e-Version of the Republic of Letters

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Abstract

Natural philosophers privately exchanged letters, manuscripts, and their newly printed books. The privacy of the letter allowed for the airing of unpopular and radically novel ideas, creating a mostly hidden discussion that carried on across Europe throughout the 17th century. This invisible *republic of letters* united like-minded thinkers and bridged the physical distances between them [1]. Correspondence analysis comprises a significant part of the history of science research as historians track the ideas of natural philosophers through their correspondence. Even if a researcher is interested in studying the contribution of one individual to a field, inevitably, she is led to examine the letter communications of others as well. That is because the correspondence data are by nature connected: natural philosophers either directly corresponded or mentioned each other's works.

As the tendency towards digitization increases, platforms emerge that individually present digital editions of correspondence categorized by authors. These platforms do not interoperate; as a result, the links between the data vanish, forcing the researchers using these platforms to study the textual sources entirely to find the relations [2]. Cataloging portals such as *Early Modern Letters Online* (EMLO) or the *Mapping The Republic Of Letters* help researchers with creating their research inventory by locating the resources on different platforms. However, these services only refer researchers to the sources of information without giving them direct access to the data. This paper presents an e-infrastructure that connects digital editions of the early modern scientific correspondence presented in different online platforms without re-creating data silos. Hence, through one single platform, researchers gain access to the semantically linked textual resources in a machine-readable format and can analyze the information using one set of research tools. Currently, the e-infrastructure brings three digital edition platforms to interoperate: the Bernoulli-Euler Online, The Newton Project, and the Briefportal Leibniz.

Representing the digital editions hosted on various endpoints as an RDF graph not only facilitates historians' research but also suggests a new research method - the network method. In contrast to the conventional approach that requires studying the individual resources to establish the connection between them, the network illustrates the links between resources, then having this picture in mind, researchers can explore the data. Furthermore, the e-infrastructure enables researchers to perform advanced searches on metadata of the network resources [2], or full-text searches for a phrase. This paper describes the asynchronous full-text search forwarding mechanism developed to this aim. Most of the digital edition platforms present text search functionality; the infrastructure benefits from this offered functionality enabling full-text searches on entire network resources without any need for collecting textual sources and indexing them. Furthermore, the paper describes an interactive web-based visualization tool that displays the RDF-based network of resources as 3D force-directed graphs

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[3]. This paper also presents a new feature recently added to introduce the time dimension to the visualizations. It allows researchers to study the change in the network over time, concerning both the topic and frequency of the correspondence.

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For information about the RDF standard, see https://www.w3.org/RDF/.