Imagery Lenses for Visualizing Text Corpora

Min Chen
Professor of Scientific Visualization

Think New Shapes
Rado (2004)
<table>
<thead>
<tr>
<th>Utah Members of the Project</th>
<th>Oxford Members of the Project</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dr. Julie Lein</strong></td>
<td><strong>Dr. Alfie Abdul-Rahman</strong></td>
</tr>
<tr>
<td>- RA, English literature</td>
<td>- RA, visualization</td>
</tr>
<tr>
<td><strong>Professor Katharine Coles</strong></td>
<td><strong>Professor Min Chen</strong></td>
</tr>
<tr>
<td>- PI, poet, English literature</td>
<td>- PI, visualization</td>
</tr>
<tr>
<td><strong>Professor Chris Johnson</strong></td>
<td><strong>Dr. Martin Wynne</strong></td>
</tr>
<tr>
<td>- CI, numerical analysis, scientific visualization</td>
<td>- CI, linguistics</td>
</tr>
<tr>
<td><strong>Dr. Miriah Meyer</strong></td>
<td><strong>Professor Anne Trefethen</strong></td>
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<tr>
<td>- “volunteer CI”, bio-information visualization</td>
<td>- CI, numerical analysis</td>
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<tr>
<td></td>
<td><strong>Eamonn Maquire</strong></td>
</tr>
<tr>
<td></td>
<td>- “volunteer RA”, bio-information visualization</td>
</tr>
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</table>
Summary of Our Progress To Date

Oxford Software development
Workshop on Text, Document, and Corpus Visualization

Oxford The team visits Utah
User-centred design

Oxford EuroVis submission
RA starts

Utah recording of reading poems
RA starts

Utah Kansas presentation
Software evaluation

Utah Workshop on Digital Humanities
DH Conf. presentation

Utah Close-reading of poems
The team visits Oxford

Timeline:
- 04/12: RA starts (Utah)
- 05/12: RA starts (Utah)
- 06/12: RA starts (Utah)
- 07/12: Recording of reading poems (Utah)
- 08/12: User-centred design (Oxford)
- 09/12: Workshop on Digital Humanities (Utah)
- 10/12: Software development (Oxford)
- 11/12: DH Conf. presentation (Utah)
- 12/12: Close-reading of poems (Utah)
- 01/13: EuroVis submission (Oxford)
- 02/13: Workshop on Text, Document, and Corpus Visualization (Oxford)
- 03/13: The team visits Utah (Oxford)
- 04/13: Software evaluation (Utah)
State of the art

- Tag clouds
- Pixel-based visualization
- Word networks
Night by Louise Bogan (Sound Components)

A Basic Visualization

- Spatial structure
- Text
- Phonetic symbols
  - interactional phonetic association
- Basic classification
  - vowel, consonant, and punctuation
Parameters of Poems

- Some 30 parameters

- What visual channels can be used?
  - Colour
  - Shape
  - Size
  - Orientation
  - Connection
  - ....
Rule-based selection

- Spatial separation
  - semantic categories correlate to regions in visualization

- Channel type matching
  - nominal
  - ordinal
  - interval
  - ratio
  - relational

- Channel capacity
  - minimal mapping range
  - ideal mapping range

- Already-in-use
Some of the Current Visualization
Sonnets from the Portuguese 43 by Elizabeth Barrett Browning

### Rule Mappings

#### Basic phonetic

<table>
<thead>
<tr>
<th>Variable</th>
<th>Region</th>
<th>Mapping</th>
<th>View</th>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vowel position</td>
<td>Additional phonetic</td>
<td>Pie chart</td>
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<tr>
<td>Phonetic type</td>
<td>Phonetic</td>
<td>Colour of background</td>
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<tr>
<td>Phonetic alphabet</td>
<td>Phonetic</td>
<td>Different kind of symbol</td>
<td></td>
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<tr>
<td>Stress</td>
<td>Phonetic</td>
<td>Colour of symbol</td>
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<tr>
<td>Vowel length</td>
<td>Phonetic</td>
<td>Size of symbol</td>
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<tr>
<td>Syllable break</td>
<td>Phonetic</td>
<td>Transparency on background</td>
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</table>

#### Basic word

<table>
<thead>
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<th>Region</th>
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<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latin alphabet</td>
<td>Word</td>
<td>Different kind of character</td>
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#### Poem action

<table>
<thead>
<tr>
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<th>Region</th>
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<th>View</th>
<th>Legend</th>
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</thead>
<tbody>
<tr>
<td>Structure break</td>
<td>Phonetic</td>
<td>Size of shape</td>
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#### Phonetic action

<table>
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<tr>
<th>Variable</th>
<th>Region</th>
<th>Mapping</th>
<th>View</th>
<th>Legend</th>
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</thead>
<tbody>
<tr>
<td>Type of relation</td>
<td>Phonetic connection</td>
<td>Colour of arc</td>
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<td></td>
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<tr>
<td>Rhyme</td>
<td>Phonetic connection</td>
<td>Height of arc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alliteration</td>
<td>Phonetic connection</td>
<td>Thickness of arc</td>
<td></td>
<td></td>
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</tbody>
</table>

#### Word action

<table>
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<th>Variable</th>
<th>Region</th>
<th>Mapping</th>
<th>View</th>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeated word</td>
<td>Word connection</td>
<td>Height of arc</td>
<td></td>
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</table>
Some of the Current Visualizations
In the 1870s, Bell travelled around to give demos ‘in concert halls, where full orchestras and choruses played “America” and “Auld Lang Syne” into his gadgetry.’

Around 1880, Queen Victoria installed a pair of telephones at Winsor and Buckingham Palace.
“Mr. Watson, come here. I want to see you”, said Bell

“Mr. Information, come here. I want to see you.”