**COLEMAN — Mapping**

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**From Mapping the Republic of Letters to Humanities + Design Research Lab: Creating Visualization Tools for Humanistic Inquiry**

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What does it mean to build visualization tools that support the research process in the humanities? In this paper we will trace the evolution of our thinking about data-driven tools beginning with case studies in early modern intellectual history and eventually including a wide range of projects from classics, social history, performance studies, and other fields. We will give concrete examples of how individual tools were designed and whether those tools ultimately failed or succeeded to provide scholars with a means to gain insights into historical data. Through these examples, this paper argues for the role of an open design process in the development of visualization tools for humanities research that brings designers, developers, and scholars into deep collaboration to build nuanced and rigorous tools for humanities research.

**Mapping the Republic of Letters**

Mapping the Republic of Letters was formed on the assumption that intellectual history is one of the fields that stands the most to gain from the influx of big data. By combining metadata from library catalogues and large-scale digitization projects, the project seeks to maximize the transformative effect of all this information. The cartographic, chronological, and network visualizations ultimately produced allow researchers to examine some of the big questions that intellectual historians have long struggled with: How do intellectual networks function? How interconnected are they? How independent are these networks from other social networks?

The 2009 Digging Into Data Challenge grant award launched an active tool development phase in the Mapping the Republic of Letters (MRofL) project at Stanford. In partnership with DensityDesign Research Lab in Milan, the team began to engage in a tool design process in response to concrete research questions. The data—based on individuals and their correspondence, travel, and publications—were multidimensional and qualitatively rich. It became clear that historians who wish to bring data visualization tools to bear on the study of the past face a number of challenges. Many available tools had a steep learning curve and were ultimately of limited help for humanists. These tools rest on assumptions about the completeness and empirical value of data that often do not hold true for humanities research. Historical data can be incomplete and messy: statistical analysis can be a helpful to a limited extent, but interpretation at the most fundamental level is required to uncover meaning. Humanists also ask questions about the data that cannot be answered by numerical analysis. We needed tools that help us filter, contextualize, compare, and see the gaps in our data.

**Humanities + Design**

Humanities + Design, a research lab founded in 2012 by Dan Edelstein, Paula Findlen, and Nicole Coleman, emerged directly out of lessons learned and opportunities for humanities data analysis discovered through MRofL. The mission of the lab is to produce, through the lens of humanistic inquiry, new modes of thinking in design and computer science to serve data-driven research in the humanities. We believe that humanistic inquiry, grounded in interpretation, has much to contribute to the development of technologies if they are to help us reveal ambiguity and paradox, allowing human-scale exploration of complex systems. In the laboratory environment, theoretical and methodological discussions happen side by side with hands-on work with digital materials. Humanities scholars and students, designers, engineers, and computer scientists engage together in ongoing tool design as defined by the specific needs of participating humanities projects.

**Palladio Project**

The award of the 2012 NEH Implementation Grant for Networks in History allowed the lab to pursue the development of visualization techniques and rich interaction with data that supports ‘thinking through data’ rather than using prescribed algorithms for data analysis. Palladio is a web-based demonstration application that allows any researcher to upload, visualize, and explore complex and multidimensional data, directly in a web browser. It has been designed for humanistic inquiry, with a special focus on historical research. The Palladio visualization system combines a primary view (for example, Map, Network Graph, and Tabular views) with filters to make it easy to query a dataset. There is no need to create an account, nor do we store any data**.** Researchers can save and shared the work they have done in the browser as a Palladio Project. Palladio’s TimeLine and TimeSpan filters encourage filtering and sorting temporal data, and allows the filtering of two or more discontinuous time periods. A Facet filter is also particularly useful when exploring multidimensional datasets and drilling down to specific aspects of one’s data. Using case studies (examples listed later in this document) we will discuss how scholars have used Palladio, highlighting those instances when uses of the tool diverged from our expectations or led us toward new insights that we incorporated (or plan to incorporate) in future versions.

**Open Design**

The development of Palladio has been an iterative process. We have been eliciting and incorporating feedback from the academic community concerning Palladio’s current and potential features and uses. Most specifically, we have engaged in sustained discussion with a small and inter-disciplinary group of scholars, known as Open Design Contributors. Our paper will offer insight into this design process and the ways that it has directly influenced current and future iterations of Palladio, as well as other tools.

**Summary**

The core innovation of our project is the design of visualization techniques that emphasize the contextualization and interpretation of data in cases where we lack the metrics for useful quantitative analysis. The two other key innovations both involve the leveraging of novel technologies that are particularly important to the study of cultural heritage data: we use new flexible data models to let individual scholars create and apply their own data categorizations, and we use open linked data sources to reconcile datasets against established authority files, in order to link entities across datasets and thereby explore networks across collections.

**Additional Case Studies to Be Discussed**

*Case Study: Toward More Complex Ways of Displaying Travel*

*Kate Elswit, Lecturer in Theatre and Performance Studies at the University of Bristol, ‘Ballet, Digital History, and the Cold War: Visualizing the Labor of Dance Touring’*

Dance scholar Kate Elswit has been using Palladio in her research on the labor of dance touring. She writes, ‘Such [visualization] techniques enable us to feel the passage of time differently.’ Following discussion with Elswit and other scholars interested in tracing travel routes, we have been thinking about how to display point-to-point travel in ways that go beyond simple flight-path-like visualizations. How to account for the differences in traveling at night rather than in the day? How to represent different levels of comfort, safety, and efficiency in travel?

*Case Study: Questions of Scale and Incomplete Data*

*Molly Taylor-Poleskey, PhD Candidate, Department of History, Stanford: Food Culture in Brandenburg-Prussia*

Taylor-Poleskey uses a large base of manuscript sources detailing the yearly consumption of one of the palaces of Prince-Elector Friedrich Wilhelm of Brandenburg-Prussia. She argues that the elector’s cultural agenda helped transform his territories over the course of his reign from dilapidated and war-torn to stable and powerful. To support her argument, she wants to see how tastes and consumption patterns changed over time, to consider how such changes might reveal the court’s aesthetic values and cultural ambitions. Creating visualizations in Palladio have helped her analyze what proportions of different foods or food groups were consumed. We have worked with Taylor-Poleskey toward creating visualizations that privilege the display of relative magnitude, and that are especially sensitive to working in different registers and scales. As some of the years in the sources she studies have incomplete or missing data, her use case has also aided us in thinking about how best to work with and represent incomplete data in ways that are not misleading or overly simplistic.

*Case Study: Toward New Palladio Data-Visualization Iterations*

*Office of the Historian, US State Department, Foreign Relations of the United States*

We will share results from our ongoing work with Thomas Faith at the Office of the Historian at the US Department of State, with whom we have been working toward the goal of producing an integrated version of Palladio that would function as a visual browser for extant online data concerning the foreign relations of the United States. The State Department project is one of many we are working on, as we look to help other researchers to implement customized versions of Palladio that can be used as search, analysis, and visualization exploratory tools within extant large-scale research projects.

**References**

**Balsamo, A.** (2009). Design. *International Journal of Learning and Media,* **1**(4): 1–10.

**Berry, D. M.** (2012). *Understanding Digital Humanities.* Palgrave Macmillan, New York.

**Buchanan, R.** (2001). Design Research and the New Learning. *Design Issues,* **17**(4): 3–23.

**Burdick, A.** (2009). Design Without Designers. *Conference on the Future of Art and Design Education in the 21st Century*,University of Brighton, England, 29 April 2009.

**Burdick, A. and Willis, H.** (2011). Digital Learning, Digital Scholarship, and Design Thinking. *Design Studies,* **32**(6): 546–56.

**Drucker, J.** (2009). SpecLab. In *Digital Aesthetics and Projects in Speculative Computing.* University of Chicago Press, Chicago.

**Drucker, J.** (2011). Humanities Approach to Interface Theory. *Culture Machine,* **12**: 1–20.

**Friedman, K.** (2003). Theory Construction in Design Research: Criteria, Approaches, and Methods. *Design Studies,* **24**(6): 16.

**Fuller, M.** (2008). Software Studies. MIT Press, Cambridge, MA.

**Ivanhoe.** (n.d.). http://www2.iath.virginia.edu/jjm2f/old/IGamehtm.html.

**Lunenfeld, P., Burdick, A., Drucker, J., Presner, T. and Schnapp, J. P.** (2012). *Digital\_Humanities*. MIT Press, Cambridge, MA.

**Mandala Browser.** (n.d.). http://mandala.humviz.org/.

**Masud, L., Valsecchi, F., Ciuccarelli, P., Ricci, D. and Caviglia, G.** (2010). From Data to Knowledge: Visualizations as Transformation Processes within the Data-Information-Knowledge Continuum. In Banissi, E., Bertschi, S., Burkhard, R., Counsell, J., Dastbaz, M., Eppler, M., Forsell, C., et al. (eds), *Information Visualisation IV, 2010 14th International Conference*, pp. 445–49.

**McCarty, W.** (2003). *Encyclopedia of Library and Information Science.* Vol. 2. 2nd ed. New York: Dekker, pp. 1224–35.

**McGann, J. and Samuels, L.** (2004). Deformance and Interpretation. In *Radiant Textuality.* New York: Palgrave Macmillan.

**Moretti, F. (**2005). *Graphs, Maps, Trees.* Verso Books, New York.

**Nowviskie, B.** (2004). *Speculative Computing: Instruments for Interpretative Scholarship.* Ph.D. thesis, University of Virginia.

**Orbis.** (n.d.). http://orbis.stanford.edu/.

**Pope, R. (**1995). *Textual Intervention: Critical and Creative Strategies for Literary Studies.* Routledge, London.

**Ramsay, S.** (2011a). On Building, 11 January, http://stephenramsay.us/text/2011/01/11/onNbuilding.html.

**Ramsay, S.** (2011b). Who’s In and Who’s Out, 8 January, http://stephenramsay.us/text/2011/01/08/whosNinNandNwhosNout.html.

**Ruecker, S., Radzikowska, M. and Sinclair, S.** (2011). *Visual Interface Design for Digital Cultural Heritage.* Ashgate.

**Schnapp, J. and Presner, T.** (2009). The Digital Humanities Manifesto 2.0, 17 June, www.humanitiesblast.com/manifesto/Manifesto\_V2.pdf.

**Schon, D. A.** (1983). *The Reflective Practitioner: How Professionals Think in Action.* 1st ed. Basic Books, New York.

**Temporal Modeling.** (n.d.). http://www2.iath.virginia.edu/time/time.html.

**Voyant.** (n.d.). http://voyant-tools.org.