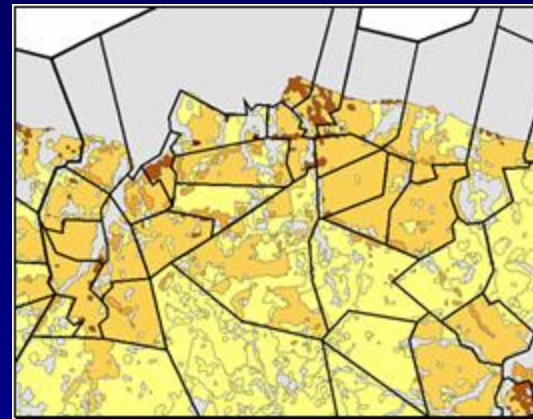
  Such limitation can be overcome with dasymetric map

Choropleth map   Dasymetric map

In dasymetric map, the mapped zones do not correspond to enumeration units, but ancillary information are used to change the boundaries of zones to better represent the actual distribution of the data within zones.

Tips for choropleth mapping

- *Do not use choropleth map for total values:*
  - In most cases, the enumeration units on a map are unequal in area
  - Unequal size of enumeration units can alter the impression of the distribution

- *Do not use choropleth map for data which has nothing to do with enumeration units*:
  - Choropleth maps are used when data occur or can be attributed to definite enumeration units (e.g. The distribution of temperature is not controlled by administrative boundaries

Part II. Cartographic Design
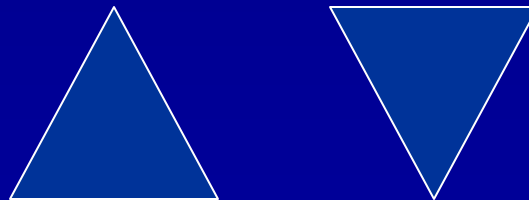
Cognitive principles behind cartographic design

- ## Figure-ground phenomenon

  What forms figure, and what forms ground?

- ## Preference for stability

  Which seems more stable?

Which is better? Why?

- Compare Figure 11.30 A to B (p. 221)
- Compare Figure 11.31 A to B (p. 222)
- Compare Figure 11.32 A to B (p. 223)
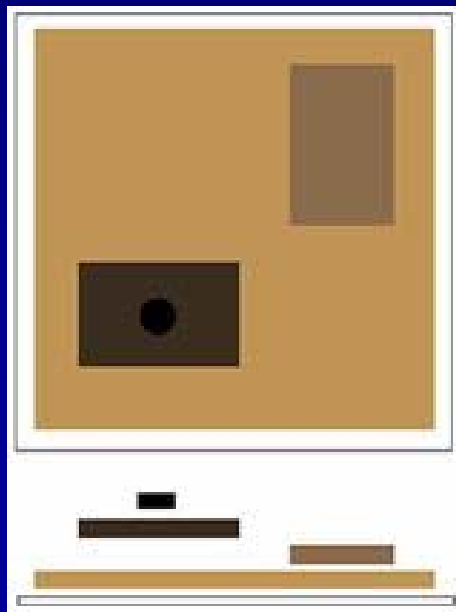- Compare Color plate 11.3 A to B

How to organize map elements?

- Hierarchical organization
  - Goal is to achieve visual hierarchy

- Planar organization
  - Goal is to achieve balance
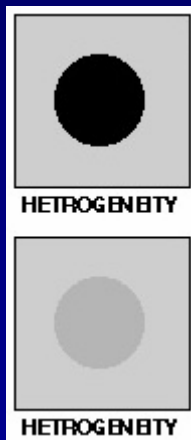
Intellectual hierarchy
Visual hierarchy

- Intellectual hierarchy: varying relative importance of map elements
- Visual hierarchy:

"Public speakers arrange their material to emphasize certain remarks and subordinate others. Professional photographers often focus the camera to provide precise detail in certain parts of the picture and leave the remainder somewhat blurred. … Choreographers arrange the dancers so that some will stand out from the rest on the stage. Professional cartographers must go through similar activities in designing the map." (B. Dent)

Visual contrast

Visual balance

- See Figure 11.35
- Some maps are visually stable and others are not
- Balance can be thought of as a state of equilibrium
- Balance can be achieved by visually centering object in available space

ICD2: Choropleth Mapping

Time	Activities
9:50- 9:55	Three persons form one group
9:55-10:00	Decide which question to answer (each group should work on the same question)
10:00-10:05	Write essay on the question
10:05-10:10	"Written comment"
10:10-10:15	"Verbal comment"
10:15-10:20	Wrap-up