While both data visualization and computational methods are an increasingly important part of scientific inquiry, there is a long history of tension between visualization and computation as modes of producing knowledge. For instance, despite the broad range of 17th and 18th century scientific instruments (thermometer, barometer, weather-clock, etc.) that produced graphical and visual records (by moving a writing implement over a moving role of paper—like a polygraph machine), the vast majority of these outputs were translated into tabular logs prior to analysis. German and British social scientists as well as applied natural scientists largely saw these automatic graphs as useless in favor of discrete samples that could then be analyzed mathematically. On the other hand, Meckel’s 18th century work on brains that focused on weight and volume has been completely overshadowed by two centuries of work that have stressed knowing the brain through its visual representation, from Bichat’s work on anatomy to Golgi’s neuron staining to the recent use of MRIs for brain imaging. Even contemporary differences between statistical based hypothesis testing and exploratory data analysis, which often relies heavily on visualization, speak to the differences and tensions between visual and computational modes of analysis in the sciences.

Visual and computational analyses often complement each other; still, different disciplines have historically tended to favor one over the other as a method of establishing scientific veracity. Moreover, the valuation of visual and computational analyses are not static within disciplines, they constantly change and are subjected to moments of crisis and rearrangement. These tensions and differences in the production of knowledge directly impact the ways in which data, information, images and other resources are used, indexed and repurposed in these fields. Understanding these historical and disciplinary differences are of the utmost importance as information professionals, data scientists and researchers increasingly work with and reuse massive stores of scientific data.

This project seeks to develop a historical understanding of the ways in which scientific disciplines have cultivated methodologies and discourses around the visual and numeric production of knowledge, in order to better comprehend the information practices that support the use of data and visualizations in the sciences. Especially by tracking the historical use of visualization in a number of scientific disciplines, this project will attempt to situate modern discourses around visualization, exploratory data analysis and hypothesis testing in the sciences. The selected fellow will be responsible for researching both theoretical and practical issues surrounding this history and will assist in producing an article about the research findings.