The Biographical Formula: Types and Dimensions of Biographical Networks

Ágoston Zénó Bernád[1], Maximilian Kaiser[1]

[1]Institute for Modern and Contemporary History (Austrian Academy of Sciences)
Hollandstraße 11–13, 1020 Vienna
Email: Agoston.Bernad@oeaw.ac.at, Maximilian.Kaiser@oeaw.ac.at

Abstract

Behind every printed national biography is a board of editors responsible for finding established scholars to write the biographies. The personal and institutional networks, the scientific and ideological socialization of these authors have a significant influence on the biographical constructs and narratives they have designed, and thus also determines the information contained in the biographies. Therefore, a source-critical approach to such biography texts is necessary. This will be exemplified using a biography selected from the *Austrian Biographical Dictionary 1815–1950* (ÖBL). A complementary approach for the interpretation of biographical dictionaries is analysis of the networks, which can be reconstructed on the basis of the information contained in the biographies. As part of the APIS project, biographical data is generated through the annotation of biographies of the ÖBL. This data consists of frequently mentioned names of persons, places and institutions that can be subsumed under the term "biographical building blocks". Biographical networks can be built on the basis of this data. In the second part of the paper, different dimensions of these networks as well as ways of analyzing this type of data will be shown.

Keywords: digital humanities, source criticism, biographical dictionary, biographical research, historical network research

1. Introduction

Mainly due to the changes in information and communication technology, the focus of recent digital biographical dictionary projects has been on objectives such as the effort to transform partially structured biographical reference works into machine-readable data, enhanced database networking, and the exploiting of biographical data using methods of the digital humanities or computational linguistics (Fokkens et al., 2017; Ebneth & Reinert, 2017). These efforts, designed according to the principle of the Semantic Web and shaped by the relational turn in biography (Arthur, 2017), also include the project APIS, which is dedicated to network-oriented digital analysis of the Austrian Biographical Dictionary 1815–1950 (ÖBL)[1] (Gruber & Wandl-Vogt, 2017).

Founded in 1946 and published since 1954, the ÖBL covers not only the territory of present-day Austria, but the entire Habsburg empire, thus providing an image of Central European culture between 1815 and 1950. As yet incomplete, the reference work being elaborated by an international collective of authors from all the successor states of the Habsburg monarchy currently contains around 20,000 biographies. The dictionary has undergone several stages of digitization (Gruber & Feigl, 2009). Within the APIS project begun in 2015, the semi-structured biographical datasets have been integrated into a web application and prepared and processed for biographical-historical research (Schlögl & Lejtovicz, 2017).

Starting with an introductory discussion of central methodological issues (Section 2) and based on selected examples, this paper deals with two complementary approaches to interpreting biographical networks. The first approach scrutinizes aspects of the genesis of the ÖBL, the networks of its biographers and their influence on biographical narratives (Section 3), while the second is devoted to analysis of the networks of biographed persons themselves (Section 4).

2. Biographical Network Research in a Digital Humanities Project

At present, the self-perception of the digital humanities appears to be quite ambivalent. Sometimes they are defined as a scientific (sub)discipline or research field within the humanities and cultural sciences, sometimes as a bundle of methods, practices and concepts at the interface between the humanities and computer science (Fitzpatrick, 2012; Thaller, 2017). Sometimes the challenge of positioning is avoided altogether (Hockey, 2004), and sometimes (Warwick, 2016) the focus is on points of criticism such as those of Stanley Fish (2011, 2012a, 2012b), who questioned the legitimacy of digital humanities arguing from the perspective of traditional humanities disciplines. In terms of scientific history, these uncertainties and oscillating positional determinations recall the *pre-paradigmatic* period in the development of a science as postulated by Thomas S. Kuhn (1970).

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[1] *Österreichisches Biographisches Lexikon 1815–1950*, Hrsg. von der Österreichischen Akademie der Wissenschaften, Wien, Köln, Graz: Böhlau Verlag, Verlag der Österreichischen Akademie der Wissenschaften, 1954ff. (hereinafter referred to as ÖBL).

But regardless of how the issue is confronted, the digital humanities are in a situation – at least due to institutionalization (Kirschenbaum, 2012) – in which the same rules apply to them as to all other actors and institutions in the scientific field: their primary tasks are the increase and dissemination of knowledge. Biographical research within the framework of the APIS project cannot and must not evade these challenges.

In the context of this study, this relates primarily to methodology (Howell & Prevenier, 2001). Historians generally use multiple sources for research into historical processes. The same applies to the APIS project, but simultaneously, the analysis of historical networks is primarily based on the information contained in the ÖBL biographies. Consequently, the circumstances of production, the historical context of origin and the intentions that determine and motivate the creation of individual biographies or the entire ÖBL should always be taken into account first. Fundamental questions of source criticism – such as aspects of the genesis of the work or the author's position, authority and competence – cannot be ignored. It is therefore also advantageous to deal with the networks of biographers. Their pupil–teacher or institutional relationships determine their scientific and political-ideological socialization, which in turn manifests itself in the biographies themselves in the form of different narratives (Rigney, 2013), thereby exerting a decisive influence on the information content of the biographical texts and thus on the constitution of meaning and the description of the past that takes place within the framework of an analysis of the networks of the biographed persons.

The ÖBL thus represents not only a biographical history for the period between 1815 and 1950, but also reflects the history of narratives of Austrian historiography after the Second World War. These are to be recorded both at the level of the entire encyclopedia – e.g. relating to transnationalism vs. national biography, the multiculturalism of the monarchy and its continuity, or the interwar period narratives in the early biographies of the 1950s – as well as that of the individual biographies. The latter will be illustrated in the following using the example of the biography of Sigmund Freud.

3. The ÖBL Biography of Sigmund Freud and the Long Arm of Eugenics

The biography of Sigmund Freud was published in the 4th issue of the first volume of the ÖBL in 1956.[2] The author of the biography is identifiable as the Austrian internist, psychiatrist, neurologist and racial hygienist Karl Johannes Thums (1904–1976) based on the lists of employees and authors published in the introductory part of the lexicon.[3] Furthermore, the archive of the ÖBL contains the much more detailed original version of the Freud biography written by Thums.[4] This archival source was used in addition to the print version. We will not go into a detailed description of the biography and achievements of Freud, one of the most influential thinkers of the 20th century, here. Rather, our aim is to show how the networks as well as the ideological and scientific socialization of an author determine the narratives present in the biography.

Let us first turn to the published version, which focuses heavily on Freud's lifework and reveals little in regard to turning points in his life. Related information ends with the year 1889 (Freud's stay in Nancy) in the text, and there is no mention of any events that had a massive influence on Freud's life and were connected to the assumption of power by the National Socialists: the burning of his works, deemed as "non-German literature" in Germany (1933), the arrest and interrogation of his daughter Anna Freud by the Gestapo in Vienna (1938), his emigration to London (1938) and the concentration camp internment and murder of four of his sisters by the Nazis (1942–1943).

Looking at the thematic development of Freudian theory and oeuvre along with their influence, we once again encounter a shortened and partly falsified representation. While the article states that "the teachings of Freudian psychoanalysis are the foundation of modern depth psychology and psychotherapy", conscious omissions and questionable assertions are also evident within it. For example, Goethe and Darwinism are mentioned as providers of impetus at the beginning of the biography, while Freud's reception of Nietzsche and Schopenhauer, which can likewise be classified as important (Gasser, 1997), is not mentioned at all. Books such as *Civilization and Its Discontents* or *Moses and Monotheism* are mentioned in the index of works, but the biographical narrative provides no contextualization as it does not mention Freud's works in the field of cultural and religious history. The contemporary reception is distorted. Factual positive statements are followed by remarks obviously intended to relativize the significance of Freud (e.g. the subordinate clause "his doctrine [has not been] acknowledged by the specialist science of foreign countries"). The final sentence, in which the merits of the biographed person should usually be highlighted, ends as follows after touching on the US reception: "But details [...] continue to be rejected, partly by psychiatric and partly by professional psychologists, as overstatements, exaggerations, one-sidedness, bold and unproven allegations." On the whole, Freud's biography in

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[2] [Karl Johannes Thums], Freud, Sigmund. In *ÖBL*, Vol. 1 (no. 4, 1956), pp. 357–358.

[3] *ÖBL*, Vol. 1, 1957, p. XIX.

[4] [Karl Johannes Thums], *Freud, Sigmund.* Archive of the ÖBL, Biographien, Karton 1: Bruch–Fussenegger.

the ÖBL constructs a narrative that affects both the content-related and rhetorical levels, serving to conceal biographical-historical facts on the one hand and devalue Freud's work on the other.

At this point, we should turn our eyes to the author of the biography. Thums studied medicine in Vienna and Berlin before working at the Kaiser Wilhelm Institute for Genealogy and Demography in Munich from 1933, where he qualified as a university lecturer in 1939. As a committed national socialist, he was a member of the NSDAP and the SA (1931) among others, and joined the Austrian Legion (Österreichische Legion), a paramilitary unit set up in the German Reich to support a German invasion in Austria (Schafranek, 2010; Holzmann, 2011), in 1933; in the mid-1930s, he left the Roman Catholic Church and acceded to the neo-paganist German Faith Movement (Deutsche Glaubensbewegung). During the Nazi era, Thums worked as a professor of hereditary and racial hygiene at the German University in Prague and was one of the most important protagonists of racial hygiene measures in the Protectorate of Bohemia and Moravia as well as in the *Reichsgau* Sudetenland. Arrested by the Czech police in 1945, he was dismissed for lack of evidence and returned to Austria, where he subsequently worked as medical officer of the St. Pölten district administration and medical counsellor to the Lower Austrian Provincial Government.
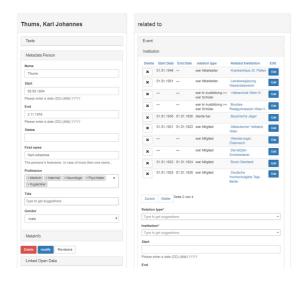

Figure 1: Part of the institutional relations of Karl Johannes Thums in APIS

Michal Šimůnek's study (2007) on Thums's career during the Nazi era and Ernst Klee's Encyclopedia of People in the Third Reich (2003) make it possible to reconstruct the personal and institutional network of the biographer Thums, who collaborated on several ÖBL volumes. The corresponding entities (persons, institutions) were entered manually into the APIS web application and the relations between them classified and – as far as possible – temporalized (see Figure 1). Finally, the data was exported in graphML format[5] and processed using the network analysis and visualization software Gephi[6] (see Figure 2).

Figure 2: The eugenic network, i.e. personal and institutional relations, of Karl Johannes Thums.

Without going into details of the structures of Thums's network, it can be said that his career path was marked by the fact that his political-ideological and scientific socializations, both at a personal and institutional level, overlapped several times. This becomes particularly clear when filtering the personal–institutional network by institutions. A typological classification of the latter into a) political, military or paramilitary organizations and fraternities, b) ideologically infiltrated research and teaching institutions, c) institutions to be classified as neutral, and d) institutions with which Thums had only indirect contact reveals a predominance of institutions of type b) (see Figure 3).

Figure 3: The institutional network of Karl Johannes Thums (green nodes represent ideologically infiltrated research and teaching institutions)

Thums's narrative about Freud results primarily from this superimposition and less from the fact that the nodes of his network ranged from fraternities to the Supreme SA leadership (OSAF), or from psychiatrist and racial hygienist Ernst

Rüdin to Reinhard Heydrich, the chair of the Wannsee Conference – to name but a few.

Thums, as a neurologist and psychiatrist, had the necessary competence, but it is not without a certain absurdity that he was commissioned to write the biography of a psychoanalyst. As a racial hygienist, he was convinced of the need to biologize social ties and relations, and believed in the mathematical predictability of human traits. In contrast, Freud turned to the psyche, and to a kind of language-supported mapping of human experience, thought and behavior. However, if we also take into account the original version of the biography written by Thums, kept in the archive of the ÖBL, we must relativise our statements in so far as, despite the critical tonality that manifests itself in it, the emigration to London is mentioned (p. 1) and the influence of his teaching on "almost all areas of cultural life" (p. 2) is highlighted more clearly. These have apparently fallen victim to editorial cuts. Whether this was done with the author's consent could not be determined. In any case, the example of Freud's biography and its author Karl Johannes Thums clearly shows us how important the source-critical approach is when dealing with biographical texts, especially if one wishes to conduct biographical network research on the basis of the data contained in the lexicon entries.

4. Dimensions of biographical networks

The next step in the interpretation of biographical dictionaries is analysis of the networks of the biographed persons themselves, which can be reconstructed based on the information contained in the biographies. Franco Moretti's witty statement about "Human beings employed full time in keeping institutions alive, not vice versa" (Moretti, 2000), which resulted from a study of published obituaries in the *New York Times*, can likewise be applied to the biographies of the ÖBL. In the APIS project, biographical data is generated through the annotation of biographies of the ÖBL. This data consists of frequently mentioned names of persons, places and institutions that can be subsumed under the term "biographical building blocks". On the basis of this data, biographical networks can be built. In this section, different dimensions of these networks as well as ways of analyzing this type of data will be discussed.

4.1 Biographical Building Blocks

The biographical articles in the ÖBL are formally structured. Every entry begins with the name of the person, their professional activities, their dates and places of birth and death, and their religious faith. This is followed by a listing of the person's direct relatives, i.e. parents, siblings and children. All of this information is available as metadata. The so-called main text of a biography is unstructured text, but essentially follows the order education – career

– memberships – awards – honors. The following text is a rough translation of a single biography from German into English. It describes the life and work of artist Alexander Demetrius Goltz, who lived from 1857 to 1944:

As the son of a railway officer, he spent his youth in Rekawinkel and in Vienna, then studied painting at the University of Fine Arts in Munich (1873 to 1874, pupil of Otto Seitz) and Vienna (1875 to 1877, pupil of Anselm Feuerbach). He undertook study trips to France, England, the Orient and America, and in between visited Munich (1884 to 1888), Dachau, Paris and the Bretagne. From 1904 to 1907 he was head of set design at the Burgtheater, and from 1909 to 1910 at the Vienna State Opera. Following Feuerbach, he initially devoted himself to figural painting with historical, often also oriental topics, which he treated with lyrical sentiment and Venetian coloring, as well as the portrait, and then went on to paint landscapes and portraits in light-and-dark contrast.[7]

The text contains several building blocks, each of which describes one particular step in Goltz's education, career or life. In addition, it also defines his relations to named entities. Through his work at the Vienna State Opera, for instance, his relation to the institution is stated. This can be annotated using the highlightertool of the APIS web application as shown in Figure 4.
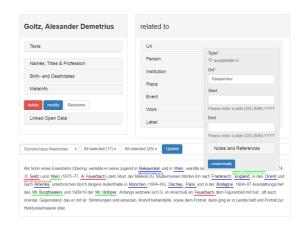

Figure 4: Screenshot showing the highlighter tool in APIS. Upon double-clicking a text passage, a pop-up-window appears and the user can enter the data manually (e.g. relation type, name of an entity, start date and end date).

The annotator can choose between several types of relations. For demonstration purposes, four different types of relations have been selected that are frequently used in biographies of artists to describe relations between persons. The networks in Figure 5 show the results and dimensions of different types like "was spouse of", "was related to", "was parent of" or "was pupil of". The last of

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[7] Goltz, Alexander Demetrius. In *ÖBL*, vol. 2 (no. 6, 1957), p. 29.

these four types provides the most promising network structure for analysis. These characteristics should be kept in mind when considering new annotation projects and future network analyses.

Lastly, which type of network a person can be linked to depends on his or her biography. The art historians Ernst Kris and Otto Kurz pointed out that certain metaphorical descriptions in biographies of artists have been repeated since antiquity (Kris & Kurz, 1995). It can thus be said that certain types of artists like the academy professor, the bohemian artist, the Orientalist painter and so on each have specific network characteristics. In the case of the Orientalist painter Johann Victor Krämer (1861–1949), more place names can be found in his biography than in many others due to his study trips to Egypt or Palestine. In the main text of an academy professor, on the other hand, one can expect numerous pupils to be mentioned. The biography of a bohemian artist such as Hans Makart is full of names of persons, reflecting his numerous contacts (Kaiser, 2017).
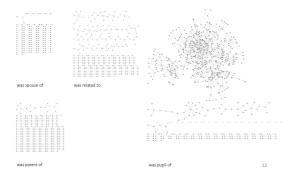
Dimensions of biographical networks

Figure 5: The different networks have the same data collection as their basis but result from different relation types.

4.2 From Migration Analyses to Spatial Art History

Place names are another category of entities frequently mentioned in biographies. They are used, for example, to describe study trips to foreign places and countries. Each time a place name is annotated in APIS, a geographical reference is automatically parsed from the matching rdf in the GeoNames database.[8] When this data is superimposed on a map, a point cloud as depicted in Figure 6 is formed. It is comparable to the concept of a scatter plot diagram. The size of a circle is determined by additional information like how frequently a place name is mentioned within

the selected sample. A specific characteristic of place names is the fact that they differ in regard to their level of detail, i.e. every imaginable type of geographical entity from countries to the smallest villages, or from mountains to excavation sites, can be encountered in biographies.

The main idea behind the corresponding mappings is the wish to gain a better understanding of how migration worked in the past. So far, the study "A Network Framework of Cultural History" (Schich et al., 2014) is the first approach to this topic in the field of the digital humanities. Based on the metadata collected from three different databases (Freebase.com, the General Artist Lexicon and the Getty Union List of Artist Names), the movements of artists were traced over a period of more than 2000 years.

Figure 6: Map showing different locations across Europe that have been the destination of a study trip by an artist.

They aim "to explain the impact of local deviations from the uncovered general patterns" through quantitative methods and statistics. Critics such as the historian Malte Rehbein have argued that this is a simplification of historical realities. From Rehbein's point of view, more qualified data beyond places of birth and death is required to make valid assumptions concerning the movement patterns (Rehbein, 2015).

Jonas Kuhn und André Blessing developed an approach based on machine learning and semi-automatic data curation for the ÖBL corpus in 2015 (Kuhn & Blessing, 2017). Their model was trained to recognize phrases describing emigration used within the main text of the biographies (e.g. "emigrierte nach", "flüchtete nach").[9]

In addition to this aspect of migration, the term spatial art history is becoming increasingly important. Scientists in this emerging field of

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[8] See GeoNames, http://www.geonames.org/, (accessed 10.01.2018).

[9] *Textual Emigration Analyses*, http://clarin01.ims.uni-stuttgart.de/tea/, (accessed 11.1.2018).

research emphasize that comprehensive art historical research needs "to cover many scales (from global to local), combine monographic and serial data, and take into account the plurality of cultural and artistic transfers that occur through both the creative process as well as its reception, as exemplified in work on cultural transfers" (Joyeux-Prunel & Dossin, 2013).

If these considerations are taken into account, APIS provides the ideal data resources for new studies in spatial art history. Simultaneously, exemplary case studies are developed within the framework to showcase how this data can be used in practice.

4.3 The *Künstlerhaus* Artist Association

The ÖBL corpus currently consists of approximately 20,000 biographies in total. Obviously, the task of annotating all of these biographies in a historically correct fashion is daunting at best. Before beginning an annotation project within APIS, it is therefore essential to precisely define a research topic. In other words, the scholar needs to compile a new prosopography. In the 1970s, when the computer-assisted humanities were in their infancy, the historian Lawrence Stone pointed out the danger that computers might "tempt [us] to abandon sampling techniques" (Stone, 1971).

There are several possibilities for sampling biographical data, like cohorts based on generations, origin or profession. Within the APIS project, one scholar is focusing on the biographies of artists. Of particular interest are artists who can be linked to the artist association *Künstlerhaus* as well as to other groups of professionals identifiable as art collectors.
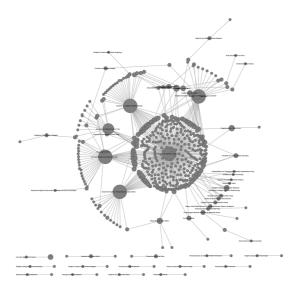

Figure 7: Two-mode network showing persons connected to institutions through the relation type "was student of".

When the data annotated in this context is filtered by the relation "was student of", the network shown in Figure 7 results. It consists of two types of nodes: institutions and persons. The more connections an institution has, the more often it is mentioned within the biographies. This is also reflected in the depiction and size of the nodes. The most prestigious institution for studying the fine arts from the time of the Habsburg monarchy up to the present day is the Vienna Academy of Fine Arts. It is thus not surprising that it is located at the center of this network (see Figure 7).

By transforming the same network into a one-mode network, different research questions can be answered. Figure 8 shows the resulting network. Connections between the nodes of this network represent students who studied at more than one university. In this specific case, the Vienna Academy of Fine Arts is strongly connected to the Vienna Technical University (TU Wien) and its predecessor, the *k. k. Polytechnisches Institut Wien*, the *Kunstgewerbeschule Wien*, predecessor of the Vienna University of Applied Arts, and the academies of arts in Munich and Prague. In other words, these educational pathways are very common for artistic careers and the narratives in the ÖBL corpus. Rare examples within this data set are represented by separated nodes at the bottom of the visualization.
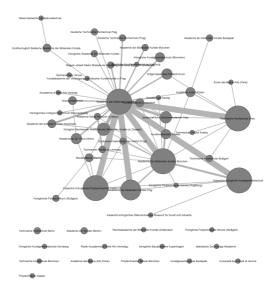

Figure 8: Graph showing the same network after transformation into a one-mode network.

5. Final Conclusion

In summary, it can be therefore said that both approaches showcase different but complementary approaches and aspects for interpreting biographical networks, and they are equally fruitful for historical studies. In the near future, the development of technical methods and infrastructures will not be the only core requirement. It will be of even greater importance to foster and strengthen this field of research by

providing comprehensive historical research on both the networks of biographers as well as those of the persons described in biographical dictionaries.

6. Acknowledgements

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