INTERTEXTUALITY IN DANTE'S COMMEDIA: HYPERMEDIA DANTE NETWORK

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Hypermedia Dante Network aims at representing through Semantic Web standards and languages the knowledge related to Dante's primary sources which is disseminated in seven centuries of commentaries on the *Divine Comedy*. The project, which was granted national funding (PRIN 2020-2023), is directed by prof. Michelangelo Zaccarello, and entails a collaboration between the Universities of Pisa, Bologna, Naples, and Turin, and ISTI CNR. *HDN* was conceived as a sequel of the project *Per un'enciclopedia dantesca digitale*, which gathered the digital libraries *Dante Medieval Archive* (*DaMA*) and *DanteSources*, as well as *DanteSearch*, a morphological and syntactic markup of Dante's Latin and vernacular works developed in the late 1990s.

DanteSources represents the knowledge about Dante's primary sources provided by the most recent editions of Dante's so-called "minor works" (*Vita Nova*, ed. Gorni 2011, ed. De Robertis 1980; *Rime*, ed. Giunta 2011; *De vulgari eloquentia*, ed. Tavoni 2011; *Convivio*, ed. Fioravanti 2014; *Monarchia*, ed. Quaglioni 2014)[1]. The knowledge base can be interrogated through predefined or free queries. Searches in *DanteSources* return information on all the sources that are quoted in a specific work by Dante, or in one specific part of it; on all of the passages in Dante's oeuvre where a specific source or a specific author is mentioned; and on the different types of intertextual references (explicit, strict, or generic, as will be defined below). The linked data extracted from the commentaries published in said editions populate an ontology specifically created to formally represent knowledge on the

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[1] On *DanteSources* see Mirko Tavoni, Paola Andriani, Carlo Meghini, Valentina Bartalesi, Daniele Metilli, "L'esplorazione delle fonti dantesche attraverso la biblioteca digitale *DanteSources*", in ed. Thomas Persico and Riccardo Viel, *Sulle tracce del Dante minore. Prospettive di ricerca per lo studio delle fonti dantesche* (Bergamo: Sestante, 2017), 29-52; Valentina Bartalesi, Carlo Meghini, Daniele Metilli, Paola Andriani, Mirko Tavoni, "*DanteSources*: a Digital Library for Studying Dante Alighieri's Primary Sources", *Umanistica Digitale* no. 1 (2017): 119-28; Valentina Bartalesi, Carlo Meghini, Paola Andriani, Mirko Tavoni, "Towards a semantic network of Dante's works", *Digital scholarship* no. 30/1 (2015): 28-35.

relationship between Dante's text and his sources. *DanteSources* thus escapes the limits imposed by the textual queries that affect the perusal of the numerous commentaries digitized by the *Dartmouth Dante Project* (*DDP*), and it provides more complete and meaningful results thanks to the high expressiveness of data granted by the use of computational logic and languages.

HDN relies on the same methodology. However, since scholarship on the primary sources of Dante's *Commedia* is significantly broader, the ontology developed for *DanteSources* has been expanded and implemented on the basis of a new conceptualization of intertextuality[2]. The *HDN* ontology revolves around a core class of *references*. In explaining Dante's *Commedia*, commentators bring to the reader's attention a specific text when they believe that text can enrich our understanding of the poem. Therefore, our knowledge on Dante's primary sources can be expressed as references, that can be formalized as follows:

> A (the commentary, i.e. the *source* of the reference) states that our knowledge about B (a fragment of Dante's text, i.e. the *subject* of the reference) can be enriched thanks to C (another text or collection of texts, i.e. the *object* of the reference).

Based on this definition, the *HDN* ontology classifies references into three sub-classes: citations (already described by the *DanteSources* ontology), *loci paralleli*, and external supports. *Citations* are the most specific references, for they imply a genetic relationship between Dante's text and its source (B derives from C). *Loci paralleli* are those texts where a certain idea or image is developed in a way similar to Dante's, without one of the two texts being directly inspired by the other one (B is similar to C). Finally, we call *external supports* those references in which a commentator mentions a text only to corroborate his interpretation, without

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[2] On *HDN,* see Valentina Bartalesi, Nicolò Pratelli, Carlo Meghini, Daniele Metilli, Gaia Tomazzoli, Leyla M. G. Livraghi, Michelangelo Zaccarello, "A formal representation of the *Divine Comedy*'s primary sources: The *Hypermedia Dante Network* ontology", *Digital Scholarship in the Humanities* no. 37/3 (2022): 630-643; Carlo Meghini, Mirko Tavoni, Michelangelo Zaccarello, "Mapping the Knowledge of Dante Commentaries in the Digital Context: A Web Ontology Approach", *Romanic Review* no. 112/1 (2021): 138-57; Carlo Meghini, Michelangelo Zaccarello, "Un nuovo progetto di biblioteca digitale con mappatura semantica dei commenti alla «Commedia»: l'"Hypermedia Dante Network'", *Griseldaonline* no. 20/2 (2021), https://doi.org/10.6092/issn.1721-4777/12552; Leonardo Canova, Michelangelo Zaccarello, "«Com'occhio segue suo falcon volando»: intertestualità e lessico della falconeria (e relativa marcatura digitale) nella *Commedia*", *Linguistica e letteratura* no. 46/1-2 (2021): 15-44.

implying a specific hermeneutic relationship with Dante's work (C is useful to explain B).

At the heart of our ontology lie the most specific references, since they tend to be more beneficial to our understanding of Dante's text. Citations are divided into the three sub-classes implemented by the *DanteSources* ontology: *explicit citations* (when Dante explicitly quotes his source); *strict citations* (where a specific fragment of text is very likely to be Dante's source); *generic citations* (where Dante is likely to have been generically influenced by a text or collection of texts).

Each reference is further characterized by other information. The more complete information is attached to citations, while for external supports we only specify: a. the relationship between subject and object (i.e. whether Dante's text confirms, contradicts, or extends his source); b. whether the commentary at hand relies on a previous commentary; c. the coordinates of the object text (title, author, theme, the relevant fragment of text and its position within the work, and a link to a digital library containing its full text). In the case of citations and *loci paralleli*, the *HDN* ontology expands the *DanteSources* ontology by representing the *content* of the reference. According to their content, references are divided into 3 categories: *textual correspondences* (based on linguistic and stylistic features), *thematic correspondences* (based on characters, episodes, or topographical elements), and *conceptual correspondences* (based on theories or motifs).

To populate this ontology, *HDN* signed a partnership with the *Dartmouth Dante Project* and acquired some 50 commentaries digitized by the *DDP*. Collaborators of *HDN* annotate the most important of these commentaries using a digital tool created by ISTI CNR. Once the ontology has been populated, users will be able to search the knowledge base through a web interface that will allow predefined queries, or through the SPARQL endpoint (a search protocol based on a formalized query language for the interrogation of the RDF graph that constitutes our knowledge base). It will be possible to download the query output in different formats, such as charts and CSV files.

Users will be able to immediately retrieve structured and meaningful information; queries will encompass, for example, all of the stylistic features deriving from the Bible in Dante's *Inferno*, all topographical elements drawn from classical literature, all of the occurrences in which Dante contradicts his sources (including

himself), and all the instances of a specific commentator mentioning one of his predecessors.

With this project, we aim at providing FAIR (Findable, Accessible, Interoperable, Reusable)[3] data on Dante's masterpiece, its sources, and its seven-centuries long commentary tradition, as well as an innovative tool for navigating the deep sea of Medieval intertextuality.

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[3] Mark D. Wilkinson et al., "The FAIR guiding principles for scientific data management and stewardship", *Scientific Data* no. 3/1 (2016): 1-9.