

Integrating Art and Science Through Visualization

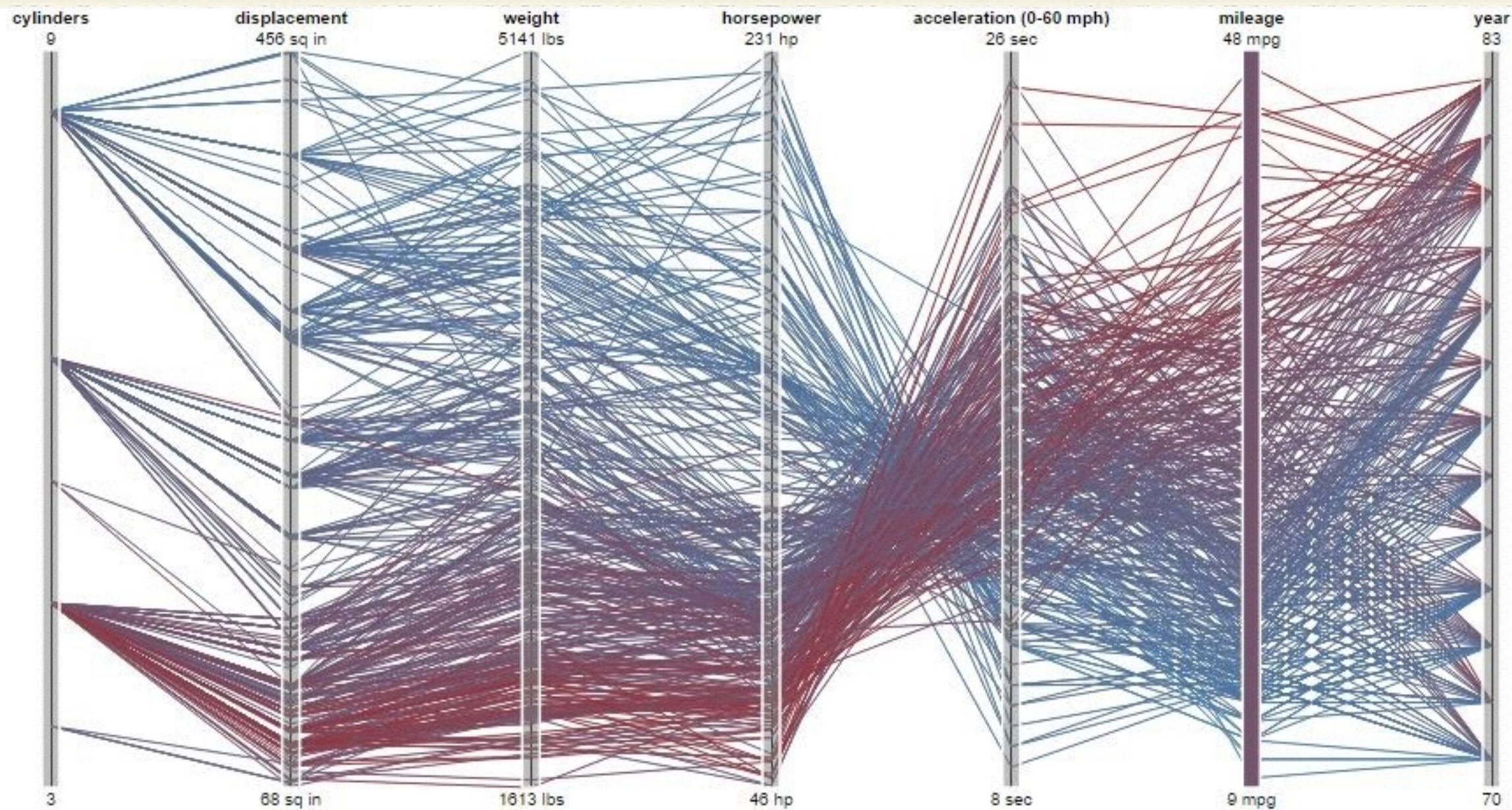
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James Madison University*

(K. Scheiter, A. Batiza, M. Stieff)



Goals for the Session

- Introduce you to the conference
- Encourage you to attend (or send someone!)
- Gather ideas for possible speakers
- Discuss how to better integrate artists in this community



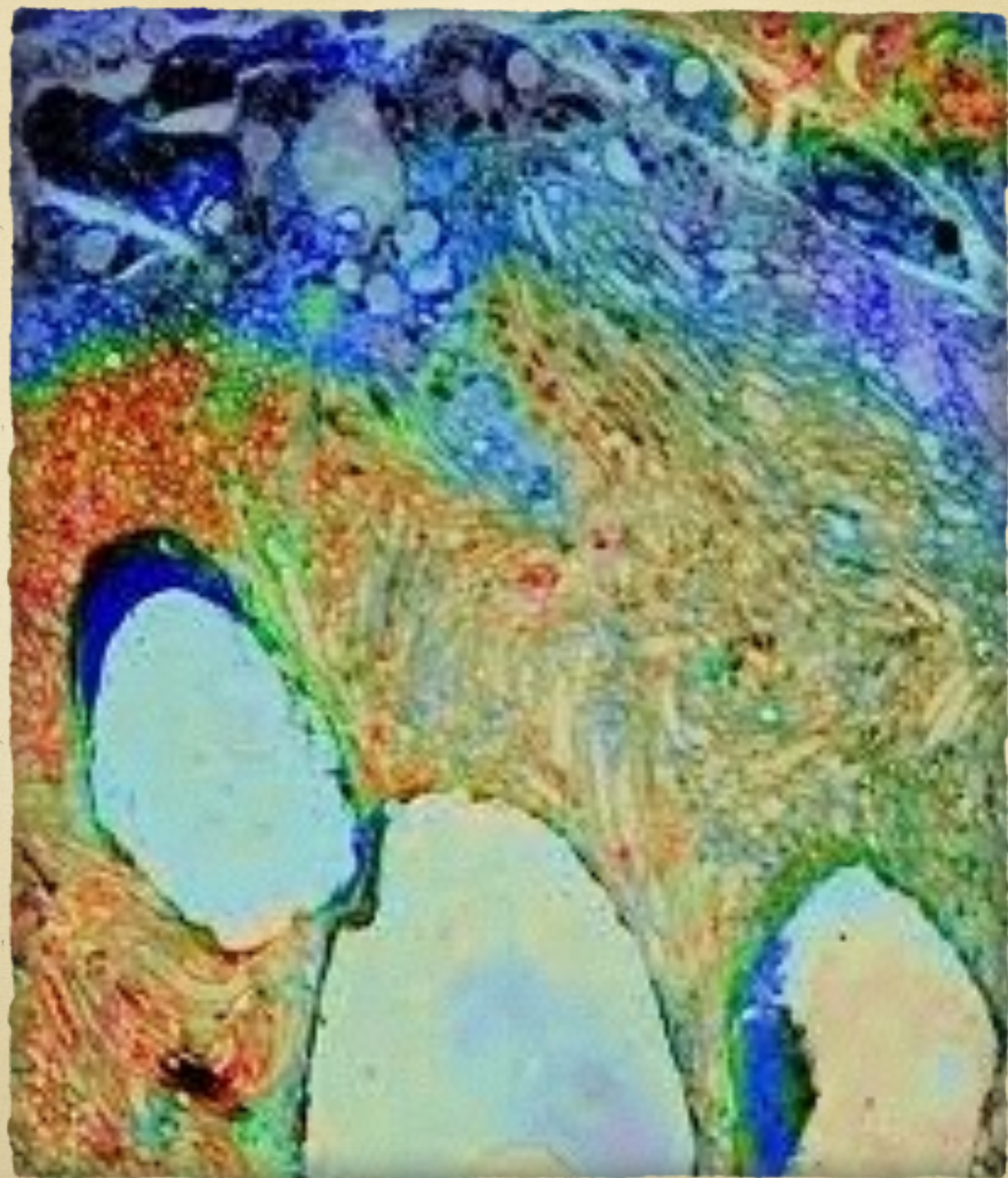
GRC History

- Community-organized
- GRC on Visualization in Science and Education -
Started in 1994 - focused on Chemistry
- Evolving and growing ever since
- Interesting Format
- Pre-Conference Workshop and Mini-grants



Gordon Research Conferences

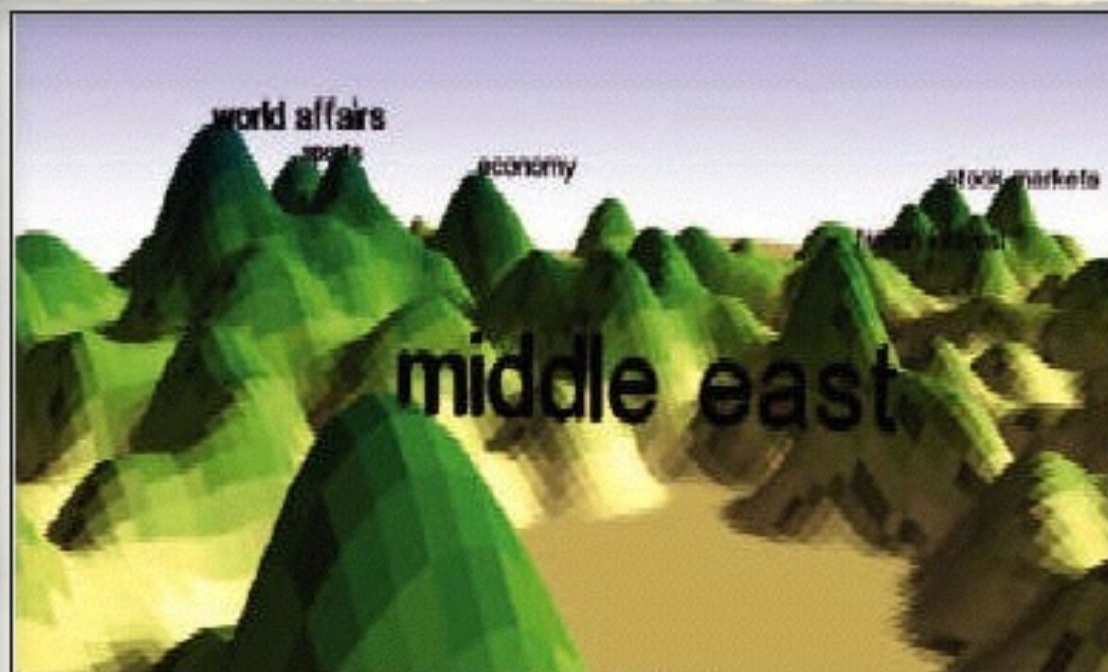
frontiers of science



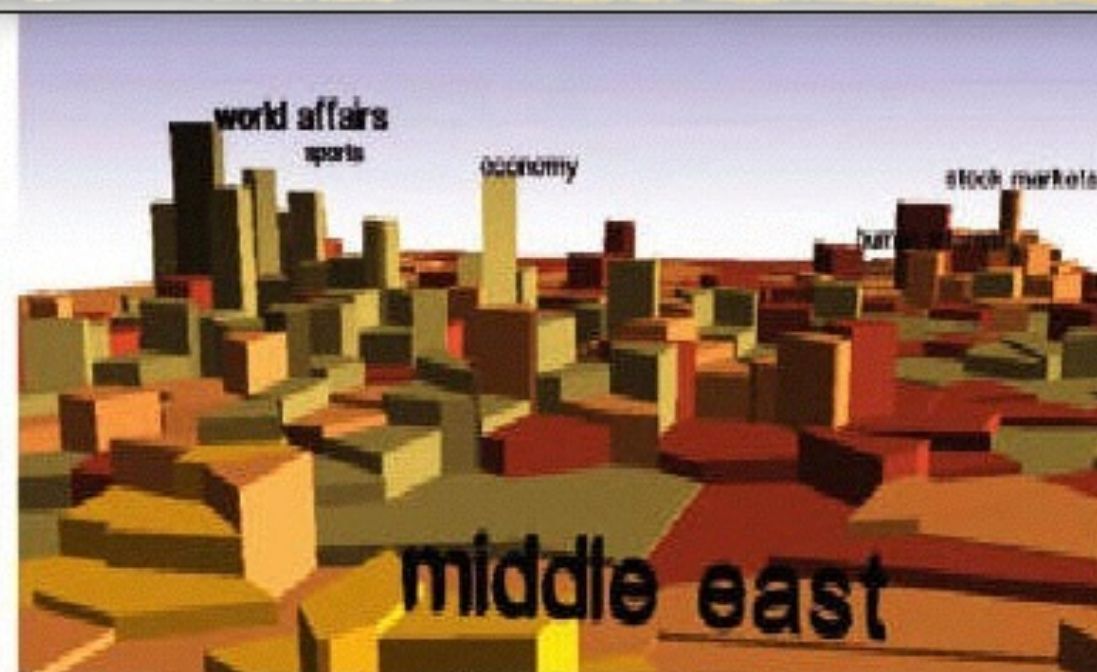
2011 Themes

Transformation by Visualization: Radical Effects on Learning in Science and Across Education

- Spanning the (Visualization) Space: Genomes, Learning & Culture
- Virtual Environments, Games & Simulations
- Transforming Education with Visualization
- Merging Art & Science
- Revealing Unseen Complexity
- Neuroscience, Attention & Magic
- Networked, Immersive, and Contextualized Learning
- Sustainability and the Role of Visualization



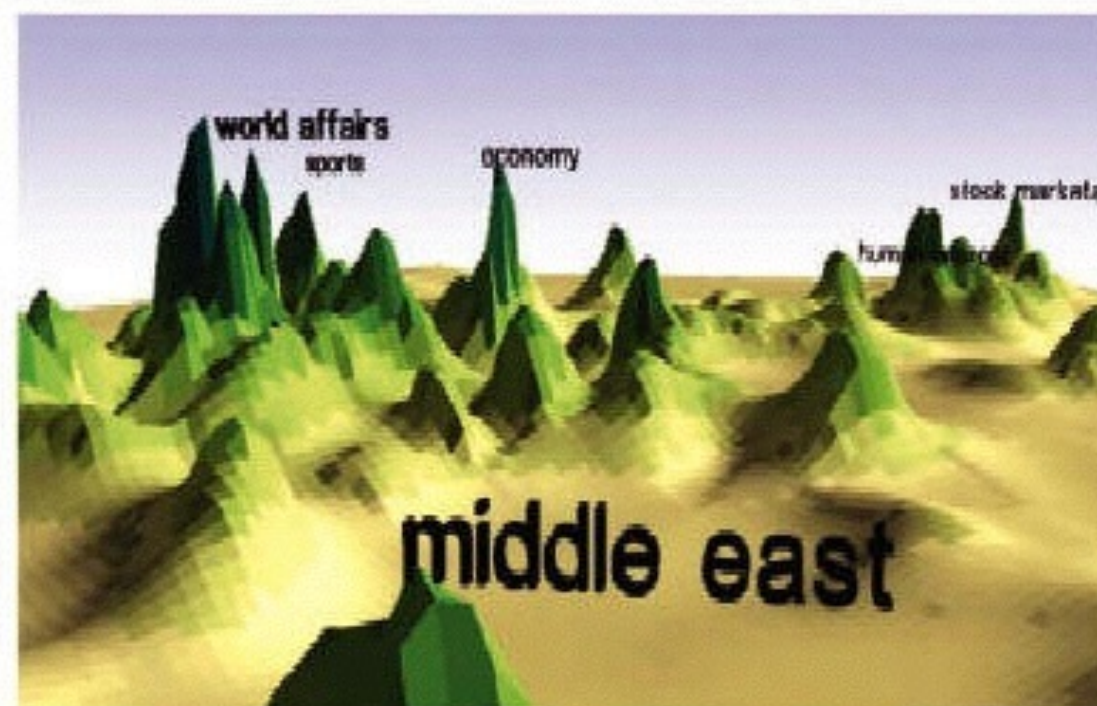
Continuous density surface (from points)



Stepped density surface (from Voronoi polygons)



Pycnophylactic reallocation (Tobler, 1979)



Pycnophylactic surface (from Voronoi polygons)

Figure 12. Density surfaces derived from a single, two-dimensional, spring configuration.

2013 Themes

Evolving Roles for Visualization in Science and Education

- Complexity in Visualization
- Visualization in Mobile Environments
- Visualization & Tools: Research and Applied
- The evolving role of visualization in the teaching of STEM
- Role of visualization in communicating complex science to the public
- Augmented reality and other modes of visualization
- Visualization in the (scientific) workplace

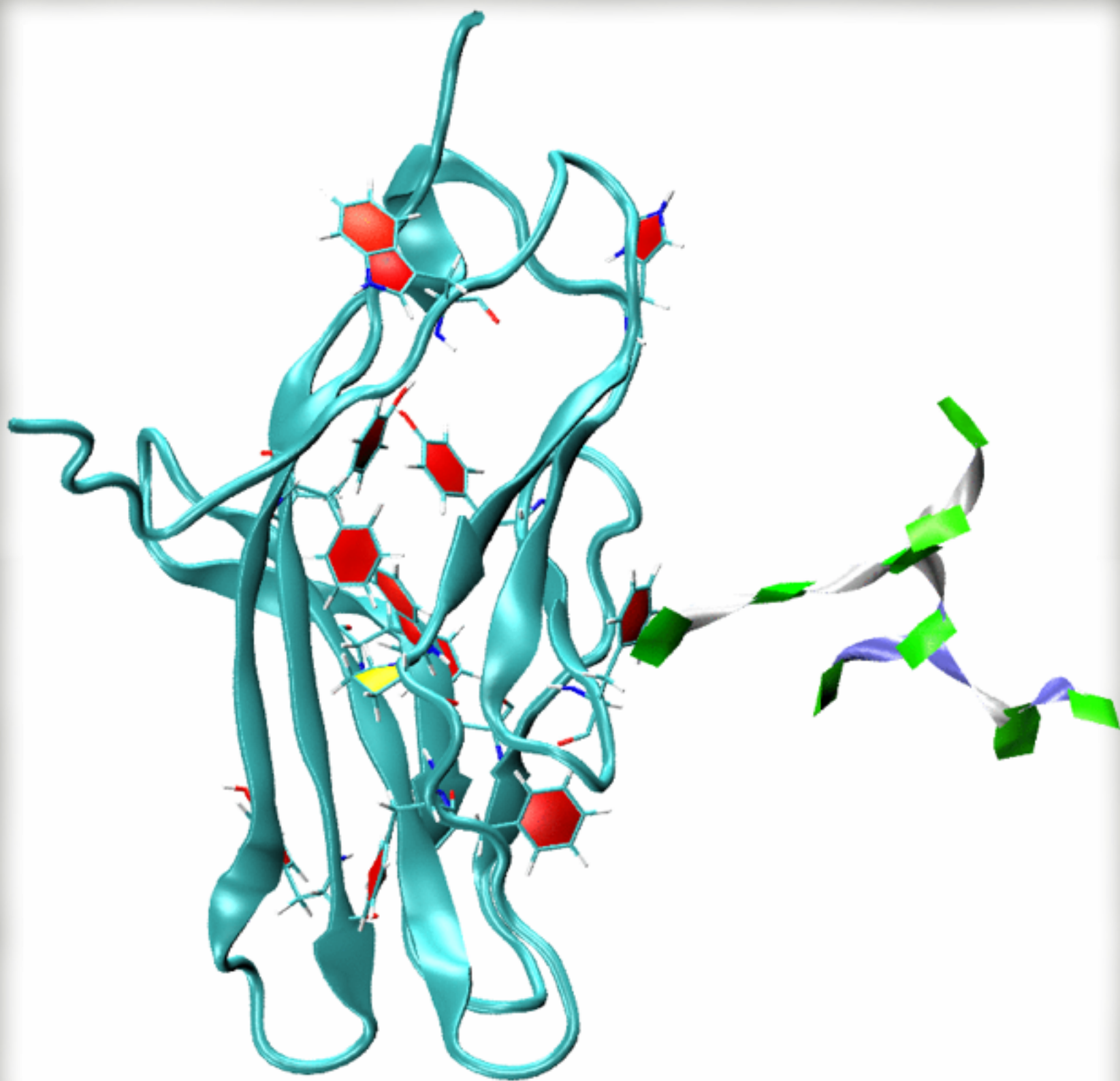


specular normal map

2015 Themes

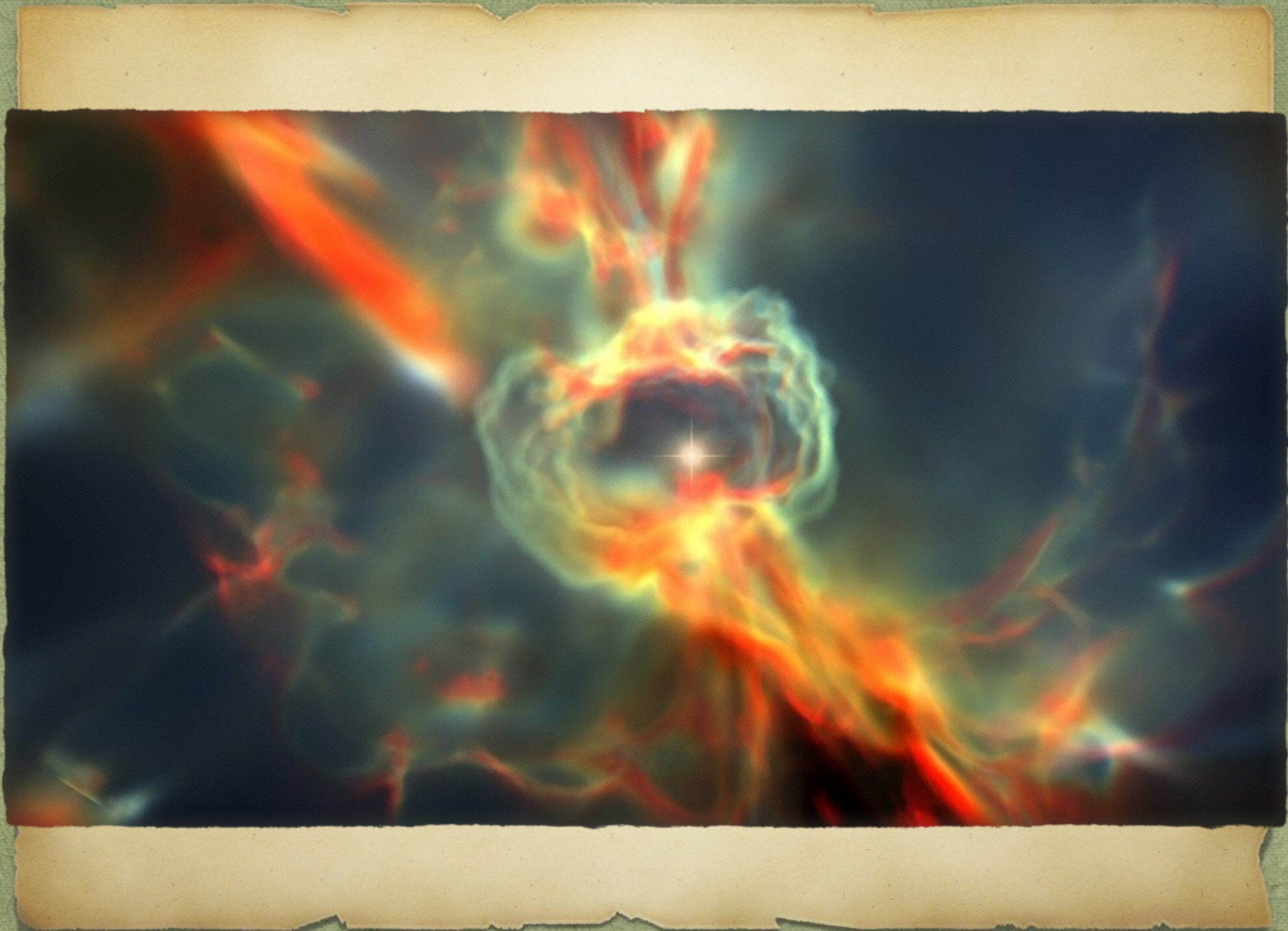
Grand Challenges in the Use of Visualization

- What Technical Limits/Challenges Remain in Scientific Visualization?
- How to Best Integrate Visualization in Education?
- What are the Special Challenges in Visualizing Large Datasets (“Big Data”)?
- How Do We Assess the Impact of Visualization and How Does Visualization Allow New Modes of Assessment?
- What Are the Best Practices in Communication Using Visualizations
- What Do Student-Created Visualizations Reveal About Student Understanding and How Do They Support It?
- What Principles Guide Artistic vs. Scientific Visualization?



Prior Speakers

- John Maeda (then at RISD)
 - Design, Data, Decisions
- Larry Gonick (Independent Cartoonist)
 - Something for Nothing: Creative Removal of Inessential Information
- Graham Johnson (Scripps)
 - Towards Molecular Cinematography
- Mark Ballora (Penn State)
 - Seeing with Your Ears: Visualizing Data with Sound



Discussion

- How to publicize the meeting?
- How to draw more artists/designers?
- Speakers?
- Contact me at kolvoora@jmu.edu