The WikiPhil Portal: Visualizing Meaningful Philosophical Connections

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Objectives

Since its inception in 2001, Wikipedia has grown rapidly to become one of the most frequently visited sites on the Web. Recently, an increasing number of researchers have explored various ways to exploit and enhance Wikipedia as a source of a vast amount of lexical, semantic, and world knowledge for various applications in natural language processing, text mining, information retrieval, and knowledge engineering tasks. The objective of the (ongoing) work reported in this paper is to extract, analyze, and visualize meaningful and interesting connections among philosophers and philosophical concepts through the automatic analysis of the hyperlink structure and the textual and semantic content of Wikipedia pages. By doing so, we aim at creating a useful portal for researchers and students of philosophy as well as the interested public, thereby contributing to the cause of digital humanities.

Materials and Methods

For the implementation of a prototype system, we first extracted the names of 330 Western philosophers (or influential thinkers, writers, scientists, etc.) from Wikipedia's "Timeline of Western Philosophers" and "Contemporary Philosophy" pages. We automatically processed the downloaded Wikipedia pages corresponding to each of the 330 philosophers to extract the linkage data as well as the data on the influence relations among philosophers. The latter data were extracted from the infoboxes contained in the Wikipedia pages for some of the philosophers. We augmented the extracted data by adding inferred data, in cases where the influence information involving two philosophers appears in only one philosopher's Wikipedia page. The extracted data were stored as relational tables in a MySQL database and as XML files marked up with GraphML and TreeML. We created a Web interface via which the user can issue queries on the link connections and influence relationships involving one philosopher, two philosophers, and all 330 philosophers as a whole. The results are displayed both in tabular and in graphical formats. The system is implemented in Java. The Web portal interface uses the Java servlet technology. The interactive visualization is done using the Prefuse Information Visualization Toolkit.

Results

Through the procedures described above, we have extracted a total of 3706 links (counting only those that involve the 330 philosophers), 2456 out of which represent unique link connections excluding repeated links between two philosophers involved, and a total of 723 influence relations among philosophers. We have computed rankings based on the statistics. The philosopher who is linked to the largest number of philosophers turned out to be Hegel with 46 unique out-links, whereas the one who is linked from the most philosophers turned out to be Aristotle with 91 unique in-links. Both Kant and Hegel rank as number one in terms of the number of bi-directional links, each having 29 unique bi-link connections. In terms of the direct influences, Kant, Aristotle, and Plato rank as number one to three, having 38, 31, and 28 philosophers influenced by each, respectively. The philosopher who is influenced by the largest number of philosophers turned out to be Heidegger with 18 influenced-by relations.

* The first author did her previous doctoral work in philosophy.

Figures 1-5 show tree and graph views of out-link/in-link/bi-link connections and influenced/influenced-by relations involving Hegel, Aristotle, Kant & Hegel, Plato, and Heidegger, respectively.
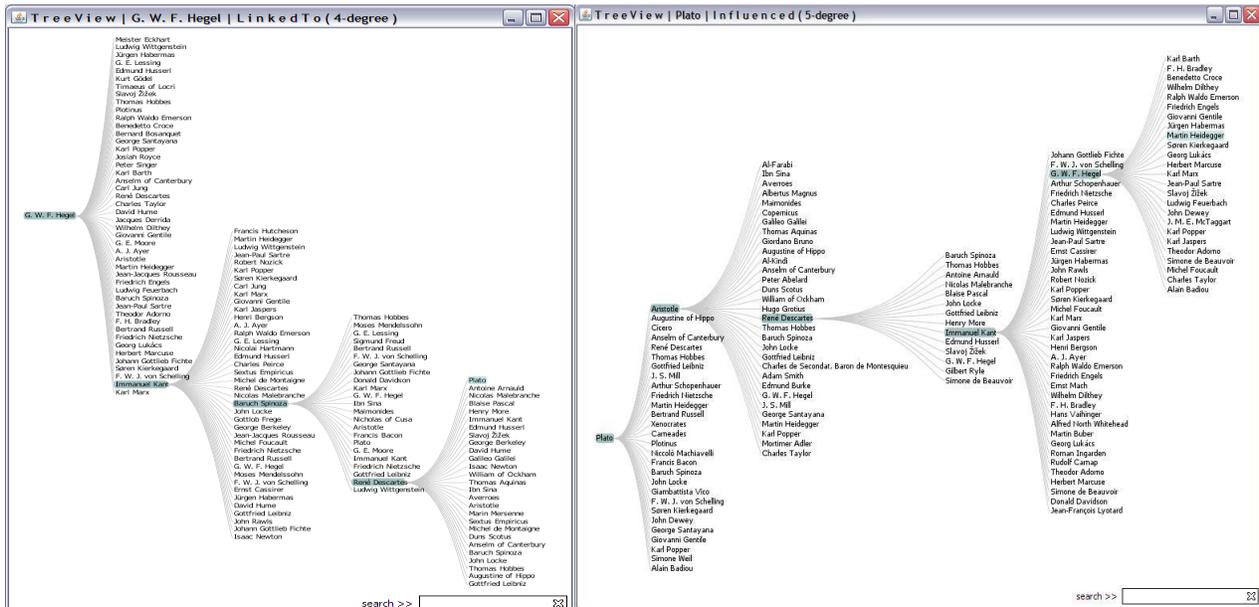
Figure 1. Out-links from Hegel.
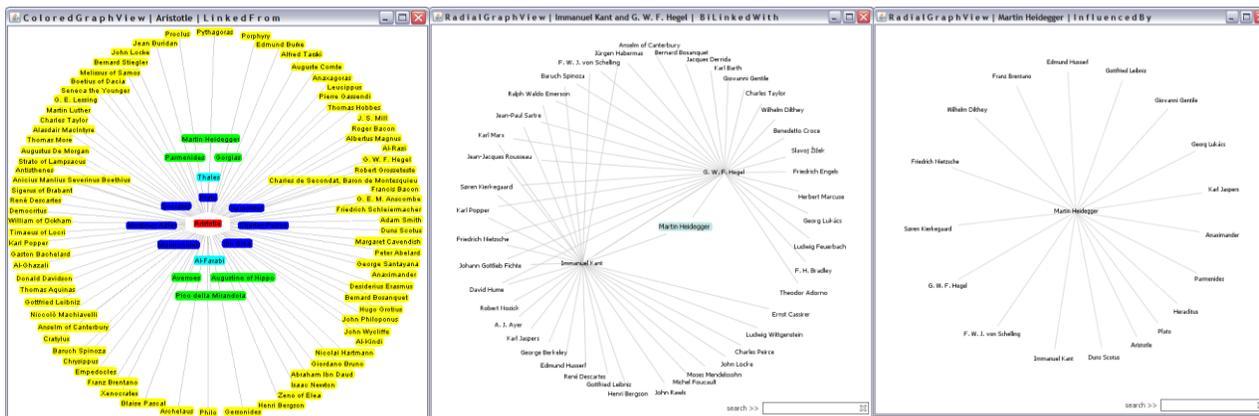
Figure 4. Influences from Plato.

Figure 2. In-links to Aristotle.

Figure 3. Bi-links with Kant & Hegel.

Figure 5. Influences to Heidegger.

Due to the space limitation, we omit the graph visualizing the entire linkage structure or the influence relationships among all 330 philosophers.

Conclusion

The WikiPhil Portal project is conceived as a venue of the convergence of art, (computer) science, and philosophy. It aims to enable the discovery and exploration of the hidden and known connections among philosophers and philosophical concepts via an aesthetically appealing interface based on the data extracted from Wikipedia. We have found that even the simple link connections can reveal interesting relations among philosophers. The future work will include extending the approach to extract and visualize the relations among philosophical concepts and to include all philosopher pages in Wikipedia. It would be also interesting to compare the results obtained from Wikipedia with those from using prominent philosophical resources on the Web such as the Stanford Encyclopedia of Philosophy or The Internet Encyclopedia of Philosophy.