

Integrating library and prosopographical data in the publication network of the Old University of Louvain

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After the Catholic University of Louvain split in the 1970s, the rare books from the Old University of Louvain (1425-1797) were inherited by the newly founded KU Leuven and UCLouvain. Decades later, the two sister universities share joined efforts to reunite this intellectual heritage to one and the same digital gateway. Their remarkable reassembling effort of the *Collectio Academica Antiqua* (Caa, henceforth) on the online platform *Lovaniensia* is a milestone in this renewed cooperation. As it is a curated rather than naturally accumulated collection,¹ the Caa is arguably quite representative of the intellectual community of Louvain at the time. The collection's metadata potentially store sufficient information to map out the web of relationships of the publishing world behind the Old University of Louvain. The present paper strives to offer an interdisciplinary perspective to the study of academic communities as real-world networks, using the Old University of Louvain as case study. Applying Historical Social Network Analysis (HSNA), we reconstruct and analyze the web of relationships within Louvain's publishing network and offer new perspectives on the evolving roles of key figures.

During the early modern period, academic output possessed various forms, such as epistolary correspondences among intellectuals, but also, crucially, printed publications, the latter flourishing after the introduction of the printing press. Printed books, pamphlets, and journals reached broader audiences, and some of this output survived to form the cultural heritage of the Old University of Louvain, now preserved in the Caa. Book creation was a collaborative effort, involving not only authors but also contributors to production, funding, and inspiration. The untapped, high-quality resource of the Caa enables us to reconstruct the network of the publishing world of the Old University of Louvain. Reconstructing the identities of the Caa contributors and their acts of collaboration allow us to provide an evidence-based network of what the publishing world behind the institution might have looked like.

Using the collection's rich metadata, we use a data-driven perspective which consists of the application of HSNA, i.e., an application of graph theory to historical data. From the metadata provided by KU Leuven Libraries, we extracted and standardized key records such as contributor biographical data, book titles, and publication dates. The Python library *pymarc* and *OpenRefine's* clustering feature, combined with manual cross-checking, helped clean the data, which was then visualized as networks using *Gephi* (Bastian, Heymann, and Jacomy 2009) and made interactive through the web application *Retina*.²

Our analysis has two goals: first, to investigate the structure and evolution of Louvain's premodern publishing network, and second, to reinterpret the evolving roles of key figures. The challenges posed by a 300-year timeline were tackled using a rolling-window approach. Taking a network's temporality into account is crucial, insofar as it could affect both topology and flow (Blonder et al., 2012). Neglecting the aspect of time may lead to erroneous interpretation of the metrics.

¹ As described from the *Collectiewijzer Erfgoedbibliotheeken*, the Caa comprises the works from and around the old University of Leuven (1425-1797). The collection is part of the rare books curated by the KU Leuven Libraries Special Collections.

² More on the *Retina* web application: <https://ouestware.gitlab.io/retina/1.0.0-beta.1/>

The contributions of our paper are the following. From the Caa metadata, we derive two browsable, interactive networks: the full network and the scholars' subgraph. The former depicts the publishing world revolving around the Old University of Louvain. The nodes are the contributors to the Caa printed items (authors, printers, publishers, dedicatees, editors, booksellers, censors, and more), whereas the edges are their shared book collaborations. The latter on the other hand is essentially a subset of the main network, with an ulterior restriction, that is, the inclusion of nodes with a form of involvement in *authoring* Caa works. We consider the role of author as a proxy to spot scholars of the Old University.

We analyze global and node-level metrics to explore the structure of the Old University of Louvain's publishing network. From the former, we infer that the full network experiences a tendency of expansion and loss of connection, corroborating key events in the history of the University. Aggregating key node centrality metrics (degree, betweenness, closeness, and eigenvector) over time, we show that censors consistently have the highest scores in closeness and eigenvector centrality, underscoring their influence over the early book industry. Printers and publishers, by contrast, exhibit prominent betweenness centrality, highlighting their crucial role as network hubs.

Narrowing the focus on scholars, centrality metrics provide proxies for understanding their social presence, aligning with the human capital index computed in Catoire et al. (2021). Degree centrality emerges as a useful measure of the social aspect of books, reflecting collaboration intensity. Scholars who co-author extensively with a few colleagues seem to possess low degree centrality, whereas those collaborating with many co-authors achieve high degree centrality. Plots tracing degree centrality illustrate the evolution of key scholars' influence in the history of the University of Louvain, revealing that scholars typically reach their peak influence while alive, with their sociability declining after death. However, humanists tend to maintain a lasting presence in the network beyond their lifetime. The analysis also underscores the decline of Scholasticism and the rise of the 'New Science,' by comparing Aristotle's degree centrality to that of notable Louvain scholars in the hard sciences. Additionally, the study documents the peak influence of Cornelius II Jansenius during the Jansenist controversy and the prominence of key figures in Humanism during the 15th and 16th centuries.

In conclusion, our elaboration of the Caa metadata, in the fashion of digital humanities and coupled with some statistical inference, culminates in the ability to browse through the publication network of the Old University of Louvain at one's fingertips. Our paper represents a pioneering attempt to integrate quantitative and qualitative approaches within the context of network research. It demonstrates the potential of digital humanities to reveal fresh insights into traditional narratives and could be adapted to explore other academic communities.

References

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