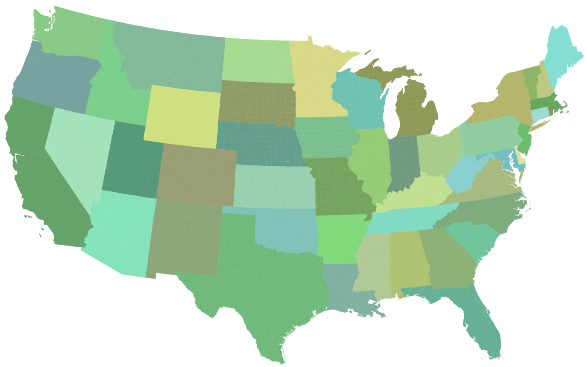
How can eye-tracking help to understand the process of search and pattern recognition in animated maps?

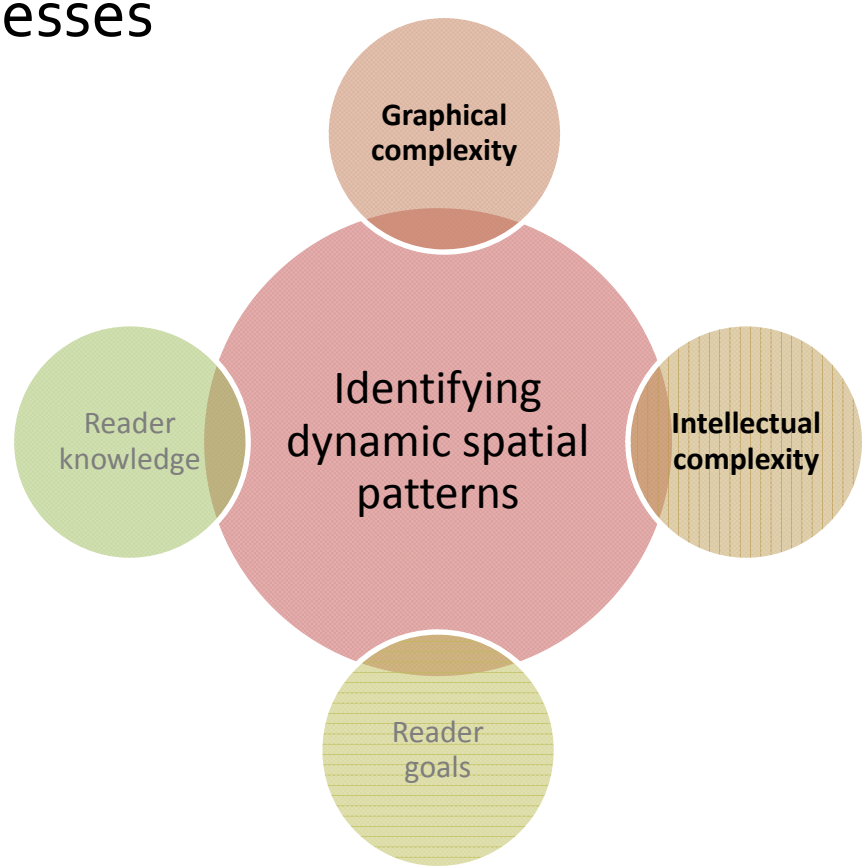
Sarah Battersby

UNIVERSITY OF SOUTH CAROLINA

General research domain / interest

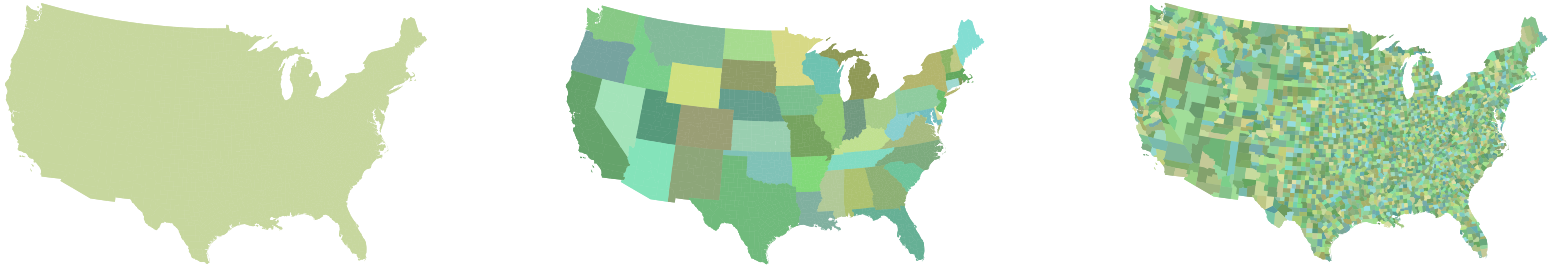
- Complexity, map search, map interpretation
  - Understanding how cartographic choices influence reader processes





Graphical complexity

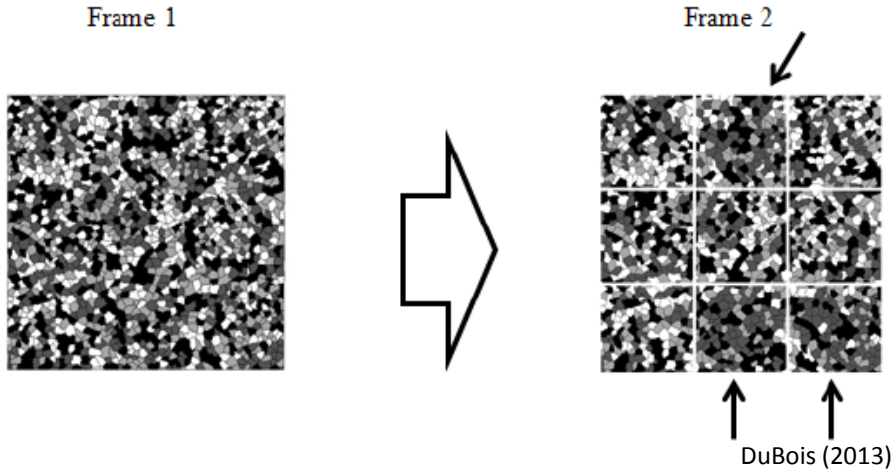
One way to look at graphical complexity



- Variation in "pattern" due to classification
- Influence of size of "clusters" of similar values across map area
- Quantity of change across scenes in animation

…a question

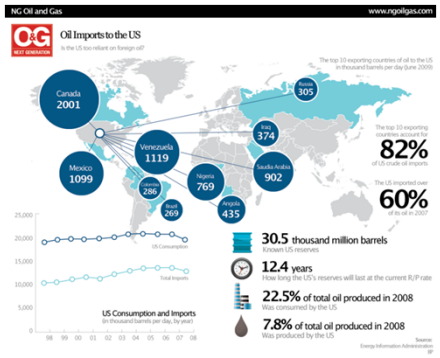
- How does variation in enumeration unit size influence search strategy and identification of patterns?
  - Or "cluster" size
  - Or number of clusters
  - Or distance between clusters



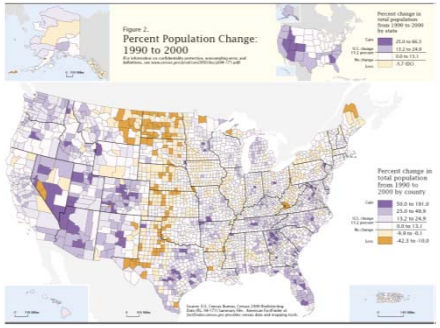
DuBois (2013)

Graphical complexity

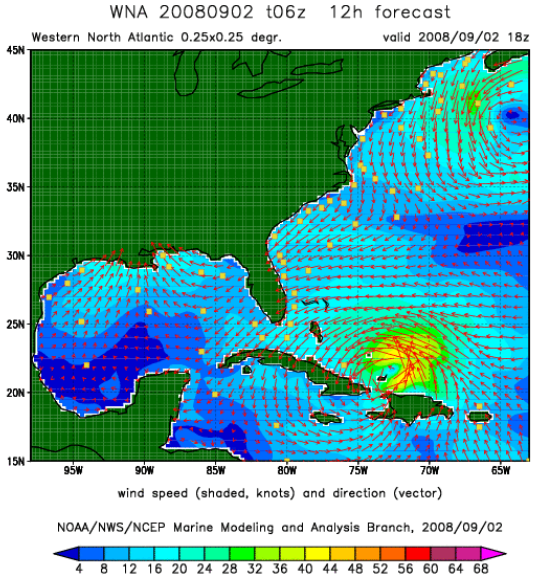
Another way to look at graphical complexity



http://www.ngoilgas.com



Brewer (2000)

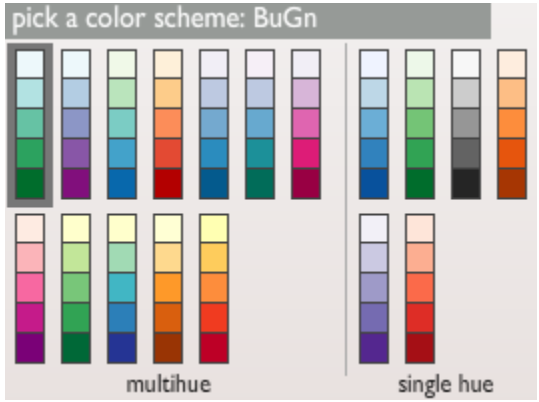


- Variation in visual variable
- Influence of visual variable choice *and* just noticeable differences
- Making signal greater than noise

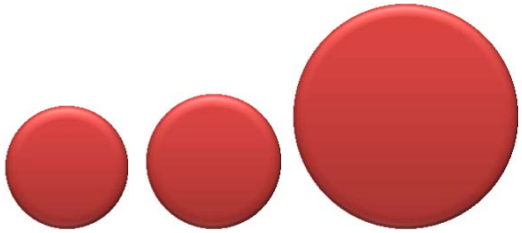
…a question

- How does variation in visual variable *type* influence search strategy?

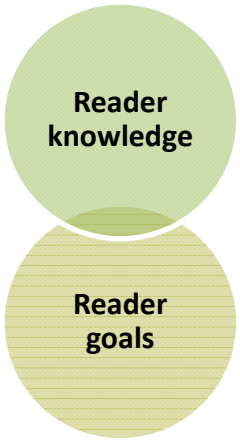
- How does variation in visual variable *difference* influence search strategy and identification of pattern?



http://colorbrewer2.org



Other influences of interest



- Task and goal specific influences
  - Existing knowledge
  - Type of information needed (e.g., level of detail about the spatial pattern of the change)

- Domain specificity
  - Knowledge of the task domain

Other influences of interest

- And we can't forget – general distractors
  - Non-mapped design influence

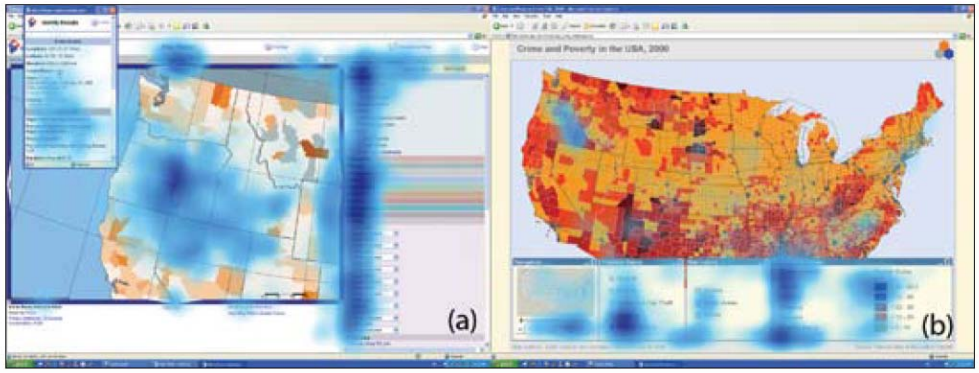
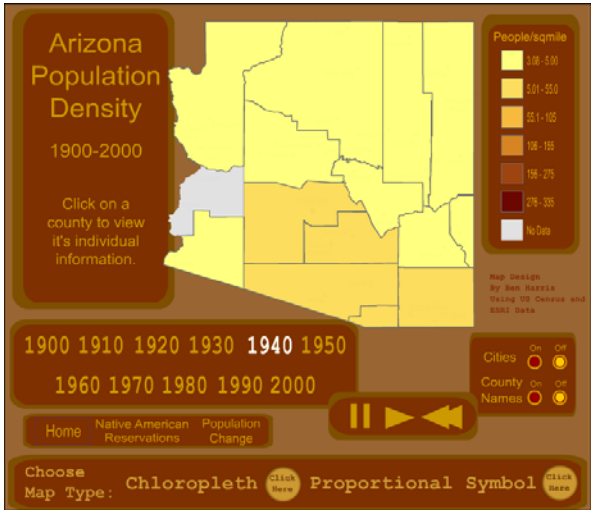


Figure 4. Density maps showing the aggregated gaze patterns over all tasks and all participants for both interfaces. (a) Natlas, (b) Carto.net.

Coltekin et al. (2008)



Flashback graphic specially for Sara F. from the ol' UCSB days!

Fabs-ulous.

So…

- Lots of questions, not formed in terms of actual research projects at this point

- …but I figure that eye tracking would be a great way to understand more of the *process* behind the search and identification of patterns