Chapter 30
Knowledge Acquisition on Dante Alighieri's Works

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ABSTRACT

The approach followed for the identification and the implementation of visualization diagrams able to support the knowledge acquisition on Dante's works is described. Two high-level structures and an implementation model are proposed. An example of citation histogram is given; one of its possible refinements is considered. The chapter is part of the Towards a Digital Dante Encyclopedia, a three-year Italian National Project which aims to build a digital library endowed with services to support scholars in creating, evolving, and consulting an encyclopedia on Dante Alighieri and on his works.

INTRODUCTION

Towards a Digital Dante Encyclopedia is a three-year Italian National Project that aims to build a digital library endowed with services to support scholars in creating, evolving and consulting a digital encyclopedia of Dante Alighieri and of his works (Alighieri, 2011, 2014). Studies concerning the semantic representation of the notes to Dante Alighieri's works can be found in Bartalesi, Locuratolo, Meghini and Versienti (2013). A semantic network of Dante's works and their contextual knowledge is described in Andriani, Bartalesi, Locuratolo, Versienti, Meghini, Tavoni and Versienti (2013).

This article is a research paper related with one of the project objectives, i.e. the identification and the implementation of visualization diagrams to support the of knowledge acquisition on Dante's works. The collaboration between humanists and computer scientists was essential for the purposes of this activity. Moreover, knowledge from humanists was advantageously exploited to individuate the right diagrams; knowledge from computer scientists was advantageously exploited to solve methodological problems of research, implementation and graphical representation.

The approach followed for the purposes of this activity was based on three phases, respectively called identification, implementation and graphical representation. With regard to the identification phase, two high level structures were introduced: the former, called Dante work's sources, is concerned with the cited primary sources; the latter, called Dante work's structure, is concerned with the structure of Dante's works. For each of them, significant types of histograms were identified. The structure Dante work's sources is applicable to both all the Dante's works/a selected Dante's work. In the former case, the histograms that can be derived from the structure are sufficient to fulfill the project purposes; in the latter case, the histograms derived from both the structures, Dante work's sources and Dante work's structure, need to be related.

The implementation phase is concerned with a table summarizing the structures and the knowledge from humanists. The significant types of citation histograms are represented in a model that does not reduce the completeness of the graphical information. The model is formed by a table containing four columns identified by the 4-tupla (Domain, Range, Graphical Type, Refinement).

With respect to the graphical representation, the histogram is a function depending from the parameters Domain and Range. The domain is represented on the horizontal axis of a cartesian diagram, whereas the citation distributions are represented on the vertical axis. The possibility to refine the acquired knowledge, as well as the possibility to increase it is provided. An examples of citation histograms is given.

BACKGROUND

The study concerning the semantic representation of the knowledge contained in commentaries to Dante Alighieri's works, especially focused on primary sources which are the works of other authors cited by Dante in his texts, is summarized. The approach is composed of several steps: the first step of them started from the analysis of an Excel style sheet, where some pieces of knowledge included in a commentary of *Convivio* (Alighieri, 2014), a philosophical essay composed by Dante Alighieri in the years between 1304 and 1307, were organized and reported by an Italian scholar. In the Excel sheet, every note is given in a row, and is composed of the following pieces of knowledge:

- Number of chapter of the annotated text, represented as a pair of the form book chapter (e.g., 1.01 indicates the first chapter of the first book of *Convivio*);
- Number of the paragraph;
- The text fragment to which the note applies (e.g., "Sì come dice lo filosofo nel principio della Prima Filosofia");
- The text of the note;
- The last three columns give information about a primary source reported into the note, structured as:
  - Author (e.g. Aristotele);
    - Title (e.g. Metafisica);
    - Thematic area (e.g. Aristotelismo).

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