

Dissertation: A Quadruple-Based Text Analysis System for History and Philosophy of Science

Editor's note:

Julia Damerow defended her dissertation titled "A Quadruple-Based Text Analysis System for History and Philosophy of Science" in July 2014 in front of committee members Manfred Laubichler, Jane Maienschein, Richard Creath, Karin Ellison, Wallace Hooper, and Jürgen Renn, earning her a Doctor of Philosophy degree. <https://repository.asu.edu/items/25951>

Abstract:

Computational tools in the digital humanities often either work on the macro-scale, enabling researchers to analyze huge amounts of data, or on the micro-scale, supporting scholars in the interpretation and analysis of individual documents. The proposed research system that was developed in the context of this dissertation, known as the Quadriga System, works to bridge these two extremes by offering tools to support close reading and interpretation of texts, while at the same time providing a means for collaboration and data collection that could lead to analyses based on big datasets.

In the field of history of science, researchers usually use unstructured data such as texts or images. To computationally analyze such data, it first has to be transformed into a machine-understandable format. The Quadriga System is based on the idea of representing texts as graphs of contextualized triples or quadruples. Those graphs (or networks) can then be mathematically analyzed and visualized. This dissertation describes two projects that use the Quadriga System for the analysis and exploration of texts and the creation of social networks. Furthermore, a model for digital humanities education is proposed that brings together students from the humanities and computer science in order to develop user-oriented, innovative tools, methods, and infrastructures.