

Knowledge Visualization in a Musicology Seminar Using SCALAR 2

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What is *Scalar* 2?

It is an open-source platform for digital scholarship created by the Alliance for Networking Visual Culture at the University of Southern California. *Scalar* 2 enables combining of media content and HTML pages into a “book” or network of user-created “paths” (ordered lists of specific pages) and “tags” (descriptors by which pages are linked). In addition to a relevancy word-cloud, it provides several additional ways in which connections between pages can be visualized, and allows for comments by site visitors. No special programming or scripting knowledge is required.

URL: scalar.usc.edu

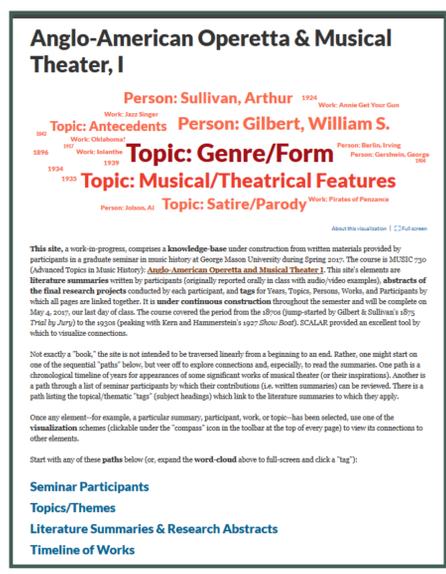


How *Scalar* Was Used

I created HTML pages in *Scalar* for each of 46 contributed summaries, created additional pages defining each of the subject headings by which the students tagged them, and linked them to the summaries. These headings included a finite list of thirteen predefined Topics/Themes, and longer lists for the Persons, Works, and Years related to each summary. To impose some structure on the 200+ resulting pages, I defined four “paths” by which users of the site could begin exploring the knowledge base: Seminar Participants, Literature Summaries/Research Abstracts, Topics/Themes, and a Timeline of years. Only the timeline is linear in the conventional sense, and paths need not be traversed in order: after clicking into and reading a page, the viewer can either proceed to the next page on the path or click other links and thus branch out into other pages.

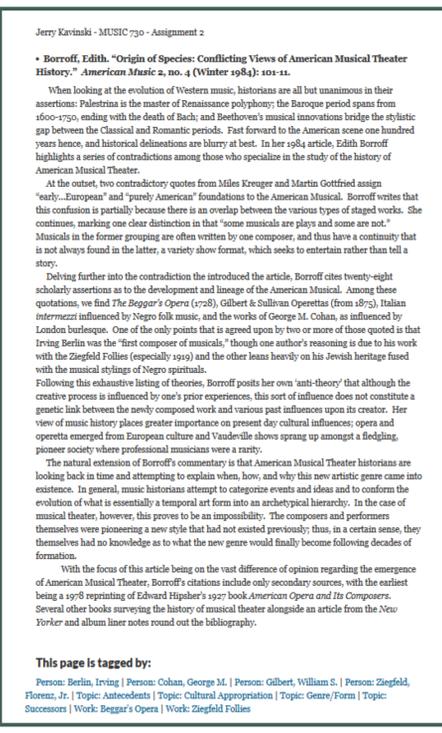
Once a page is selected, a visualization tool will display its direct connections to other pages in several ways: most useful in this case are a “grid” format and an animated “force-directed” format. The *Scalar* platform can also display all tags as a word-cloud where the larger, darker, more central terms are the most frequently referenced. All items in all visualizations are clickable to open the documents to which they refer.

Fig. 1. Screen shot of home page at the *Scalar* server for the seminar; URL = scalar.usc.edu/works/anglo-american-music-theater-i/index. This introduces the web site with an explanation, links to four paths (Participants, Topics, Summaries, Timeline), and a small detail of a word-cloud of tags (which can be expanded to show all tags, full-screen).



All eleven students in the seminar agreed that their summaries could be posted online—thank you to Master of Music and Master of Music Education students Beth Atkins, Kelly Burcher, Natalie Duchon, Mary Halco, Jerry Kavinski, Veronica Kokas, Felix Polendey, Jimmy Stevens, Nigel Tangredi, Rhea Tucker, and Andrew Velez.

Fig. 2. One of the student-written summaries of scholarly literature from the seminar's *Scalar* book, in this case his summary of an article on musical theater historiography. At the end are the tags for associated Persons, Topics, and Works; each is a hyperlink to further information.



About the Seminar

Eleven music graduate students participated in my Advanced Topics in Music History seminar entitled “Anglo-American Operetta and Musical Theater, I: From *Trial by Jury* to *Show Boat*” (MUSIC 730, Spring 2017). A major feature of the learning process was my construction of a knowledge base comprising written summaries of relevant literature and written abstracts of individual research projects. Students gave brief, illustrated in-class presentations on assigned journal articles and book chapters, then provided written summaries tagged with subject headings related to topics, significant persons, and important works. They also conducted personal research and completed traditional papers. The core of the knowledge base includes 46 such summaries—a mosaic of scholarly commentary on aspects of musical theater history in Britain and the USA. Students were also tested on familiarity with the contents of all summaries. My desire to visualize the resulting connections in an interactive online environment led me beyond the use of a blog or digital repository to the discovery of *Scalar* 2.

ANGLO-AMERICAN OPERETTA AND MUSICAL THEATER, I: FROM TRIAL BY JURY TO SHOWBOAT (MUSI 730, Advanced Topics in Music History) Wednesdays, 7:20-10 pm – Jan. 25 to May 10, 2017 MTB 1023 – Prof. Steve Gerber

THIS SEMINAR EXAMINES the development of the comedic musical theater genre in England and the USA from approximately 1870 to 1930 in socio-cultural and music-analytical contexts, and in relation to antecedents and successors. Themes explored may include, but are not limited to: caricature, satire and parody, sentimentality and “middlebrow” aesthetics; colonialism and exoticism; gender politics; musical and theatrical innovations; biographical aspects; marketing and dissemination; reception, influence and legacy. Prerequisite: MUSI 662 (or equivalent) recommended.



[Image source: Illustrated Sporting and Dramatic News (London), 1 May 1875; David Henry Friston, artist; public domain, available online]

Fig. 3. Below, left, the page for the tag (subject heading) *Satire/Parody* showing links to the literature summaries which it describes; right, a grid view which shows that this selected page connects directly to 17 other pages out of the 200+ in the entire site. Hovering over any block in the grid displays the title of the page it represents; clicking on it selects it and displays its connections (in addition to those of any previously selected blocks); by clicking a title’s “visit” button one leaves the visualization and opens the desired page.

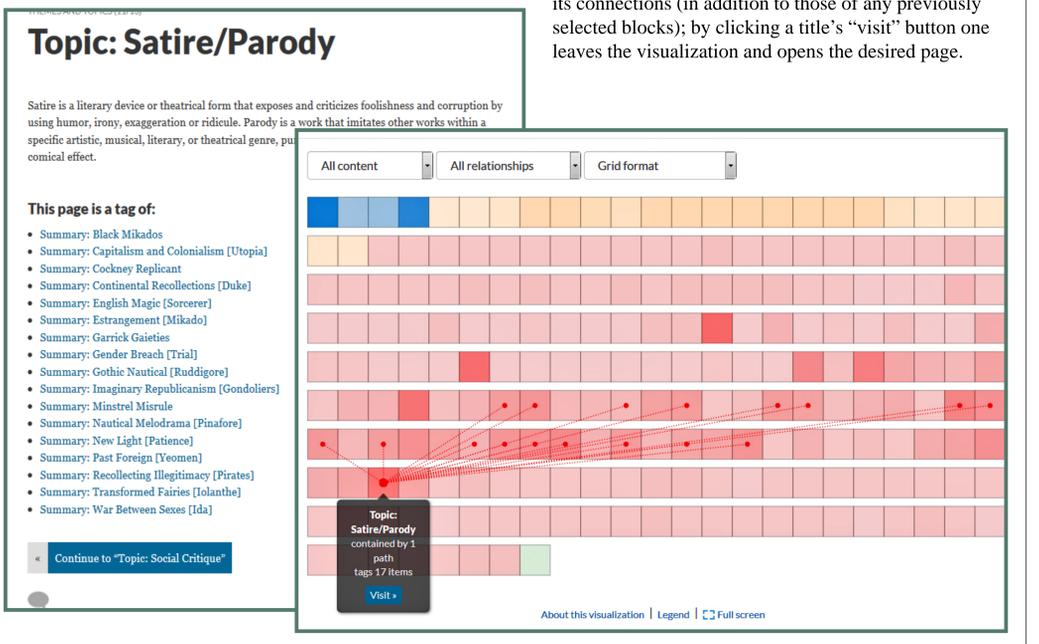


Fig. 4. A “force-directed” visualization of four selected pages and their connections. Here, the topic *Ethnic Caricature* is shown with its connection to the summary of an article about 19th-century “Uncle Tom” Shows, and the article’s connection to the author Harriet Beecher Stowe and to her novel *Uncle Tom’s Cabin*. The novel also connects to the year 1852 on a historical timeline. Each element of the visualization is a clickable link to the page it represents. The force-directed visualization can also be used to display all 200+ pages and their direct connections to each other simultaneously; it takes approximately ten seconds for the elements to populate the diagram as they jostle each other for position. (The resulting tangled mass of connecting lines challenges comprehension, albeit the animation is fun to watch. The grid visualization in Fig. 3 above is better for viewing part-to-whole.) *Scalar*’s visualization tools also allow for a radial diagram where each page is a sector of a circle; this particular graphic format is also unwieldy for more than thirty or forty pages.

