

Reasoning with Reasoning: Practices of Digital Humanists

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ABSTRACT

The proposed paper explores different reasoning practices in the context of Linked Data, in particular in the domain of the digital humanities. By “reasoning” we do not primarily refer to the algorithmical notion of the term as used in computer science but the particular practices applied by humanists to Linked Data and the inferences they draw in specific research contexts.

For this purpose, we will conduct a series of experiments using the collaborative semantic annotation tool Pundit, the data visualisation tool Ask, and faceted browsers which have been developed in the project Digitised Manuscripts to Europeana (DM2E).

Through the exploration of this topic we hope to increase the awareness of the scholarly practice of modelling and of models and its importance for supporting reasoning in the digital humanities.

KEYWORDS: Linked Data, Semantic Annotation, Reasoning, Digital Humanities, DM2E, Ask, Pundit.

1 Reasoning with Reasoning: Practices of Digital Humanists

Within the discipline that has emerged out of the joining of the two fields of humanities and computing, the Digital Humanities (cf. Svensson, 2009), there is an ever growing number of scholars moving towards Semantic Web technologies and Linked Data especially. As with all digital humanities¹ endeavours, the question arises as to what extent the technologies developed in the context of computer science translate to the needs of scholars in individual humanities disciplines (cf. McCarty, 2005, p. 141). Here, we want to explicitly focus on a humanities' perspective in the digital realm. In 2009, Zöllner-Weber discussed the specific topics of logic reasoning and ontologies for the humanities. In her study regarding the use of inference tools in the domain of literature, she came to the conclusion that there are limitations to the application of such tools for humanities scholars. For one, the researcher is largely required to have an in-depth understanding of mathematical logics. In addition, scholarly activities in the humanities often involve "vague, ambiguous, or even contradictory" (Zöllner-Weber, 2009, p.10) information. In this context, McCarty said in 2005 that the benefits of computer science, which "focuses on combinatorics, syntax, and algorithms" and whose "guiding question is 'what can be automated?'" fail to "address the humanities intellectually" (McCarty, 2005, p. 141). When it comes to "reasoning", to our knowledge the literature on this topic tends to favour the technology aspect, the algorithmical use of the term as machine-inference of new knowledge from a given knowledge base, and overlook the different scholarly practices of reasoning humanists use in the interaction with simple digital tools (cf. McCarty, 2008). For this reason it would be beneficial to make the research more comprehensive with regard to the humanists' practices and examine if and how current tools do indeed support humanist reasoning activities.

The research for this paper is being carried out within the EU-funded project Digitised Manuscripts to Europeana (DM2E),² which is among other things concerned with "researching the scholarly practices in the humanities as well building the tools that respond to the needs of scholars".³ For the purpose of our research on humanist practices of "reasoning" and Linked Data, we will focus on the data in the form of content and semantic annotations from the DM2E projects as well as a set of tools which includes Pundit, Ask (Net7) and faceted browsers.

Pundit (<http://thepund.it/>) and Ask (<http://ask.thepund.it/>) have been developed in cooperation with Net7 (<http://netseven.it/>) in the context of DM2E. Pundit is an open source collaborative research application which lets scholars semantically annotate documents on the Web using existing and custom-made ontologies. The annotations are collected in private or public notebooks and can be queried or re-used to form the basis of data visualisations. Ask allows users to look at annotations created with Pundit and contained in public notebooks. Furthermore, these annotations can be explored, searched, and filtered using faceted browsers. Here, DM2E utilizes two types of faceted browser configurations: Ask comes with a tabular faceted browser which allows for the filtering of all triples in stipulated notebooks according to subject, predicate, and object, while the second faceted browser enables the exploration of ontology data along particular metadata entities.

Using the aforementioned resources of DM2E as a basis, our paper will explore the question of what kinds of "reasoning" humanists want to apply to digital data, in this case, Linked Data,

¹ To stress this aspect we use "digital humanities" in lower cases.

² <http://dm2e.eu/>.

³ Ibid.

using the simple faceted browser tool. We are working with different user groups of digital humanities scholars, who are applying data from the DM2E context. One of these user groups is the Wittgenstein Archive at the University of Bergen. They use a prototype of an ontology navigator for the Wittgenstein ontology of the Wittgenstein Archives at the University of Bergen (WAB) (Pichler & Zöllner-Weber, 2013), which visualises semantic facets by indexing the results of queries on the ontology.

Each group will be asked to reflect on the reasoning process while answering domain relevant research questions that they have suggested. For this purpose they will create semantic annotations with Pundit or use existing ones pertaining to particular research data and objects. They will then use faceted browsers in order to explore the triples and thereby to find answers to their initial research questions. It is exactly this process that we will ask them to reflect upon, using guidelines for self-documentation created for this purpose. Then, using McCarty's (2008, p. 11) idea of the "Stylistics of Reasoning", which implies that there are different styles of reasoning used in the humanities, we will identify different practices of humanities reasoning to emerge from the DM2E scholars' interactions with the Linked Data in the faceted browser. This is of particular relevance as it will demonstrate how certain seemingly simple tools are useful for reasoning activities across a number of domains.

Reasoning in a Linked Data environment involves both the scholar's domain knowledge and understanding of data. Such a process includes selecting the most meaningful facets from a structured representation of a domain, such as the Wittgenstein ontology, or a corpus of semantic annotations, e.g. the one created with Pundit annotating web pages. In order to understand which contexts are the best candidates to be visualised as facets – in the case of Linked Data these are RDF properties in particular – one needs to first understand how the property is actually used. However, a scholar alone, by analysing the facets, can really decide which facets actually conceive relevant insights.

Our research on reasoning is still ongoing, but our goal for the proposed paper is to show and discuss the potential application of the Semantic Web tools developed in the context of DM2E for digital humanists and to help further develop the understanding of scholarly practices. Lastly, we will discuss the concept of humanist practices of reasoning in digital humanities as a complementary approach to the algorithmic practice to the issue of "reasoning" in the context of Linked Data.

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