Visualizing Biodiversity with Voronoi Treemaps

- **Defn**: Voronoi Diagram
- **Defn**: Voronoi Treemaps

- **ALGORITHM:**

<table>
<thead>
<tr>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>M. Balzer and O. Duessen. &quot;Voronoi Treemaps.&quot; InfoVis 2005</td>
</tr>
</tbody>
</table>

**Goal**: create a multi-user interactive vis for the Encyclopedia of Life (EoL)

- EoL has 1.2M entries of species names/descriptions
- EoL organizes species using 9-level taxonomy
- Avoid indentation-style lists more appropriate for single user

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**Display Considerations:**

- Appeal – motivation to approach
- Data – dependent on exhibition content
- Highly intuitive interaction – users aren’t experts
- Engaging data representation – short time span

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**Phylogenetic Trees**

- Phylogenetic trees show evolutionary relationships
- Group regions spatially based on relatedness

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**Results**

- Projection hindered more than helped
- Unintuitive interaction – solved with a pilot study?
- Didn’t design to be multi-user! People visit museums in groups
- People came up with their own ways to make it multi-user
- They intended it to be walk-up-and-use but many people couldn’t (some looked for instructions)
- Easy to get lost in tree animation
- Good
- Pretty!

**Evaluation**

- Ethnographic observation
- 267 interactions observed (1 person watched 2-4hrs, 15 days)
- 87 questionnaires
- Results
  - Interaction time: <2 mins (30%) or 2-5 mins (avg)
  - Cut section vis dominated; familiar button-like dots
  - Interactions primarily touch-and-release, “which worked but in a rather inaccurate and dissatisfying way”
  - They intended people to run their fingers through the vis
  - Mixed response

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**Critique**

- Good
- Pretty!

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**Data for 2 Vis Components**

1. Primary data set – they compiled 103 written statements about Emily Carr, 71 pictures of paintings
2. Tree frameworks – they derived 6 keyword tree maps to provide context for statements/pictures

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**Highly Intuitive Interaction / Data Representation**

1. Cut Section
2. Tree Map
Visualizing Biodiversity with Voronoi Treemaps

- Critique
  - Good
  - Continually iterative development
  - Use of Voronoi treemaps for multi-user interaction
  - Main vis can be rotated
  - Animation during transitions
  - ‘Back’ button at opposite ends of table
  - Bad
  - Media component and Back buttons have 1 orientation
  - No other indication of current tree level – lack context
  - No indication of path followed
  - More colour use?

Collaborative Brushing and Linking for Co-located Visual Analytics of Document Collections

- 4 Questions Guiding Design
  - Did another search also find my document?
  - Has someone else issued my search?
  - Has someone considered the same document?
  - Has someone read the same document?

- Motivation
  - Work independently; collaborate if there’s something in common
  - Prevent redundancy

Papers

- EMDialog: Bringing Information Visualization Into the Museum Via iVis, Holly Schmidt, Sheetal Gharpande

- Visualizing Biodiversity with Voronoi Treemaps
  - Michael S. Horn, Matthew Tobiss, Chie Shen

- Collaborative Brushing and Linking for Co-located Visual Analytics of Document Collections
  - Petra Isenberg, Danyel Fisher

- Goal: create a visual analytics tool to support individual and collaborative information foraging

- Defn: Collaborative brushing and linking: “An awareness technique in which the interactions of one collaborator on a visualization are visible to other collaborators viewing the data items in their own visualizations or view of the data.”

- Data and Tasks
  - Task – 2 users search through a document collection to understand an outbreak of BSE (mad cow disease), see if it’s linked to corruption in city hall
  - Data – 1200 fictitious newspaper articles from VAST 2006 contest

- Initial Eval & Critique
  - Good
    - Substantial emphasis on collaboration
    - Good interaction after 15mins training
    - Good multi-touch support
  - Bad
    - Results show users mostly worked by themselves, in silence (though monitored other participant)
    - Scalability, e.g. if a user performs >6 searches

QUESTIONS?

Thanks!