# Serendip

## Topic Model-Driven Visual Exploration of Text Corpora

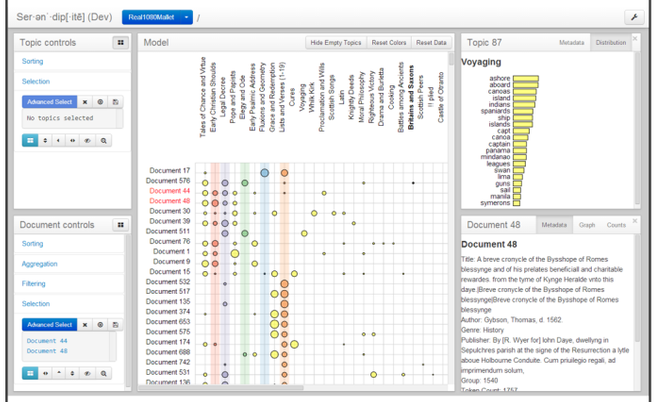

Eric Alexander, *Department of Computer Science, University of Wisconsin-Madison*

Joe Kohlmann, *Department of Computer Science, University of Wisconsin-Madison*

Robin Valenza, *Department of English, University of Wisconsin-Madison*

Michael Witmore, *Folger Shakespeare Library in Washington, D.C.*

Michael Gleicher, Member, IEEE, *Department of Computer Science, University of Wisconsin-Madison*



# Serendipity

- „The Three Princes of Serendip"
- Happy accidents
- Fate or extreme cleverness
- Research: How to make coincidence more likely?
- „The bohemian bookshelf" by Thudt et al



# Promoting Serendipity


A. Thudt, U. Hinrichs, and S. Carpendale


**„The bohemian bookshelf: supporting serendipitous book discoveries through information visualization"**


In *Proc. ACM Human Factors in Computing Systems*


- Providing multiple access points
- Highlighting adjacencies
- Offering flexible pathways for exploration
- Enticing curiosity and playfulness

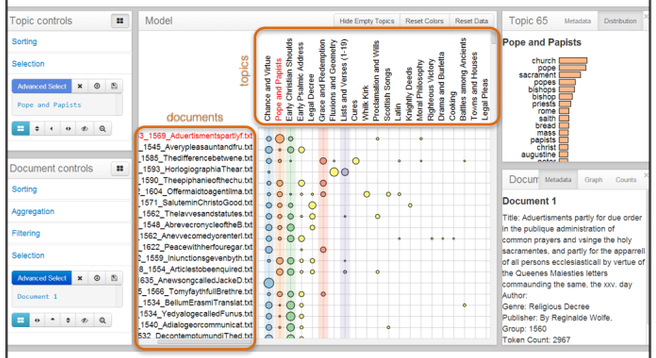


# Three Views

- CorpusViewer: Re-orderable matrix
- TextViewer: Examination within one document
- RankViewer: Examine specific words



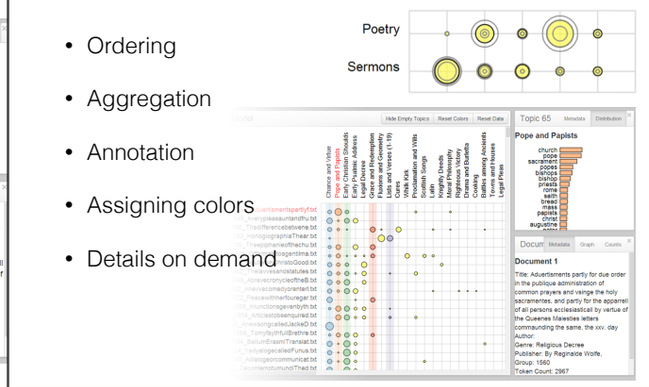
# CorpusViewer





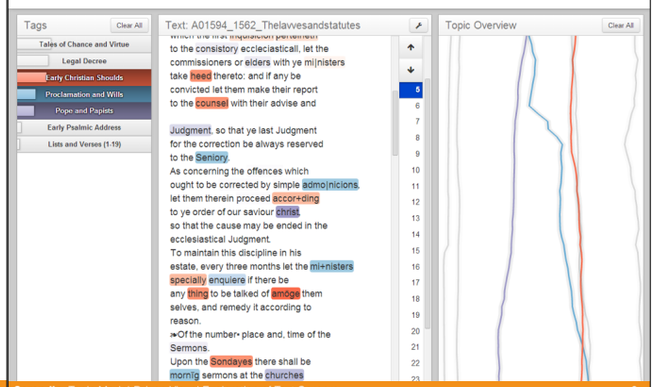
# Features combatting scale

- Ordering
- Aggregation
- Annotation
- Assigning colors
- Details on demand



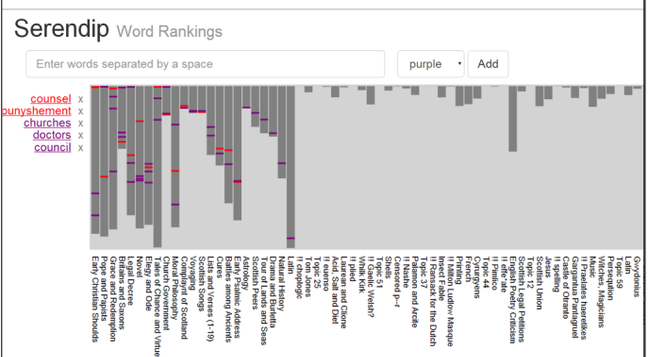



# TextViewer





# RankViewer






## How are the factors for Serendipity implemented?

- Multiple access points: 3 Views, Ordered to user's liking
- Highlighting adjacencies: Through ordering and vis
- Flexible pathways: Jumping between views
- Curiosity and playfulness: Interaction & Discovery



# 2 use cases

- Vis Abstracts

**1127 abstracts**
From SciVis, InfoVis, VAST, BioVis, and PacificVis papers from 2007-2013
each 30 to 389 words

- Early Modern Literature

**1080** digitized texts
From English literature published between 1530 to 1799
each few hundred words to few hundred pages

# Formal evaluation still due

- To confirm serendipitous discoveries across multiple scales of data and abstraction
- Problem: How to evaluate serendipity?
- Long-term user studies needed



# Discussion

**+ strengths**

- Suitable for any document and corpus size
- Three layers (whole corpus, single document, single words)
- Simple but effective visualizations
- Easily accessible (Online tool; *though topic modelling part still due*)

**- weaknesses**

- Not for quick exploration
- Sceptical about serendipitous discoveries



| | |
|---|---|
| **System** | Serendip |
| **What** | **Data** |
| | Document collection (Text, Metadata, Topics) |
| **Why** | **Tasks** |
| | Explore document collections |
| | Facilitate serendipitous discoveries |
| **How** | **Encode** |
| | Reorderable matrix, line graph, bar graph |
| | **Reduce** |
| | Aggregation, Ordering |
| | **Manipulate** |
| | Order, Color, Annotate, Details-on-Demand |
| **Scale** | Up to ~1,000 Documents (various length) |