

**Harvard Library Lab**  
**Highbrow: A Deep Zoom Widget for Textual Annotations**  
**Final Report**  
**November 14, 2011**

**Project Summary**

Highbrow is an experimental "genome browser" for literary texts. It is an HTML5-based visualization tool that plots the density of scholarly references or other annotations onto literary works, providing a quick, high level overview of the areas of the text that are of most interest to different commentators or match certain patterns. Users can then zoom in to see increasingly detailed information about selected regions.

Live demos, source code, screenshots, screencasts and written documentation are available here:

<http://osc.hul.harvard.edu/highbrow>

**Accomplishments**

I am pleased that I was able to get Highbrow to do what I set out to do on a technical level (details below). But even more gratifying to me than hitting these technical milestones is the fact that Highbrow is actually being used in classrooms -- beyond Harvard, even.

This Fall, three classrooms at three universities that I know of have incorporated Highbrow into their syllabi: one at Harvard (Jeffrey Schnapp's Dante course) one at Washington State (Augusta Rohrbach's Emerson course) and another at Colby College (Laura Saltz's American Studies 302, also on Emerson). With Highbrow's recently added support for zero-configuration TEI document viewing, I am optimistic that adoption will only increase.

Below is a quick overview of the four major areas of Highbrow development. The first area (deep zoom, etc.) was my main focus during the first round of funding, the latter three were round two enhancements.

**1. Deep Zoom and support for large datasets**

Using google maps style "deep zoom pyramid" tiling techniques, Highbrow can now display very large collections of scholarly references. Working with Professor Jeffrey Schnapp and using data from the Dante Dartmouth Project, I configured a Highbrow instance to display 77 tracks of commentary spanning 7 centuries (over 288 thousand individual annotations) on Dante's Divine Comedy.

I also added support for interactive aggregation of annotation tracks, allowing multiple individual commentaries to be combined and displayed as a single, aggregated track. This is useful for two reasons: first, because it makes datasets with large numbers of commentaries less overwhelming, but perhaps more importantly, because the resulting aggregations are often interesting in themselves (for example: we can plot which regions of the Bible are of interest not just to particular commentators, but to Catholics vs. Protestants vs. Jews vs. Marxists in aggregate).

<http://osc.hul.harvard.edu/highbrow/demo/dante/>

**2. Interactive Editing of Annotations**

Working with Augusta Rohrbach at Washington State University, I modified Highbrow to allow students to interactively add and edit their own annotations. This proved very valuable in getting students in her Emerson course engaged with the text, and easing more reticent students into participate at all. Professor Rohrbach is preparing a piece on her experience with Highbrow for the Chronicle of Higher Education's "Profhacker" blog.

<http://thestudyhabit.org/>

### **3. Multimedia Annotations**

Although Highbrow was initially conceived of as a tool for visualizing literary texts, it was inspired by a very different field (genomics), and can easily be adapted to to plot annotations on any kind of sequence data.

As a case in point, working with Phil Desenne of the Academic Technology Group (ATG), I configured Highbrow to plot real student annotations onto a video lecture by Gary King. It is immediately apparent which areas of the lecture are of most interest and users can quickly jump to these. As the video advances, a playhead indicates areas of overlapping annotation.

(please note: Chrome browser required to view annotated video at present)

<http://osc.hul.harvard.edu/highbrow/demo/video/>

In addition to being able to plot textual annotations against multimedia sources, Highbrow now allows annotations themselves to contain multimedia content such as images and rich HTML.

### **4. Text Encoding Initiative (TEI) Support**

Many existing digital humanities texts, particularly in the classics, are already in TEI format. By adding TEI support to Highbrow, I have tried to provide an easy on-ramp for scholars in these fields. Instead of diddling with novel data formats and configuration files, scholars can simply plug in an existing TEI url and see their data visualized. Although TEI is a big format and there are some tags that Highbrow does not yet optimally support, I am optimistic that these last remaining kinks will be ironed out shortly.

<http://osc.hul.harvard.edu/highbrow/dev/tei/>

### **Challenges**

Although I am flattered by the level of interest Highbrow has generated, I did not quite anticipate how much time presentations and communication would absorb. As a result, I am a little behind in terms of tidying up and documenting the APIs. Although I hope to have this remedied shortly, it is not yet quite as easy as I would like it to be for others to install, configure, and style a new Highbrow instance.

### **Next Steps**

As I mentioned, my main focus now is tidying up the API and documentation to make it easier for others to install and configure Highbrow.

The Academic Technology Group (ATG) and Paolo Cicarese at the Medical School recently agreed on a new standard for annotation modeling and data interchange, the Annotation Ontology (AO). I would like to adapt Highbrow to import and export data in this format. Annotations generated in other tools that support this emerging standard could then be viewed in Highbrow and vice-versa.

In terms of the Highbrow user interface, I am continuing to work with users to determine future directions for Highbrow development. In particular, Augusta Rohrbach solicited detailed student feedback during her Emerson course which we are going to meet to discuss and prioritize in late November. If anything, I have too many ideas for what could still be done, and need to whittle them down a bit.

Depending on what emerges from my discussions with Professor Rohrbach and others, I may put in for a third round of Highbrow development at some point, but for now I am going to limit myself to light maintenance, user support and documentation. My manager, Sue Kriegsmann, has approved that I spend a small portion of my time continuing to do this.

If Highbrow usage grows beyond what I can manage part time, we have already begun discussions with Phil Lau and his team about possibilities for transferring maintenance responsibilities. But for now, I'd like to keep my finger on the pulse of actual use and respond quickly to questions, problems and suggestions.

### **Budget Spent**

As projected, Highbrow required no resources beyond some of my time. It took a little more of my time than I initially anticipated, but I was able to balance this with the competing concerns of my "day job" at OSC and stay productive on both fronts.

### **Publicity and Presentations**

In addition to discussing Highbrow with many individual faculty members, staff, and students, I gave the following larger group presentations:

In February, I presented Highbrow at a well-attended ABCD Interactive Working Group meeting.

In March, I gave a half hour presentation of Highbrow to local digital humanists at the Thinking with Technology group meeting at the Barker Center. This resulted in a number of fruitful collaborations, including my work with Prof. Rohrbach.

In May, I gave a 45 minute talk about Highbrow at the *New Directions in Technical Analysis* conference. I also presented it at the TEI at Harvard meeting at the Science Center.

In June, I gave a 10 minute Highbrow presentation at the Harvard IT summit.

In October, I presented Highbrow to Jeffrey Schnapp's "Cosmos of the Comedy" students.

I also created a series of youtube screencasts covering the basics of navigation and editing on the Dante and Emerson data sets.