Final Project Progress Report

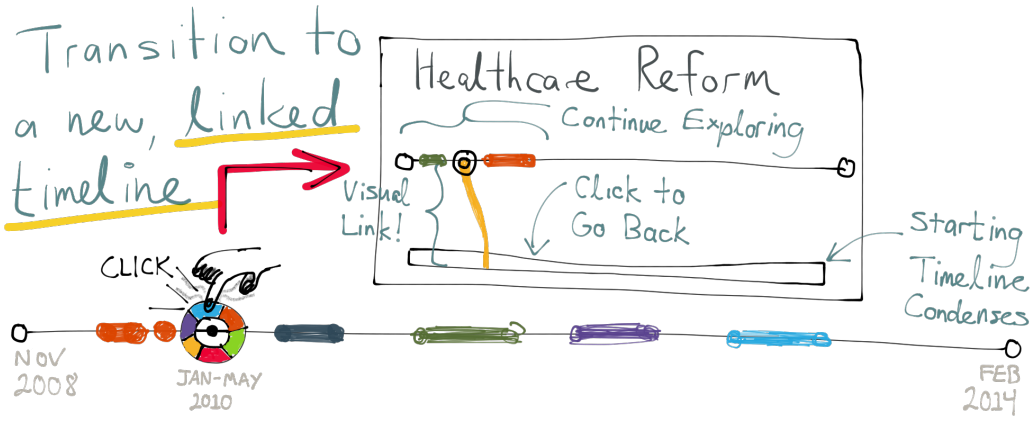
Michael Beswetherick & Joe Kohlmann

CSE 512, Winter 2014 · 26 February 2014

Description

The current approaches to generalized browsing of news articles over time, especially those related to a specific person or organization, could greatly benefit from improved visualizations. For example, the New York Times has a Semantic API, which exposes human-readable pages for each person, organization, location, and subject descriptor in the taxonomy. These views amount to little more than walls of text, however, and they only extend to the articles associated with a particular term without any interlinking of concepts, unlike, say, Wikipedia's deeply cross-referenced articles.

We propose a visual system in which semantically relevant content is displayed in an interactive timeline that affords multiple modes of exploration. In particular, we envision a feature in which humans can not only browse the "root" timeline for a semantic concept, such as a person, but can also dynamically transition to a new timeline based on the links between a node or nodes in the root timeline and nodes elsewhere in the New York Times database. The system may also support rapid transitioning between multiple related timelines in a single session. Finally, the system may also incorporate visual summaries of article nodes to support the visual display of hundreds, if not thousands of elements.

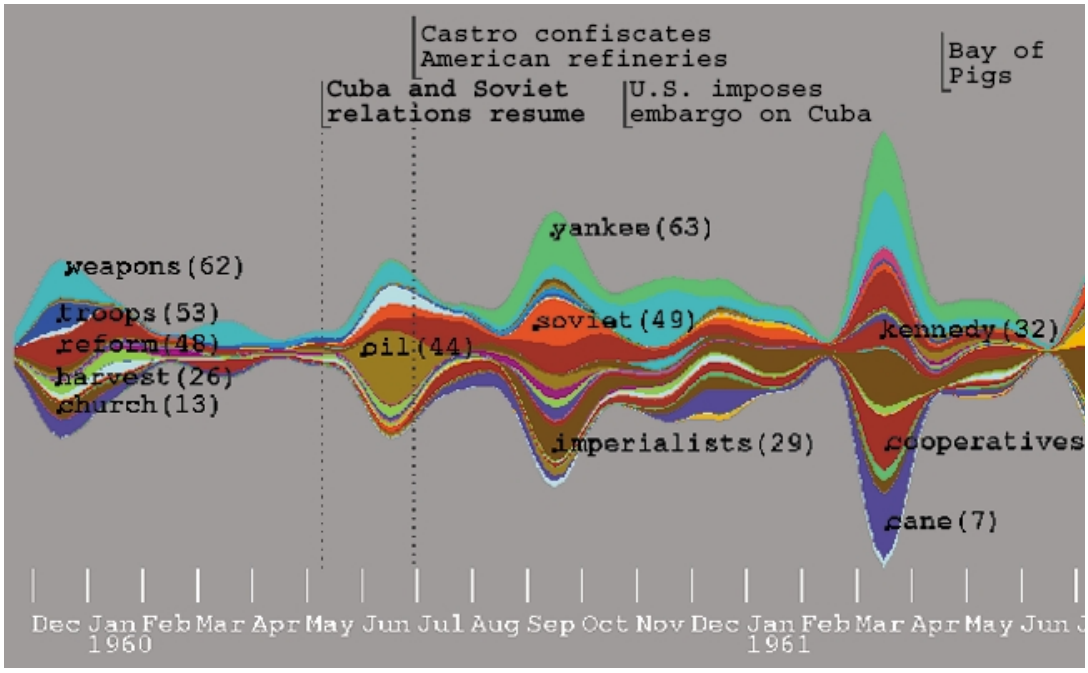


A sketch of a timeline showing groups of articles for a particular news subject, which could be a person, organization, etc. The concept implies a few possibilities: articles aggregated by time and/or subject, summary glyphs which appear when brushing, and transitions to new timeline, which visually and conceptually link back to their ancestors.

Literature Review

ThemeRiver: Visualizing Theme Changes over Time [1]

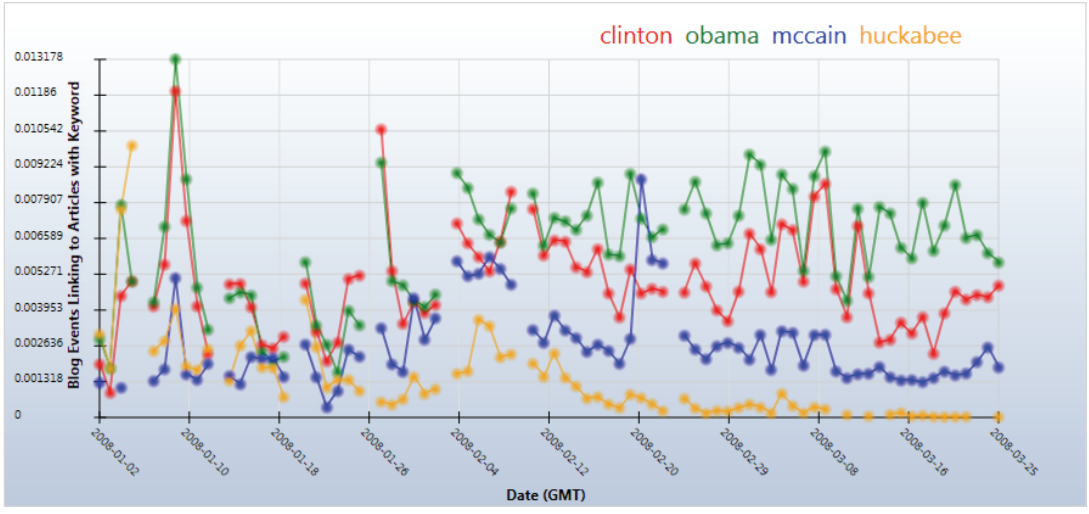
ThemeRiver™ uses a river metaphor to represent theme changes over time.



ThemeRiver is a visualization tool based off the "time flows as a river" metaphor. The authors believe that news stories flow like a metaphor. The popularity of a news story is encoded via width in a stacked line graph. For popular news stories, the width of the river is wide and vice verse for less popular ones. We find this approach to be novel because it encapsulates trending themes in time, which we would like to extend to our project.

Narratives: A Visualization to Track Narrative Events as they Develop [2]

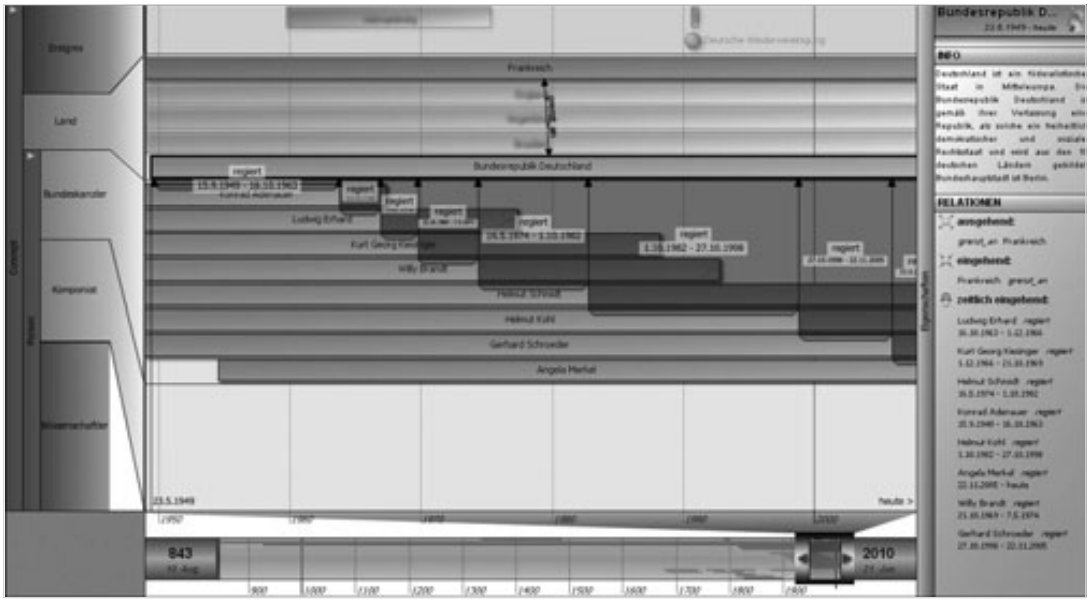
Narratives, showing daily references to four US presidential candidates.



Narratives visualizes news stories on a temporal axis and uses other methods to show related concepts. Narratives is able to show spikes in data references using a simple line graph. With days encoded on the x-axis & the frequency of a term mentioned in an article on the y-axis, one can see when a certain term is trending. This gives way to thinking about data clustering. How can one successfully deal with data that is compactly put together? We are considering multiple ways of dealing with data clustering, although we are unsure of the best method.

SemaTime - Visualization of Time-Dependent Semantics [3]

SemaTime, showing temporal navigation, hierarchical categories, and details.



SemaTime is an elaborate approach to temporal information viewing which uses multiple coordinated views, zooming, categorization, and filtering. While the system implemented here is highly complex, it offers many sources of interaction inspiration.

Final Project Plan

2/27 Final Project Progress Presentation

Present slides, get feedback, submit literature review and this plan

3/04 Prepare Initial Data Set

Figure out if we can use the live NYT APIs (or not)
Make sure we can get the data we want, and in the format/s we want

3/06 Finish View Experiments

Have separate timeline views working
Get timeline item details on demand working
Begin integrating the views together

3/11 Finalize Overall Interaction Design

Have a full plan for user interactions and events
Also have a plan for how this is going to get implemented

3/13 Final Project Poster Presentation

Working demonstration of project
Have near-final visual design
Start writing the paper
Start cleaning up code and adding bits of polish

3/20 Final Project Paper and Software Due

Finish the paper
Write Documentation
Get the final code on GitHub

Works Cited

[1] S. Havre, B. Hetzler, and L. Nowell, "ThemeRiver: Visualizing theme changes over time," … *Visualization*, 2000.

[2] D. Fisher, A. Hoff, G. Robertson, and M. Hurst, "Narratives: A visualization to track narrative events as they develop," *Visual Analytics Science …*, pp. 115–122, 2008.

[3] C. Stab, K. Nazemi, and D. W. Fellner, "SemaTime - Timeline Visualization of Time-Dependent Relations and Semantics," in *Advances in Visual Computing*, vol. 6455, no. 53, Berlin, Heidelberg: Springer Berlin Heidelberg, 2010, pp. 514–523.