Points, Lines, Polygons, and Pixels: A Framework for Teaching & Learning Humanities through Visualization

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Introduction

Points, lines, polygons, and pixels, the primary elements of digital visualization, can be arranged and rearranged to present infinite interpretations of space, time, objects, or patterns. Visualization offers a significant opportunity for humanities students to develop digital visual literacies through exploratory making, analysis, and storytelling. Yet incorporating digital visualization components into teaching depends upon instructors' course content and access to expertise, time, and tools. A scalable, replicable approach is needed to support visualization pedagogies that can be implemented in diverse educational environments. In this poster, I propose a framework for designing and implementing visualization projects within existing courses, drawing on my instructional experience in the Wired! Lab at Duke University.

Background

The rising prevalence of visual media in global society points to an increasing need to cultivate digital visual literacies in humanities classrooms. Susan Brown has noted this "shift from textuality to visuality," calling for more "active engagement with new technologies rather than passive consumption." Through this engagement, students may learn to create scholarly visualizations and can become thoughtful critics of the visual media with which they interact in everyday life.

My role with the Wired! Lab involves working with instructors to design and implement such visualization projects. These projects have involved a variety of methods, including architectural modeling, mapping, digital exhibit curation, and information visualization. (see the list of recent student projects) Through these collaborations, our instructional teams have recognized a need for both scalability and replicability in assignment design and implementation. Accordingly, I have begun to approach to project design with an eye toward creating instructional templates that can be applied to multiple topics and course levels. This strategy has been echoed by Aaron Mauro, who calls for an emphasis in undergraduate digital humanities on "iterability, openness, and extensibility" (Mauro, 2016). Assignments must be made flexible, or responsive, to varying constraints in instructors' and students' access to resources both in and beyond the Wired! Lab. In response to this need for project plans that can be adjusted to a variety of contexts, I am developing a framework for iterative course project design.

Framework

This proposed framework presents a decision-making process that enables instructors to shape project ideas into assignments suitable for their multiple contexts. The framework seeks to match digital methods and resources with pedagogical goals, course content, and visualization concepts by guiding instructors through an iterative planning process:

Instructors are first asked to devise a research question, based on their course goals and content, that will drive the assignment. Next they develop a list of possible source materials and ascertain whether these materials are accessible to students. If materials are not available, instructors revise their question around available sources. These sources are then examined with the aim of identifying types of information: is it quantitative, qualitative, or both? How might this information be further classified—spatially, temporally, statistically, categorically? Of these data types, which provide evidence needed to answer the research question? (If this process reveals that the data are not useful, instructors should return to their question and list of sources to reevaluate.)

Based on the process so far, instructors consider first how the visualization will be used: will it be a tool for exploring information and analysis? Or will its present an interpretive visual narrative? Second, will the visualization(s) be static or dynamic? Third, instructors consider which visualization type(s) might provide the best mode(s) of representation: scientific, informational, conceptual, spatial, temporal? Within these types, instructors begin to identify specific methods: mapping or 3D modeling, data visualization

or visual narrative, for example. Then another moment of reflection: does the chosen method fit the research question, course goals, and visualization purpose? If not, instructors may reconsider their method in conjunction with these decisions.

Finally, instructors begin exploring possible tools as they examine their design thus far in comparison to both students' expected skill level and institutional resources: access to expertise (theirs or someone else's), additional time before and during the course, and tools (hardware, software, internet).

Resulting visualization projects may require few or many interventions in the course structure and content. They may rely on a combination of visualization techniques. They may be applied in multiple course iterations. Overall, they should engage the research question while advancing digital visual literacies.

Conclusion

Visualization is a powerful tool for communication that can be investigated across humanities disciplines. It can be employed to develop students' critical abilities to represent humanities research in a multitude of ways. This proposed framework addresses the challenges instructors face when implementing visualization in classrooms: from matching content to method, to identifying appropriate tools, to designing for scalability across one or more course settings.

Bibliography

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