Overview of Visualization

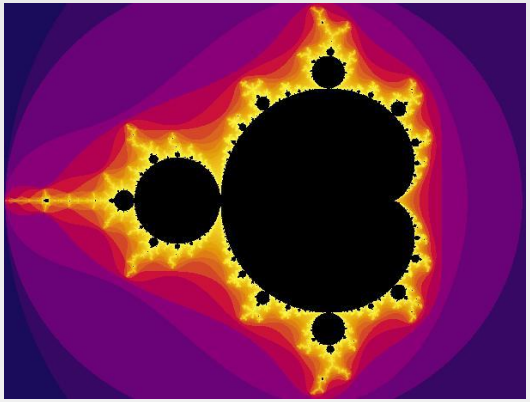
John C. Hart

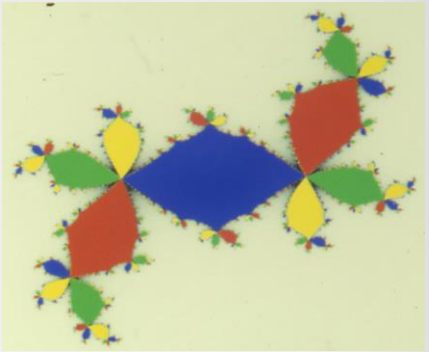
Department of Computer Science

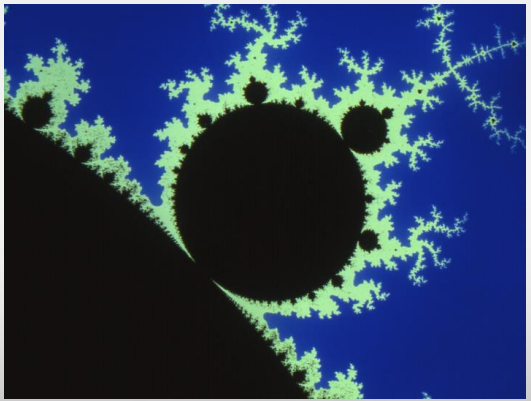
University of Illinois at Urbana-Champaign

Mathematical Visualization

- Data results from mathematics
- Missing data can be readily generated by the computer

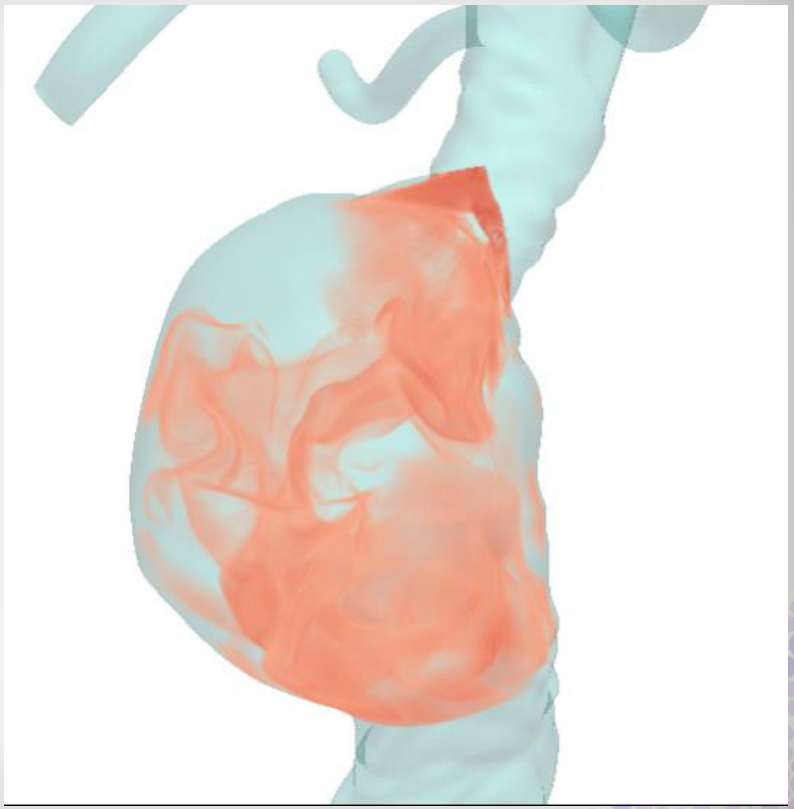






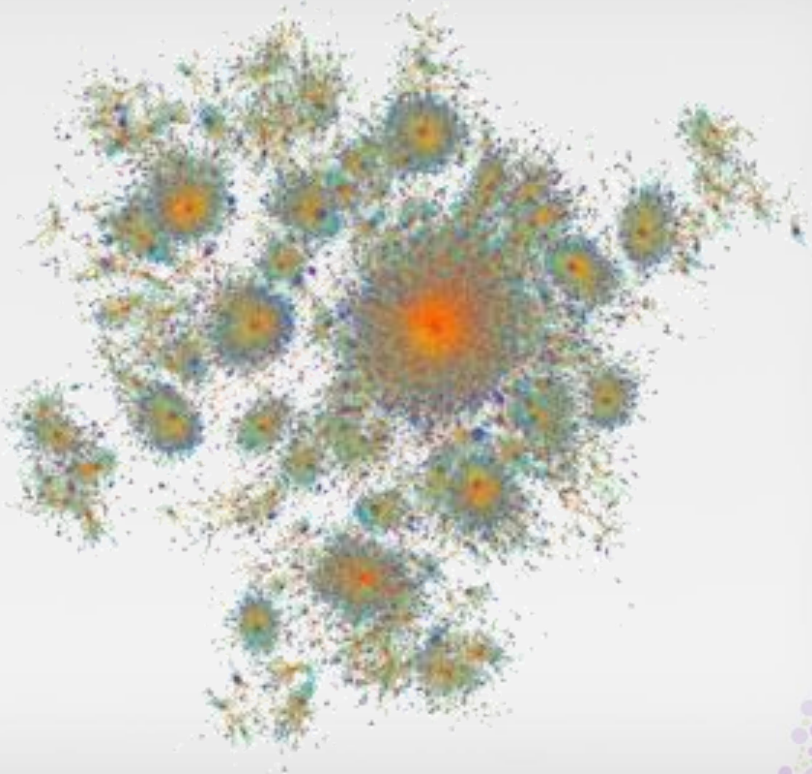
Scientific Visualization

- Visualization of scientific data
- Data measured or via lengthy, expensive simulations
- Interactive visualization can be used to steer simulations toward more productive directions
- Missing data must be handled
- Coordinate data
  - spatial coordinates
  - temperature, pressure, etc.
  - time can be a spatial dimension



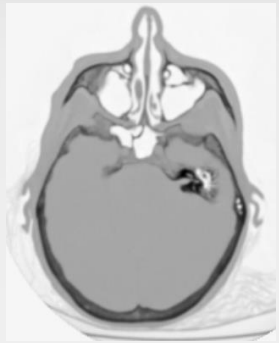
Information Visualization

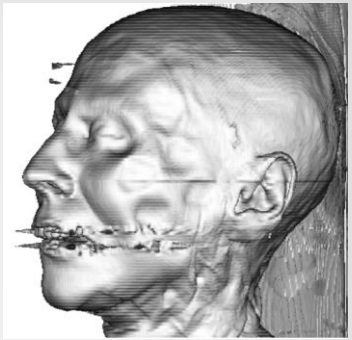
- Visualization of more abstract, non-coordinate data
- Relies more heavily on processing abstract data into a more concrete form that can be more effectively perceived by an observer

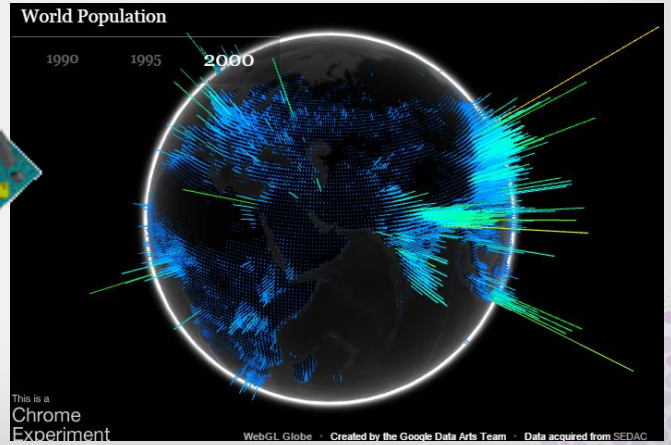


Domain Specific Visualization

- Medical Imaging
- Business Intelligence
- Educational Visualization
- Geographical Information Systems







Modes of Visualization

Interactive Visualization

- Used for discovery
- Intended for a single investigator or collaborators
- Rerenders based on input
- Prototype quality

Presentation Visualization

- Used for communication
- Intended for large group or mass audience
- Does not support user input
- Highly polished

Interactive Storytelling

- Presentations via interative webpages