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Artist Migration Through the Biographer's Lens: A Case Study Based on Biographical Data Retrieved from the Austrian Biographical Dictionary.

Keywords

Abstract

A lexicon like the *Österreichisches Biographisches Lexikon 1815–1950* (Austrian Biographical Dictionary) seems to be as all in one cast because it is built on a set of formal rules for writing articles and some strict but basic criteria for the selection of new entries. The human reader can find information within that resource on a wide range of topics as well as detailed information about the life and career paths of historical individuals. An attempt to systematically analyze this information in a larger scale, however, is condemned to fail without the help of computational methods. In a first stage it is needed to convert unstructured text in structured

information. Pieces of information, the so called biographical building blocks, can be identified in two ways: through natural language processing methods and by manual annotations. Both processes which are intertwined and - in the case of the APIS project - done in a custom-built virtual research environment provide the existing biographical data at hand for the analyses following in later stages. This paper aims at describing the data collection process on the example of place names which can be found in artist biographies and at demonstrating possible use cases for historical network research. In this context it is also outlined how this field of research can benefit particularly from biographical data.

1   Introduction to the Austrian Prosopographical Information System (APIS)∗

The *Österreichisches Biographisches Lexikon 1815–1950* (Austrian Biographical Dictionary) was launched as a project by the Austrian Academy of Sciences in the 1950s.[1] First concepts and plans for the publication of only three to four volumes soon proved as insufficient. Up to the present day, the lexicon consists of 15 printed volumes with 69 issues. The documentation, on which basis the printed version of the ÖBL was made, started as card-index boxes. Each card contained the fundamental facts, a short description of the most important professional relations and a list of reference literature. A transformation process to a digital research environment has been introduced step by step from a first concept of a relational database system in 1997 called *ÖBL-DOC* to the *Gideon* database in 2009.[2] Now the workflow from the distribution of new biographies

1   It will be abbreviated in the following as ÖBL.
2   See Christine Gruber and Roland Feigl, "Von der Karteikarte zum biografischen Informationsmanagementsystem. Neue Wege am Institut Österreichisches Biographisches Lexikon und biographische Dokumentation", in *Biografische Lexika im Internet. Internationale Tagung der „Sächsischen Biografie" in Dresden (30. und 31. Mai 2008)* (= Bausteine aus dem Institut

to the authors to the publishing of the final articles can be done digitally. In respect of the prosopographical research topic, the former member of the editorial board Friederike Hillbrand-Grill has noted already in the 1990s that a digital approach would help researchers by conducting quantitative studies.[3] Soon after the ÖBL went online in 2011, a transnational initiative was launched to cross reference entries between the different national biographical dictionaries such as the *New German Biography* (NDB), the *Historical Lexicon of Switzerland* (HLS), the *Slovenian Biography* (SBI), the *Austrian Music Lexicon* (OeML) and smaller regional biographies from Germany.[4]

Since then, in addition to the printed version of the ÖBL, six "online only" issues have been published. The goals of this new edition are the extension of the time period covered by the lexicon up to the year 2010 and the update of rather scarce biographies from the first two volumes. For Central Europe, the ÖBL is the only comprehensive scientific reference work which covers the lives and careers of individuals who had impact through their life and work in the Habsburg Monarchy or in the successor state of Austria. At the beginning of the research project "Mapping historical networks: Building the New Austrian Prosopographical/Biographical Information System" (APIS) the data at hand was a corpus of approximately 18,000 biographies in the form of partly structured XML-files. The main tasks, were the enrichment of the unstructured text, the development of methods for analysing this kind of data and the answering of historical research questions based on the visualization of networks and maps.[5]

The application of digital humanities methods in biographical research is a relatively new field of research. Back then there didn't exist any form of comprehensive text corpora under open-access licensing which could have provided structured biographical data beyond the fundamental facts. In 2015, when the APIS project started, the workshop *Biographical Data in a Digital World* (BD2015) was held in Amsterdam. This was the first time that researchers from

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für Sächsische Geschichte und Volkskunde 14), ed. Martina Schattkowsky and Frank Metasch (Dresden: Thelem Universitätsverlag, 2009), 55–75; Ágoston Zénó Bernád, "Das Österreichische Biographische Lexikon 1815–1950. Ein Nachschlagewerk im Wandel der Zeit", in *Hortus amicorum. Köszöntőkötet Egyed Emese tiszteletére [Festschrift für E. Egyed]*, ed. Katalin Ágnes Bartha, Annamária Biró, Zsuzsa Demeter, and Gabriella-Nóra Tar (Kolozsvár: Erdélyi Múzeum Egyesület, 2017), 464.

3   Friederike Hillbrand-Grill, *Ein neues Forum der Personengeschichte* (= Österreichisches Biographisches Lexikon, Schriftenreihe 2) (Wien, 1992), 13–14.

4   If you search for the artist Heinrich von Angeli (1840–1925), the database gives you not only a list of names but also shows you that an additional biography can be found in the database of the NDB. See *Biographie-Portal*, www.biographie-portal.eu (accessed 19 February 2018).

5   The APIS project is a collaboration of the Institute for Modern and Contemporary History (INZ), the Austrian Centre for Digital Humanities (ACDH) and the Institute for Urban and Regional Research (ISR) at the Austrian Academy of Sciences.

the field of the digital humanities and biography research came together to discuss the diverse topics, tasks and challenges. In autumn of the same year, the conference *Europa baut auf Biographien* took place as a kick-off-event of APIS in Vienna. The proceedings of these events so far form the most complete overview of these topics.[6]

2   Artist migration as a topic in the realm of digital art history

Study trips, mobility and migration shaped the narratives of artist biographies since the beginning. This can be traced through the frequently mentioned places in biographical texts, starting by Giorgio Vasari's famous *Lives of the most eminent painters, sculptors, and architects* up to modernity. Cities like Florence or Rome were the centres for art and culture during Renaissance times, lost their hegemony over time and were replaced by new art metropoles. At the end of the 17th century Paris superseded Rome as Europe's most important art metropolis in connection with the newly established Salon exhibitions and art discourse.[7] "Best seen through the bird's view", one might think. In 2014 a group of researchers, among them the art historian Maximilian Schich and the social network expert Albert-Laszlo Barabasi, started a project called *A Network Framework of Cultural History*.[8] The findings of this study were object of discussion and controversy not limited to the field of digital art history – a research field related to the digital humanities. In the *Science* article they mapped the cultural history of mankind on the basis of freely accessible biographical data.[9] Critics pointed out that the study was based on weak data. *Freebase.com* and other data sources provided them only fundamental facts such as the places of birth and death of an artist.[10] The critical reception of the study

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[6]   See Serge ter Braake, Antske Fokkens, Ronald Sluijter, Thierry Declerck, and Eveline Wandl-Vogt, eds., *BD2015. Biographical Data in a Digital World 2015. Proceedings of the First Conference on Biographical Data in a Digital World 2015. Amsterdam, The Netherlands, April 9, 2015* (2015), http://ceur-ws.org/Vol-1399/ (accessed 23 November 2018); Ágoston Zénó Bernád, Christine Gruber, and Maximilian Kaiser, eds., *Europa baut auf Biographien. Aspekte, Bausteine, Normen und Standards für eine europäische Biographik* (Wien: new academic press, 2017).

[7]   See Uwe Fleckner, Maike Steinkamp, and Hendrik Ziegler, "In die Welt geschickt. Künstlerische Mobilität vom Mittelalter bis in die Gegenwart", in *Der Künstler in der Fremde. Migration – Reise – Exil*, ed. Uwe Fleckner, Maike Steinkamp, and Hendrik Ziegler (Boston: de Gruyter, 2015), 4–5.

[8]   Maximilian Schich et al., "A network framework of cultural history", *Science* 345, no. 6196 (2014): 558–562, http://barabasi.com/f/491.pdf (accessed 23 November 2018).

[9]   The tool which was developed during the project "Cosmobilities – Grenzüberschreitende Lebensläufe in den europäischen Nationalbiographien des 19. Jahrhunderts" should be mentioned. *Cosmotool*, https://cosmotool.de.dariah.eu/cosmotool/personsearch/ (accessed 23 November 2018).

[10]   Malte Rehbein, "Digitalisierung braucht Historiker/innen, die sie beherrschen, nicht beherrscht", *H/Soz/Kult*, 27. November 2015, www.hsozkult.de/debate/id/diskussionen-2905 (accessed 18 April 2018).

made clear that a more detailed set of data is needed to make valid assumptions about the migration of artists.

Schich was the first to conduct such a case study with artist biographies. Historian Sarah Panter and her colleague Michael Piotrowski, a computer linguist, attempted a similar study, but from a historical perspective and with a different focus. Panter coined the new term "cosmobilities" based on two concepts framed by sociologists: "cosmopolitan" and "mobilities". This new term stands for a methodological approach which should be acknowledged here because of its "stimulating impetus for analysing transnational lives".[11]

For the sake of completeness another project should be mentioned. In the republic of letters project, the amateur architects, who went in the 18th century during their Grand Tours to Italy, were subject of a quantitative case study. The authors of this study emphasised that they looked for "aggregates and patterns, but not in merely quantitative terms".[12] They took a sample of sixty-nine persons from the digitized prosopographical *Dictionary of British and Irish Travellers in Italy, 1701–1800* as a basis for their analyses of correlations between the travel activities and the emergence of social networks.

In comparison to that, the research project APIS deals with a later epoch and isn't limited to a group of elites, but also includes people from the so-called second rank. It aims to provide researchers with access to prosopographical data hidden in the ÖBL biographies. To achieve this goal the text corpus is processed with natural language processing methods. Furthermore, manual annotation with a web-based highlighter tool and data curation is done by historians with specific domain knowledge. With each annotation in the web application, a connection to a linked open data source like the *Integrated Authority File* (GND) or *Geonames.org* (GeoNames) is established. From these resources, information is retrieved through an automatic parsing process. With this method, place entries in the APIS database receive not only an URI and a label in the form of a string but also geographic coordinates that are stored as metadata in these external data sources.[13] The following section introduces the sample data set collected within the APIS web application and exemplifies with

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[11] Sarah Panter, Johannes Paulmann, and Margit Szöllösi-Janze, "Mobility and Biography: Methodological Challenges and Perspectives", in *Mobility and Biography* (= Jahrbuch für Europäische Geschichte / European History Yearbook 16), ed. Sarah Panter (Berlin and Boston: de Gruyter, 2016), 5.

[12] Giovanna Ceserani, Giorgio Caviglia, Nicole Coleman, Thea de Armond, Sara Murray, and Molly Taylor-Polesky, "British Travelers in Eighteenth-Century Italy: The Grand Tour and the Profession of Architecture", *American Historical Forum* 122, no. 2 (April 2017): 449, DOI: 10.1093/ahr/122.2.425.

[13] "Integrated Authority File (GND)", available under the following URL: http://www.dnb.de/EN/Standardisierung/GND/gnd_node.html (accessed 4 December 2017); "GeoNames",http://www.geonames.org/ (accessed 4 December 2017).

the help of auto-biographical sources three different migration stories of artists which can be found in the ÖBL.

With this, it is intended to emphasize the human condition behind all the following networks, maps and statistics. In connection to *A Network Framework of Cultural History* the final section demonstrates what assertions about migrations can be made with a more detailed set of biographical data.

2.1   The "Künstlerhaus" data collection

When working with biographical data, the question how to build a sample is inevitable. The following quote originates from the English historian Lawrence Stone. At the beginning of the 1970s, when scholars started to discuss how computers can be applied in humanities research for the first time, he already pointed out that it will become more and more important for prosopographical research to reason data sampling through methodology.

> The availability of the computer will increasingly tempt some historians to concentrate their energies on problems that can be solved by quantification, problems which are sometimes – but by no means always – the most important or interesting ones. It will also tempt them to abandon sampling techniques (…).[14]

Sampling of biographical data can be done in numerous ways: cohorts can be compiled according to their belonging to a generation, the origin of a person or upon thematic criteria. In this particular study the decision was in a first instance to select a group based on their profession. In total there are about 2,500 artists in the ÖBL.[15] After that, every artist who was member of the artist association "Genossenschaft bildender Künstler Wiens" was selected. This was done by running through the yearly published lists of members which are still preserved in the archives until today. This decision was made because of the prominence and the art historical relevance of this institution. In the end the collection for this study consisted of 506 ÖBL biographies.

The association itself, also known by its alias name "Künstlerhaus", was founded in the year 1861.[16] At this point in history, except for the Albrecht-Dürer-Verein, it has been the only artist association in Vienna and the most

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[14]   Lawrence Stone, "Prosopography", *Daedalus. Historical Studies Today* 100, no. 1 (1971): 72.

[15]   The "Künstlerhaus" data collection was built at the beginning of the APIS-project in 2015. All biographies published until the 14th volume (65th issue) of the ÖBL have been initially imported into the database. Approximately 2,255 (12,5 %) of the ~18,000 biographies in the lexicon were artists' biographies at this point. The data collection grew because of an additional data import of the ÖBL print (66th issue) and (4th) online edition at a later stage of the project in 2016. At the time this article was written in 2018, the database therefore consisted of ~2,500 biographies of artists (+ 1,4 %).
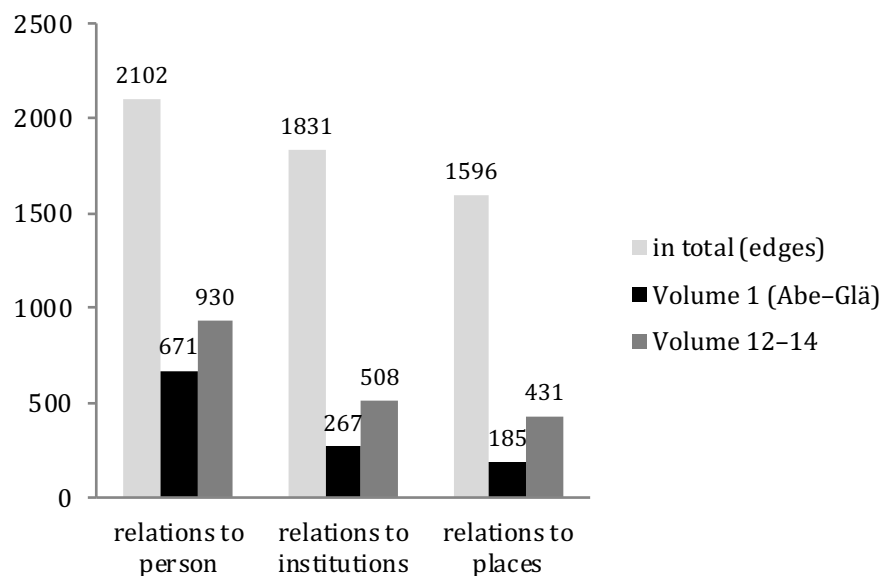
[16]   Instead of the association's full name it's alias name "Künstlerhaus", which was used by contemporaries of this time, will be used synonymous in the following.

important professional network for artists in the Habsburg Monarchy. With the founding of the Vienna Secession 1897, and some years later that of the Hagenbund, for the first time the monopoly of the Künstlerhaus was challenged. For this reason, admission to the association and the participation in the exhibitions in the building at the Karlsplatz have long been decisive for the acknowledgement of the social status of an artist.

This leads to the following initial questions: Which places are frequently mentioned in artists' biographies? What categories can be used for describing the various relation types? How can these categories be distinguished statistically? Before starting the manually performed annotation project in the APIS web application, it was assumed that relations between the biographies and the various entities wouldn't be equally distributed. This assumption was made on the basis that artists' biographies are written differently in comparison to that of lawyers, politicians, clergymen or physicians. The numbers resulting from the annotation project are shown in figure 1. In ÖBL biographies it is common practice to mention place names instead of institutions (e.g. "studied in Vienna" instead of "studied at the University of Vienna"). It also has to be considered that the circumstances for historical research has been completely different in the 1950s compared to nowadays. The digitalisation of resources from civil registers, letters, historical newspapers or literature has advanced significantly in the past decades.

Finding categories for the quantification of mobility is not an easy task. Especially when taking the timespan and the regions covered by the lexicon into account. To start at any point, it was necessary to define some basic categories. The following text passage describes a small section from the life and career path of the Austrian painter Alexander Demetrius Goltz as it is depicted in the ÖBL. "He undertook study trips to France, England, the Orient and America and in between visited Munich (1884 to 1888), Dachau, Paris and the Bretagne."[17] Every place name mentioned in this sentence is underlined to illustrate those passages which were annotated in APIS (figure 2). In this case, each of the first four places would be the destination of a study trip. Therefore, the category "was place of a study trip" was chosen. The following place names must be annotated differently because of the diverging textual description. It is obvious that the biographer wanted to point out that these stays lasted longer.

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[17]   N. N., "Goltz, Alexander Demetrius, Maler", in *Österreichisches Biographisches Lexikon 1815–1950*, Bd. 2 (Lfg. 6, 1957), 29.

Figure 1. This diagram shows artists' biographies and their relations to other persons and other APIS entities (places, institutions). In the first volume of the ÖBL 385 artists can be found and for 82 of them the membership in the Künstlerhaus can be proven. A comparison of this group makes it necessary to take all published artists' biographies of the last three volumes together into account. Even though these volumes contain nearly the same amount of biographies, these articles exceed the earlier entries of the ÖBL in quality and detail of information. This fact can be concluded out of the number of relations to places or institutions. The most significant growth can be seen by these two kinds of entities. (graphic of the authors)

Once all 506 biographies are annotated through the APIS web application, the analyses of the used categories can be started. Figure 3 shows the results of this step and in descending order the most frequent types of person-place relations as they appear in the artists' biographies of the ÖBL.

Within the digital art history discourse, it is often mentioned that building such categories is one of the most important epistemological tasks during a project. Miriam Posner made that clear when she stated the following during an interview:

> But in my own work, I've found that I gain things, too, not only from the finished product of, for example, a network diagram, but from the iterative process that goes into making it. (…) Sometimes this tension between what goes unsaid in

text-based scholarship and what needs to be made explicit in a data-based project becomes the real question at the heart of your work.[18]
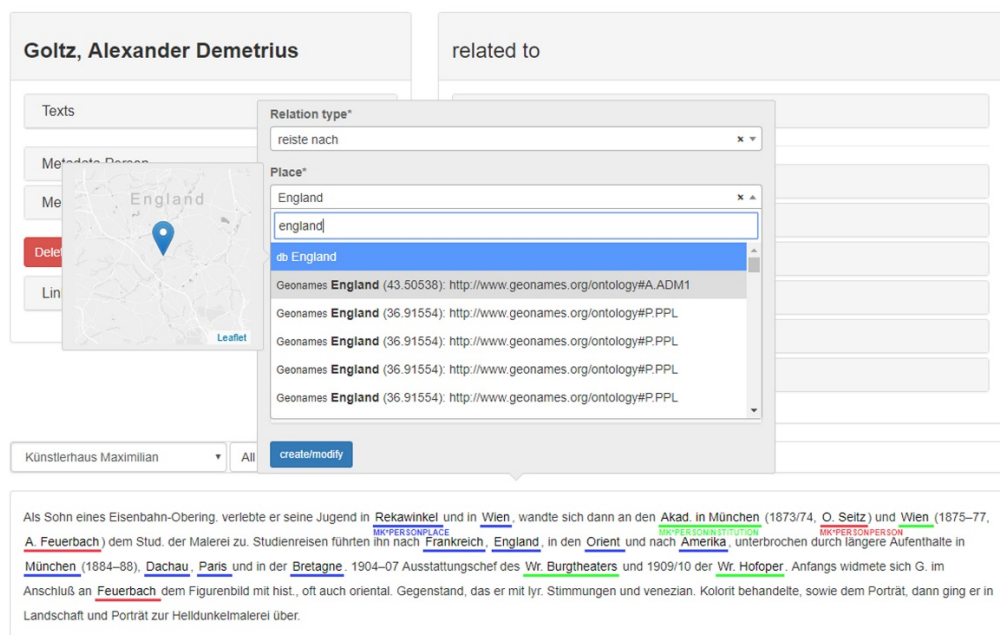

Figure 2. The screenshot shows how text passages are annotated in the web application. First, the type of relation "was place of a study trip" (in German "reiste nach") must be selected. Second, the right entity must be chosen. After typing the name of the place, an auto-complete-function brings up existing entries of the database (indicated as db) and entries from external resources (indicated as GND or GeoNames). If the researcher scrolls through the list map tiles appear and show where the place is situated on the overall map. Depending on what type of entity is annotated, the text is finally highlighted in blue (place), green (institution) or red (person). This provides the researcher with an overview of the progressing annotation process.

The difference of 0,2 percentage points between the number of places for birth and death can be explained through the fact that in some cases this information is simply not available. In other words, the author of the biography couldn't find any clues of where and how the artist had died. The least often mentioned relation types in this sample are "migrated to" (3), "went into exile" (2) or "was deported to" (2).[19]

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[18]   Miriam Kienle, "Digital Art History 'Beyond the Digitized Slide Library': An Interview with Johanna Drucker and Miriam Posner", *Artl@s Bulletin 6*, no. 3 (2017): 125, http://docs.lib.pur-due.edu/artlas/vol6/iss3/9 (accessed 23 November 2018).

[19]   The numbers between the round brackets stand for the frequency.
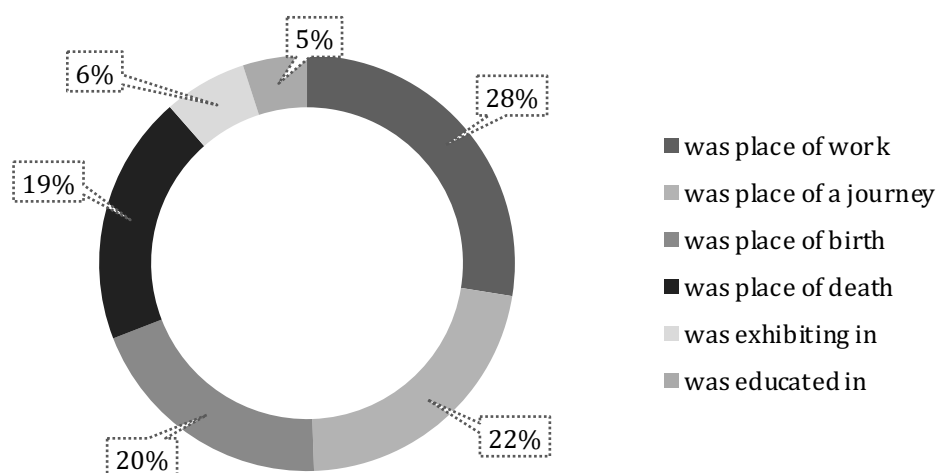
Figure 3. The diagram shows the percentage of the different person-place relation types which were used during annotating the 506 artists' biographies. These categories paraphrase on a general level the individual context in which an artist is related to a place mentioned in his biography. Therefore, places of work constitute the highest share (28 %) within all places mentioned in the biographies of artists, followed by places visited during a study trip (22 %). Places attended by reasons of education only represent 5 % of all places. (graphic of the authors)

2.2   Different angles on three migration stories

The stories, which can be told in connection with the biographies of the following three artists, are intended to illustrate the diversity of migration stories. For this purpose, Leopold Carl Müller (1834–1892), Josef Engelhart (1864–1941) and Jehudo Epstein (1870–1945) were chosen.

The first artist, Leopold Carl Müller, can be characterized as an Orient painter. He was a friend of some of the most influential painters of the so called Ringstrasse era like Hans Makart or August von Pettenkofen. A photography, which is frequently reproduced and is today in possession of the image archive of the Austrian National Library shows him together with his colleagues and friends during a study trip to Cairo. The ÖBL summarises his travelling activity as follows: "M. was on journeys a lot: 1861/62 to Hungary, 1870–72 to Venice, 1872/73 to Sicily, then several times to Egypt."[20] This line gives only a brief overview. By consulting the monograph *Carl Leopold Müller. Ein Künstlerleben in Briefen, Bildern und Dokumenten* written by Adalbert Franz Seligmann it is possible to get a better knowledge of what exactly the painter did during his

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[20]   Every quote from the ÖBL is a corresponding translation by the authors of the original German text in the lexicon. – Hans Schöny, "Müller, Leopold Karl (1834–1892), Maler und Zeichner", in *Österreichisches Biographisches Lexikon 1815–1950*, Bd. 6 (Lfg. 30, 1975), 423–424.

stays at the various locations. With this book, Seligmann published his transcriptions of the personal correspondence at request of the artist's relatives. After finishing his studies in Vienna, the first study trip of the artist took him to the Hungarian countryside. His destination was the small town of Szolnok, which later became famous through the founding of its own artist colony. 1861 Müller wrote to his father after arriving at the town of Szolnok:

> I have arrived in Szolnok in a good mood and safe and sound, have been talking much about politics on my way and was able to settle myself into the local condition. I have established my atelier in the house of a miller, which is not so far away from the miller's own domicile. (…) The Austrian government tries everything to provoke the Hungarian people to any violent uprise – but every provocation and try had failed because of the smart leadership of this people.[21]

In another letter, addressed to his friend Ferdinand Julius Laufberger[22], he wrote about his stay in Venice in the year 1871. There he illustrated the advantages of the Italian town in comparison to Paris during winter:

> As I had seen it coming, Pettenkofen [note: August Pettenkofer (Pettenkofen), 1822–1889] is completely unhappy that he didn't followed my example. Yesterday I received a writing from him in Paris. Within that, he informed me that he hadn't seen the sky since his arrival and that, while writing these lines by candlelight on two o'clock afternoon, in which from dirty blackened snow and thick clouds of fog can be read. (…) How can it be for a German, if he must not do, to go to Paris at this time of the year. It can't be cosy there right now under all these fools.[23]

In 1875, as Müller plans to accompany the Prince of Wales on his journey to India disappeared in sound and smoke, he decided to leave Venice in direction to Egypt.[24] He hoped that besides his other friends also Pettenkofen would join him on his study trip. Müller left in November by ship. He wrote his first letter to Laufberger at the 7th of December that year:

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[21] These and the following passages are corresponding translations by the authors from German into English. – See Adalbert Franz Seligmann, ed., *Leopold Carl Müller. Ein Künstlerleben in Briefen, Bildern und Dokumenten* (Wien: Rikola Verlag, 1922), 14–15.

[22] See Hans Schöny, "Ferdinand Julius Laufberger (1829–1889), Maler und Graphiker", in *Österreichisches Biographisches Lexikon 1815–1950*, Bd. 5 (Lfg. 21, 1970), 49.

[23] Seligmann, *Müller*, 56–57.

[24] To be part of this undertaking, Müller travelled to England for meeting the prince in person. The whole journey was published with plenty of illustrations in book form later. A wide range of items can be found in the collection of the Royal Collection Trust. One interesting item is an illustrated map which shows the path of the journey. See Royal Collection Trust, https://www.royalcollection.org.uk/collection/themes/trails/the-prince-of-waless-tour-of-india-in-1875-6 (accessed 2 February 2018).

Beloved friend! I'm, as you know once again in my loved Cairo – and I am delighted. You might know that Makart, Huber [note: Carl Rudolf Huber, 1839–1896] and Lenbach [note: Franz von Lenbach, 1836–1904] are also here. I lost plenty of my time by wandering around with them and so on. Pettenkofen got aquaphobic in Triest and returned home, although he had intended to come here.[25]

On this occasion the previous mentioned photography was shot. A similar photography, showing count Karl Khevenhüller, architect Adolf Gnauth, Lenbach, Makart, Huber and Müller, can be found in Seligmann's book. Seligmann as a journalist and art critic is an interesting character, because in the 1920s he was writing some biographies for the *Neue Österreichische Biographie* (e.g. Heinrich von Angeli, Franz von Defregger, Pauline von Metternich, Johann Nepomuk Graf von Wilczek), the prequel of the ÖBL, and therefore is strongly connected with the early history of the lexicon.[26]

As a second example, the story of Josef Engelhart should be told. His fame is grounded on his role as one of the co-founder of the Vienna Secession. Legend has it, that because his painting *Kirschpflückerin* was rejected by the jury of the annual exhibition of the Künstlerhaus, the Secession was founded. It was the trigger for the upcoming events and is known in art history for exactly that reason. In the ÖBL it is written:

> On the wish of his parents he studied at the Technical University of Vienna, but then went on to the academies of Vienna and Munich and, after a long time stay at Paris (1890), made study trips to Spain and Italy.[27]

In his autobiographical novel *Ein Wiener Maler erzählt* he describes his stay in Paris in detail. During this time, he came into contact with many artists and actors.

> My cottage was behind a tenement in the Rue des Martyrs, rising up the Montmartre. A door at the end of the courtyard led up a few steps to it. Through the adjoining gardens and mansion-like houses, the whole thing had an almost rural character, and if in summer the foliage of the chestnut trees covered the front of the house, one could actually feel like being transferred into a small country town, even though one was in the heart of Paris. I moved here as subtenant of the painter Mesplès [note: Paul-Eugéne Mesplès, 1849–1924]. To the left of my studio was the property of the successful comedian Gandillot [note:

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25   Seligmann, *Müller*, 109.
26   See Maximilian Kaiser, *Der Wiener Diskurs zur Avantgarde. Rekonstruktion und Analyse des Diskursnetzwerkes* (Dissertation, Universität Wien, 2017), 147.
27   N. N., "Engelhart, Josef, Maler und Bildhauer", in *Österreichisches Biographisches Lexikon 1815–1950*, Bd. 1 (Lfg. 3, 1956), 251.

Léon Gandillot, 1862–1912], to the right was the garden and home of the member of the Comédie Francaise Talbot [note: Denis-Stanislas Montalant (Talbot), 1824–1904], who, despite his high years, still received a lot of young ladies whom he taught in acting.[28]

These contacts had been very useful when he travelled through Europe on behalf of the newly formed Vienna Secession. In this mission he sought allies among the most famous of European artists like Edgar Degas or James McNeal Whistler, to strengthen the international character of the artists' association Vienna Secession and its local exhibition program. Engelhart's novel is full of anecdotes. Some of these episodes, for example his meeting with Whistler, must be seen especially from his point of view and his understanding as an agent of the Secession.

The Jewish painter Jehudo Epstein, our third example for an artist's life and migration story, has also written an autobiography. In contrast to Josef Engelhart who got supported by his parents and was lucky to marry into a wealthy family, Epstein was born in a jewish ghetto in Sluzk (today's Republic of Belarus) in poverty.[29] He moved to Vienna in hope of success and planned to make his living as a painter. This is the leading topic of the book *Mein Weg von Ost nach West*.[30] Twenty-six years before this book was published, the well-known German art critic Franz Servaes wrote an article about Epstein. Servaes resided at this time in Vienna and was well connected within the art scene of the capital.[31] This article was part of a larger anthology with the name *Jüdische Künstler* which was edited by the famous Zionist Martin Buber. For the biographical side notes Servaes used quotes from a letter Epstein provided him for the purpose of writing his article.

About the career and life of Jehudo Epstein so far, we let the artist speak for himself. He is writing the author of these lines (…) As I had learned enough of drawing, I decided to study at an academy and because it was particularly difficult for jews to study in St. Petersburg, I decided to go to Vienna. With fifteen

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[28]   Josef Engelhart, *Ein Wiener Maler erzählt. Mein Leben und meine Modelle* (Wien: Andermann, 1943), 48–49.

[29]   Josef Engelhart was the child of the butcher Josef Anton E. (1838–1900) and Maria Apfelthaler (1842–1933). He married 1895 Dorothea (Doris) Mauthner (1871–1967), the daughter of industrialist and brewery owner Karl Ferdinand Mauthner v. Markhof. – See Wien Geschichte Wiki, https://www.wien.gv.at/wiki/index.php?title=Josef_Anton_Engelhart (accessed 30 April 2018).

[30]   See Jehudo Epstein, *Mein Weg von Ost nach West. Erinnerungen* (Stuttgart: J. Engelhorn & Nachfahren, 1929).

[31]   As an example, he was part of the organizing team in 1903 of the so called "Kunstwanderungen". This was a series of guided tours through art collections of the aristocracy and their palaces. See Kaiser, *Wiener Diskurs,* 52–53.

guilders in my pockets, without speaking any German, without any sort of recommendation, I came to Vienna and lived through hard times.[32]

Besides his first steps in Vienna, he managed to establish himself as a painter. His breakthrough came by winning a prize sponsored by the Michael Beer foundation. With this support he could travel to Rome. About the results of this journey he wrote:

> The works of the last eighteen months, I spent in Rome, I presented to the general public through a solo-exhibition at the Künstlerhaus, from November till December, 1901.[33]

The first version of his biography in the ÖBL was published in the mid-1950s. Because of that, the initial information about the artist's life which can be found in the biography was rather scarce:

> He has been member of the Künstlerhaus since 1902, made several journeys and won international and national awards. The ashes of the emigrant were buried in Vienna 1949.[34]

The newly updated version from the year 2015 is much longer, goes much more into detail and includes the circumstances of his emigration:

> In December of 1934 E. travelled out of financial reasons to Johannesburg (his furniture from his studio and his apartment in Vienna was stored in the factory of Bernhard Altmann, one of his close friends, in 1936) and he was able to establish himself with the painting of portraits. (…) After the Anschluss in 1938, his temporary stay changed into emigration.[35]

After the first appearance of the avant-garde in Vienna, Epstein became one of its most rigid critics. In several articles he criticised art historians, mostly Hans Tietze, for their support of the younger and more international oriented generation of artists.[36] Besides all controversies, the art historian Max Eisler spoke at the dinner which was given on the occasion of Epstein's journey to Palestine in 1927.

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32 See Franz Servaes, "Jehudo Epstein", in *Jüdische Künstler,* ed. Martin Buber (Berlin: Jüdischer Verlag, 1903), 163–165.

33 Ibid., 165.

34 N. N., "Epstein, Jehudo, Maler", in *Österreichisches Biographisches Lexikon 1815–1950*, Bd. 1 (Lfg. 3, 1956), 258–259.

35 Rene Schober, "Epstein, Jehudo (1870–1945), Maler und Illustrator", in *Österreichisches Biographisches Lexikon. Online Edition*, 30.11.2015, http://www.biographien.ac.at/ (accessed 2 February 2018).

36 See Kaiser, *Wiener Diskurs*, 136–137.

> The man, of whom I want to speak, is certainly not an admirer of my profession. (…) With this I come to the third and last encounter with Epstein, the encounter with his jewish soul. Out of his autobiography, she can be understood at its clearest (…) How he managed to become successful as a painter out of the poorest beginnings through hard work, can be cause for admiration. On this difficult path he relentlessly worked also on his humanity and didn't lose his deeply rooted jewish idealism, this is connecting him only closer with our group of people and therefore imposes the duty on us to honor a farewell solemnly, no, cordially.[37]

Eisler's speech can be read as a gesture of reconciliation with Epstein. This is certainly based on commonalities such as Jewish life in Vienna. It is also possible that he was moved by the fact that the departure of an artist which is important for his religious community was imminent.

2.3   Biographical Data and Historical Network Research

As these few examples already show, the reasons for migration are very diverse. The authors of the ÖBL biographies used a wide range of historical sources because they had to cover an artist's life completely from birth until death. These materials could be archival resources, newspapers, journals, ephemera or scholarly work. Biographical data collected from the ÖBL biographies always reflects this multitude. This implies that this data is also incomplete and historically shaped.[38] In contrast to that historical network research is built upon the systematically exploitation of one singular type of resource such as exhibition catalogues. One can therefore ask the question whether biographical data can be of any value to serious academic research. While this is a justifiable critique it has to be noted that APIS data allows for a macro perspective that wouldn't be possible based on heterogeneous data such as primary resources. To allow the proper distinction between historical network research and analysis of biographical data with methods from network analysis in the future, the term "biographical network research" should be introduced here.

Do any further applications for biographical data exist? This question can only be answered in respect of the emerging research field of digital art history. The application of digital methods is of particular interest when it comes to answering spatial research questions:

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[37]   Max Eisler, "Jehudo Epstein. Eine Tischrede", *Menorah. Jüdisches Familienblatt für Wissenschaft, Kunst und Literatur* 5, no. 3 (März 1927): 158–167.

[38]   Matthias Schlögl et al., "Biographik in den Digital Humanities – Kritische Bestandsaufnahme und quantitative Analysemöglichkeiten am Beispiel des Österreichischen Biographischen Lexikons 1815–1950", in DHd 2018. Kritik der digitalen Vernunft. Konferenzabstracts. Universität zu Köln, 26. Februar bis 2. März 2018, ed. Georg Vogeler (2018), 360–363. http://dhd2018.uni-koeln.de/wp-content/uploads/boa-DHd2018-web-ISBN.pdf (accessed 23 November 2018).

> To be coherent and comprehensive, art historical research needs to cover many scales (from the global to the local), to 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, and the comparative approaches of cultural and social history.[39]

This quote originates from two scholars working on the Artl@s-project. Within this framework, serial data such as exhibition catalogues of the Paris Salon among others has been collected and entered into a database. The retrieved data was the basis for the visualisation of networks and maps. The systematic exploitation of these primary sources is a commonality with other projects in the realm of digital art history.[40] Since networks are based on vectors collected in the form of tabular data, the possibilities of filter criteria and attributes are limited due to technical standards. In APIS most of the information is captured in relations between entities rather than attributes of nodes. This implies that filtering of nodes needs to be done partly on relations to other nodes, something that is currently only insufficiently possible in the General User Interface (GUI). But on the other hand, the theoretical assumptions based on network structures are numerous. It therefore would make sense to use biographical data to bridge the gap between ideal conception and the possibilities available to us. So, it would not only be possible to read out of network structures the importance of an actor, but also ask questions about which places a person visited and institutions he or she attended during the education and career path. These are questions of particular interest with regard to cultural transfers and social history of art.

3   Beyond *A Network Framework to Cultural History*: analysing migration patterns based on APIS data

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[39]   Béatrice Joyeux-Prunel, Catherine Dossin, and Sorin Adam Matei, "Spatial (Digital) History: A Total Art History? – The Artl@s Project", *Visual Resources. An International Journal of Documentation* 29, no. 1-2 (12 March 2013), 48, DOI: 10.1080/01973762.2013.761119.

[40]   The following list gives a brief overview about which research and exhibition projects has been using this methodology since 2010: Informatics. Data driven analyses of art related data | Impuls-Bauhaus | Netzwerk Will Grohmann | Hagenbund. An international artist network | Avant-Garde Network in the Twenties. The International Connections of Lajos Kassák and his journal MA | Artnet: Modern and Contemporary Artist Networks, Art Groups and Art Association | Artl@s | Map Tap: Mapping the Antwerp Brussels Oudenarde tapestry complex via social network analysis 1600–1700 | Exhibitium project | Exhibitions of Modern European Paintings 1905–1915 | Cornelia – a database for analysing creative communities.

Three types of analyses can be done with this biographical data at hand: a visual exploration of migration and mobility through a) networks, b) maps and c) alluvial diagrams. All three methods should be discussed in the following two sections.

As mentioned above, Schich and his colleagues concentrated in their study on fundamental facts as provided by the databases. This can be done with the APIS data as well. But before the network is analysed some basic operations are necessary. First of all, the data export gives the user a two-mode network which consists of two types of nodes: namely person and places. In our case, the relations between the entities are "was place of birth" and "was place of death". Vienna is clearly the central hub in this network. A quick first glance suggests that migration primarily took place from the periphery to the centre of the Habsburg Monarchy. This assessment coincides with findings presented in the literature on historical migration research. For instance, Heinz Fassmann states that in the 19th century in Europe in general and in the Habsburg Monarchy in particular spatial mobility in the majority of cases meant rural-to-urban migration within the borders of a state.[41]

In the next step it is transformed to a one-mode network which consists of places only. After completing this step, each edge represents a person connected to more than one place through the given relation types. Isolated nodes represent cases were a person was born and has died at the same place. At the same time as the amount of data has decreased, new interpretations become possible.[42] The comparison of these two graphs is shown in figure 4.

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[41] Heinz Fassmann, "Europäische Migration im 19. und 20. Jahrhundert", in *Migrationen. Globale Entwicklungen seit 1850* (= Globalgeschichte und Entwicklungspolitik 6), eds. Albert Kraler et al. (Wien: Mandelbaum Verlag, 2007), 38.

[42] "The multiplication can also be applied on two-mode matrices. From this, two-mode networks can be transformed into interesting one-mode networks." See Jürgen Lerner, "Beziehungsmatrix", in *Handbuch Netzwerkforschung*, eds. Christian Stegbauer and Roger Häußling (Wiesbaden: VS Verlag, 2010), 361.
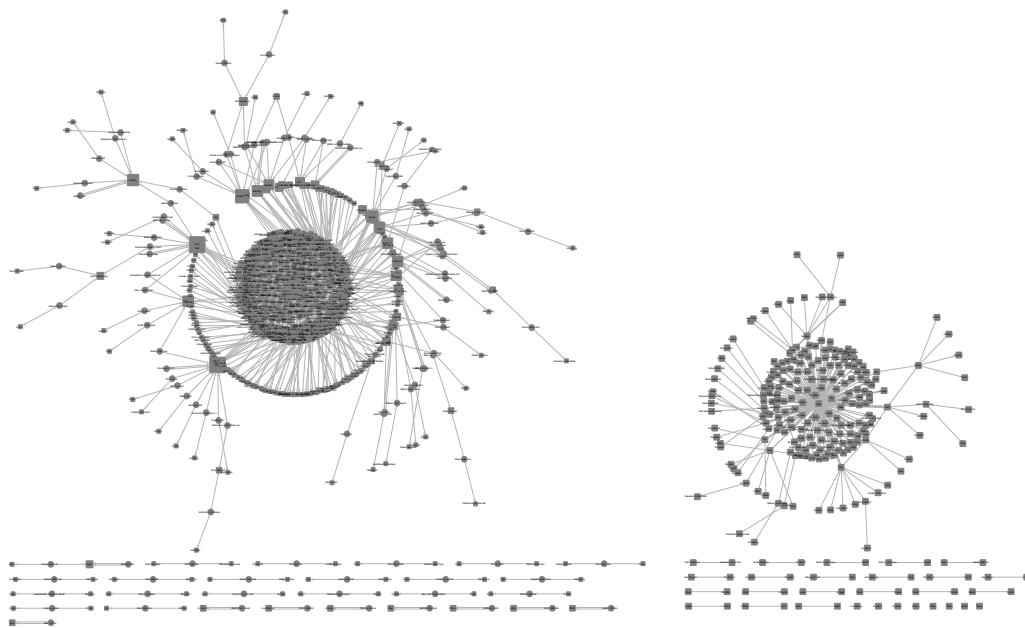
Figure 4. These two graphs show the network after the data export (left) and after the transformation to a one-mode network (right). Originally it consists of 769 nodes (265 of them are places) and 1007 edges. In its new form there are only the places with a fraction of the edges. On the other side the edge weight has increased. (graphic of the authors)

Edges can be read as migration from place A to place B. So, the newly drawn graph on the right shows, for example, how often persons have moved between those places. This is depicted through the width of an edge in this network. One advantage of the APIS data is that every place has its geographic coordinates through the linking to the norm data of the GeoNames database. This makes it possible to display the same network on a map (figure 5).

What are the most common migration paths in this network? One way of answering that question would be to count the multiplicity or numbers of the edges in this network. All values are computed through the visualisation software *visone*. In descending order, the most frequent paths outgoing from Vienna are therefore: Graz (12, meaning that 12 out of 506 persons were born in Vienna and have died in Graz), Prague, Klagenfurt and Budapest (10), Linz, Mödling and Lemberg (8). And what are the most distant migration paths in this network? The actual distance becomes better understandable in this view of the network data. Calculated from Vienna, the most distant places are New York City (6,795 km), Södertörn (1,707 km) and Syrakus (1,240 km).[43]

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[43]   The distance is calculated with the web service luftlinie.org. See Stephan Georg, Luftlinie.org, https://www.luftlinie.org/ (accessed 12 March 2018).
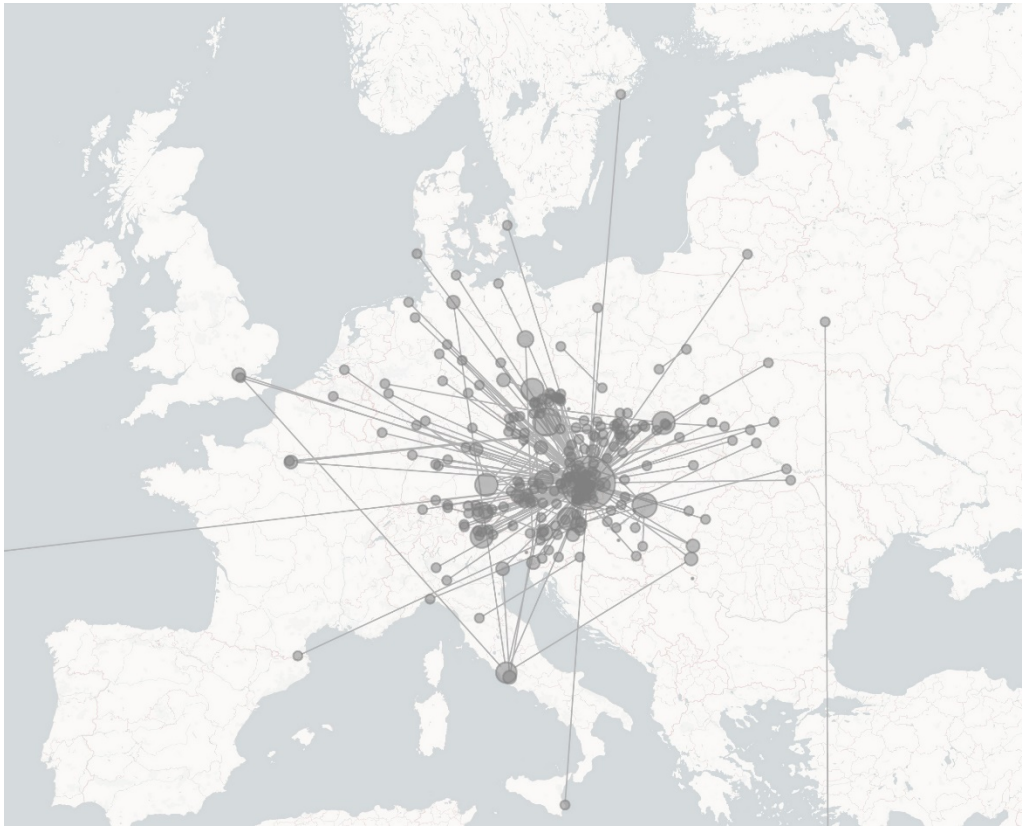
Figure 5. This map shows a similar migration network to *A Network Framework to Cultural History*. It is based on the birth and death places of artists in the ÖBL ("Künstlerhaus" data collection). Two edges lead beyond this map tile: that of Jehudo Epstein and Josef Urban (1872–1932). Epstein's emigration was mentioned before in this paper. The architect Urban fled 1908 after financial problems from Vienna to the US. In New York City he could establish himself professionally again.

But let us return to the biographies and actors of this network. The painter Eduard Ender (1822–1883), as one example picked out of the whole, was born in Rome and died in London. His biography in the ÖBL describes his life as following: "Pupil of his father Johann Nepomuk and the academy of fine arts Vienna, last educated in Paris. Mostly rejected from contemporary critics."[44] His migration path is easy to grasp in the cartographic representation because of its uniqueness in this dataset. But two steps between Rome and London as mentioned in his biography are missing. First of all, his time as a student of the Academy of Fine Arts in Vienna is implicit information. Following the annotation guidelines defined by the research group it therefore can't be

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[44]   N. N., "Ender, Eduard, Maler", in *Österreichisches Biographisches Lexikon 1815–1950*, Bd. 1 (Lfg. 3, 1956), 247.

annotated in the text. Secondly, for completing his studies he went to Paris. This is given in the text, but it was annotated with the relation type "was educated in". So, it is clearly not displayed on this map. Other edges in this network which connect Vienna with distant places like Syrakus in the South of Italy are obvious indications for migration but likewise rare examples.[45]

The fact that Vienna, as the capital of the Habsburg Monarchy, is the central hub in this network is a characteristic result out of the sampling method. The GeoNames feature code "PPLC" stands for "capital of a political entity". Like other capital cities such as Prague, Budapest or Rome someone might think that they are the most prominent nodes. But by measuring the centrality value degree it becomes clearer that these places are not the only feature category within the top-10 of this network. Munich and Innsbruck, for example, both cities of regional importance follow shortly thereafter in the ranking.[46] Munich was not only important because of its relatively close distance to Vienna but through a similar set of cultural institutions. The Academy of Fine arts Munich was very popular under artists from all over the Habsburg Monarchy, the Glaspalast provided a generous exhibition platform and the artist association "Münchner Künstlergenossenschaft" offered possibilities comparable to the Künstlerhaus. Innsbruck however was the catchment area for people of the alpine regions, especially the southern and eastern parts of Tyrol and Vorarlberg in the West. Its importance lies in the fact that it has been the cultural and institutional centre of a transit region. To the south there were the art academies of Florence and Milano, to the north, as it was already mentioned, the academy of Munich and to the east the Academy of Fine Arts Vienna. Apart from Vienna, mobility between cities and villages is numerous but the reoccurrence of such paths is rather rare.

A subset of this dataset are places where a person both was born and has died. They are displayed as single points on the map. This case is not very typically for the members of the Künstlerhaus as the dataset shows. It regards just seven out of 506 persons. But in some of these cases it is still possible to find a migration story. The painter József Rippl-Rónai (1861–1927) is such a candidate. He was born and died in the village of Kaposvár in Hungary, but his ÖBL-biography is full of places which he visited in context of his work and study trips:

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[45]   In this case it is the biography of the Orient painter Franz Xaver Kosler (1864–1905). He was a pupil of the painter Carl Leopold Müller and followed his teacher in the choosing of his topics. Several times he exhibited in exhibitions of the Künstlerhaus, in the Glaspalast Munich and in London. Finally, after a long-lasting illness he decided to move to the city of Syrakus where he died in December 1905. See Anonymus, "(Walter Kosler †.)", *Neues Wiener Tagblatt* 39, no. 355 (24 December 1905), 16.

[46]   GeoNames categorize both cities as feature category "seat of a first-order administrative division" (PPLA).

After graduating from grammar school, he was educator of the duke Zichy's family and started painting. Since 1884 he studied at the Academy of Fine Arts Munich and was the pupil of Herterich. From 1887 on he worked in Paris for Munkacsy. (...) Since 1892 he shared a studio with the sculptor Maillol in Neuilly. Around 1900 he returned to Hungary and lived some years in Budapest and since 1902 lived in Kapsovár.[47]
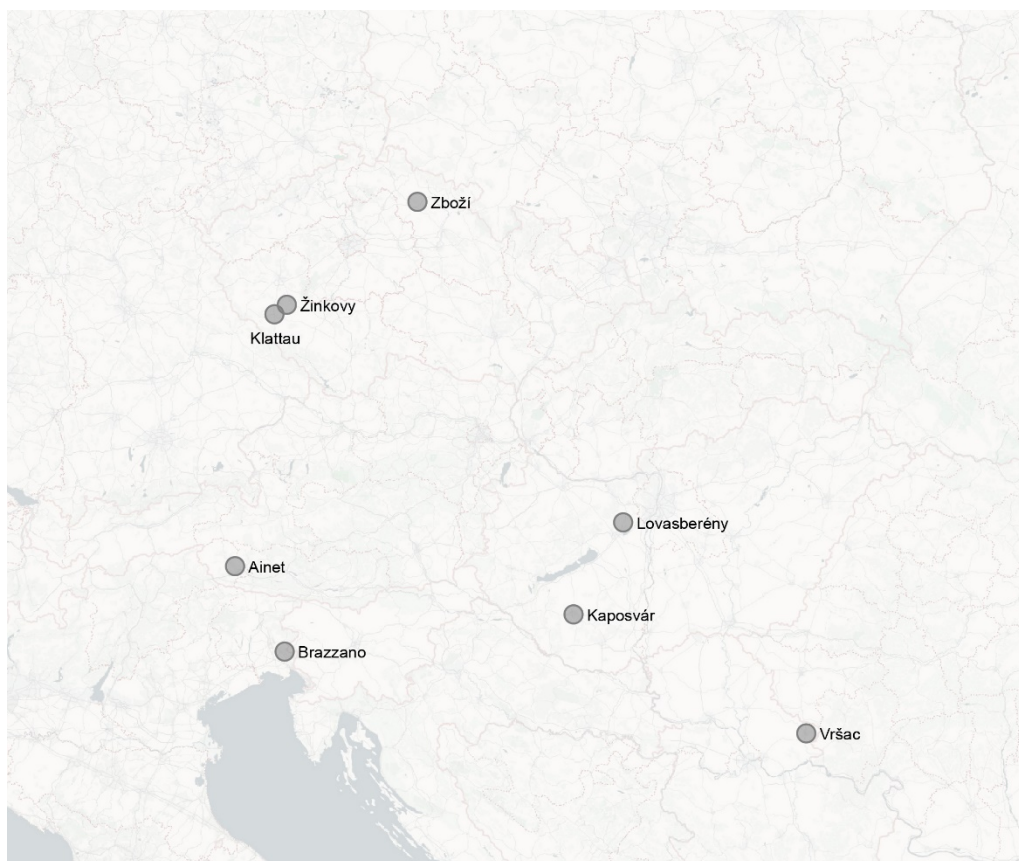
Figure 6. This map shows the places where artists were both born and have died. It is based on the data manually annotated in the "Künstlerhaus" data collection.

If these cases where the places of birth and death of one person are identical are visualized as a network in figure 6, every single point would represent an isolated node and therefore wouldn't be connected with any of the other places mentioned in the biography. So, when simply comparing a person's place of birth and place of death, obviously, lots of information on spatial mobility and migration occurring during the person's lifetime can be lost. This clearly shows

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[47] Benda Kálmán, "Rippl-Rónai, József, Maler und Graphiker", in *Österreichisches Biographisches Lexikon 1815–1950*, Bd. 9 (Lfg. 42, 1985), 174.

the usefulness of extending the analysis to further whereabouts as places of work or places of a journey.

4   Migration patterns and perspectives for data analyses

Based on the presented analyses of this article so far, it is possible to develop further research tracks. It can be summarized that for most of the members of the Künstlerhaus the city of Vienna is the most important place for education and work. Besides their place of birth, their spatial mobility in context of education and their travel activities, for work and exhibitions they often moved or returned to the capital of the Habsburg monarchy (figure 7). This explains the central position of Vienna in the person-place network.

For the following data analyses and identification of migration patterns, we used so called alluvial diagrams. Firstly, these diagrams are based on the biographical data, precisely on the persons' relations to places as well as to institutions which are mentioned within the biographical articles of the ÖBL. The institutions are also a key factor within the conceptual understanding of "Cosmobilities".

> In such a scenario [note: the historically shaped borders of East Central Europe are meant] it is no longer the implementation of the nation-state model but the dynamic and complex entanglements between regional, national, imperial and global levels that are put into the analytical focus. This, in turn, connects to our understanding, which views 'mobilities' as both infrastructural prerequisites for actors going beyond borders and influential factors in (re-)shaping and (re-)negotiating boundaries.[48]

Secondly, it was necessary to distinguish between those relations commonly associated with migration in a narrower sense (place: "was place of education", "was place of work"; institutions: "was student at", "was professor at") and those representing only short-time stays (place: "was place of a study trip") or weak ties to institutions (institutions: "was member at", "was delegate at"). The resulting diagram shows the migration paths step-wise and according to their relation to a certain geographical category (various toponyms). These categories can either stand for single places of the size of a capital city (GeoNames feature code "PPLC") such as Vienna or Prague, for larger cities (GeoNames feature code "PPLA") or several smaller places (GeoNames feature code "PPLA2", "PPLA3" and "PPLA4").[49] From the left to the right, a path can be read as a migration from one category or place to another, relating to the first four steps

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[48]   Panter, Paulmann, and Szöllösi-Janze, "Mobility and Biography", 10.

[49]   In those cases, where it is not likely that the reader associates a place name with the right category of the alluvial diagram, the category is written afterwards and behind curved brackets.

of a person's migration process in a narrower sense, meaning longer-term spatial mobility.
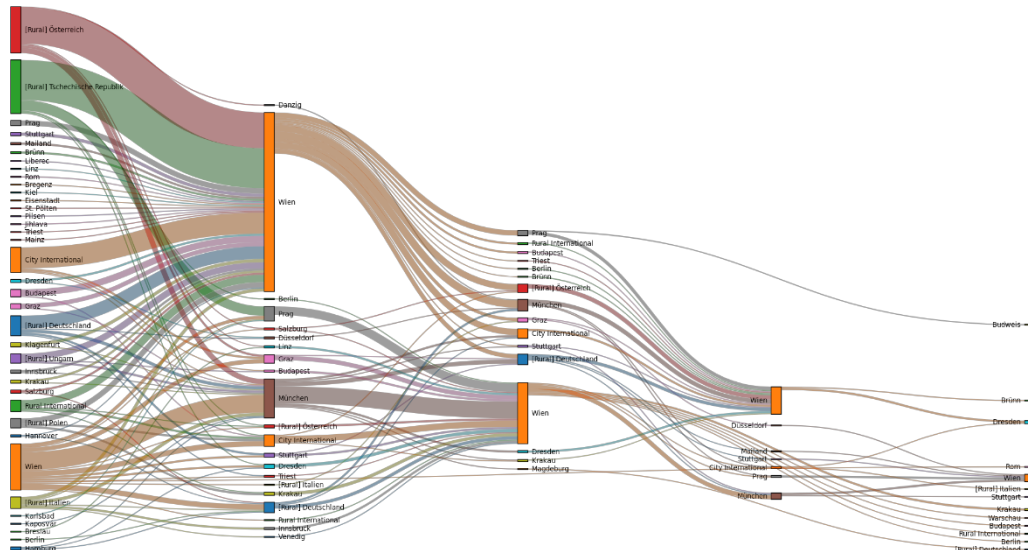
Figure 7. The alluvial diagram shows the migration steps in the order as they appear in the artists' biographies incorporated in the "Künstlerhaus" data collection. In this visualisation, nearly all relations to places and to institutions are considered to give the most complete picture of the persons' spatial mobility. Relations which represent only a short stay in context of a study trip or weak ties to institutions such as "was member of", "was delegate of" etc. have been excluded. All places below the size of the GeoNames feature code "PPLA" (seat of a first-order administrative division) are subsumed under the term "[rural] name of country". Cities which are neither connected to the neighbouring countries of Austria (Hungary, Czech Republic, Italy and Germany) nor have a distinctive seize in the sample are displayed as "City international" or "Rural international". For the sake of simplicity only the first four migration steps were taken into account. If a person has more than one step at the same place this relation is also excluded in this visualisation. (graphic of the authors)

4.1   Potentials of Automatic Relation Extraction

But what different questions could be answered if there wouldn't be the limitations of the time-consuming work of annotating artists' biographies manually? For this, it would be necessary to go beyond the manually collected data. In order to do so, the application of automatic information retrieval techniques would be necessary. Therefore, in APIS a system for Information Extraction has been developed. After the identification of Named Entities, first Entity Linking, then Relation Extraction is performed. The system uses open-source tools to derive structured semantic information from unstructured biographies, i.e. relations between Entities that have been identified and linked to Linked Open Data resources like GND and GeoNames. For the relation extraction, the open-source software *General Architecture for Text Engineering*

(GATE)[50] is currently tested. Regular expressions are run on the annotations in order to identify linguistic patterns that express a given relationship. If the application finds a string that corresponds to the pattern, it automatically assigns a new annotation to it, which describes the type of relation that holds between the entities in the given section of the text. In the ÖBL the name of the person is often omitted in order to avoid redundancy, which results in relations that cannot be annotated by other tools such as IEPY[51], as one of the entities in the relation (i.e. the person who performed the action) is missing in the text. Due to this, the regular-expression-based approach implemented in GATE is more applicable for ÖBL data. Another approach which is currently developed in APIS uses the manual annotations for the training of machine-learning algorithms. As it has been pointed out, both methods are still under development and will require more time for further training of the systems and the evaluation of the output.[52]

4.2   The subsamples of Tyrolean and Bohemian Artists

Nevertheless, for demonstrating the potentials of these methods, a comparison between two population groups and migration patterns based on subsamples of the manually annotated biographies of the "Künstlerhaus" data collection shall be made. To pick an example out of the almost 2,500 artists' biographies, the group of Tyrolean artists has been chosen. They are defined as persons who were born or have died within the boundaries of the federal province of Tyrol in the borders of 1910. The "Künstlerhaus" data collection contains 30 persons (21 relations "was place of birth"; 15 relations "was place of death"), to whom this specific characteristic is applicable. The distinction between places which can be found within the historical border of Tyrol and those which are located elsewhere is made with *HistoGIS* data, a project developed at the Austrian Centre for Digital Humanities.[53] In total 326 Tyrolean artists can be found in the ÖBL by using this method. The Tyrolean artists from the collection thus represent 9,20 % of the whole group. This group is of particular interest from an art historical point of view because of two reasons. Firstly, geographically Tyrol

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50   *GATE*, https://gate.ac.uk/ (accessed 25 April 2018).

51   *IEPY*, https://github.com/machinalis/iepy (accessed 25 April 2018).

52   Matthias Schlögl and Katalin Lejtovicz, "A Prosopographical Information System (APIS)", in *BD-2017. Biographical Data in a Digital World 2017. Proceedings of the Second Conference on Biographical Data in a Digital World 2017, Linz, Austria, November 6-7, 2017*, eds. Antske Fokkens et al. (2018), 53–58, http://ceur-ws.org/Vol-2119/paper9.pdf (accessed 23 November 2018).

53   In *HistoGIS,* shapefiles, which can describe borders, rivers, shapes of cities or districts, are drawn on the basis of historical maps in order to answer geospatial questions. The application can distinguish for a certain time slice, if the marker, which always represents a certain place on a map, lies within the specific outline or not. On this basis, locations within the historical border of Tyrol can be identified. See *HistoGIS*, https://histogis.acdh.oeaw.ac.at/ (accessed 13 November 2018).

is positioned in the far west of the Habsburg monarchy. Secondly, Innsbruck as the regional capital didn't have its own art academy.[54] It thus can be assumed that for those persons interested in studying art, migrating to a larger city was inevitable. One question would be, which places are of importance for the Tyrolean artists? How far do they migrate into the east? With the end of the supremacy of academic styles and the appearance of the avant-gardes at the end of the 19th century, the networks and mobility of artists underwent significant changes. Deduced from that, how changed mobility for the generations of the artists born in the 1860s and later compared to the older generations?

A first analysis of the places of birth shows that – with the exception of Tony Grubhofer (1845–1935) and Leo Putz (1869–1940) – most of the Tyrolean artists in this small sample of 21 persons moved from one place to another at least once in their lifetime (figure 8). The diagram makes it clear that it is important to include more than one relation type and entity type. Otherwise the view on the data can lead to false assumptions. For example, the life and work of the artist Leo Putz can only be described as transnational.[55] He has been member not only of the Künstlerhaus but also of the German artist group "Die Scholle" and the Vienna Secession. Besides his stays in Munich and Vienna, he also travelled to Brazil ("City international") and lived there between 1929 and 1933. Tony Grubhofer on the other side was educated in Munich and Vienna, made study trips to foreign countries, worked for some time in Bolzano ("[Rural] Republic of Italy") and finally became director of the "Staatsgewerbeschule" in Innsbruck.[56] For both biographies, Munich plays a central role as a place for their education and work.

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[54] The highest educational institution for the art in Tyrol, which is listed in the *Hof- und Staat-shandbuch der Österreichisch-Ungarischen Monarchie für 1900*, was the 'Staatsgewerbeschule' in Innsbruck. Prominent artists such as the architect Clemens Holzmeister were teaching there. The city of Hall in Tirol had a professional school for carving and carpentry. St. Ulrich in Gröden and Bozen, both situated in Southern Tyrol, had professional schools for wood-working. The professional school in Laas, also situated there and famous for its marble quarry, was specialised in stoneworking and sculpture. All these institutions can be found in the artists' biographies of the ÖBL.

[55] Erich Egg, "Putz, Leo, Maler", in *Österreichisches Biographisches Lexikon 1815–1950*, Bd. 8 (Lfg. 39, 1982), 348.

[56] N. N., "Grubhofer, Tony, Maler", in *Österreichisches Biographisches Lexikon 1815–1950*, Bd. 2 (Lfg. 6, 1957), 85.
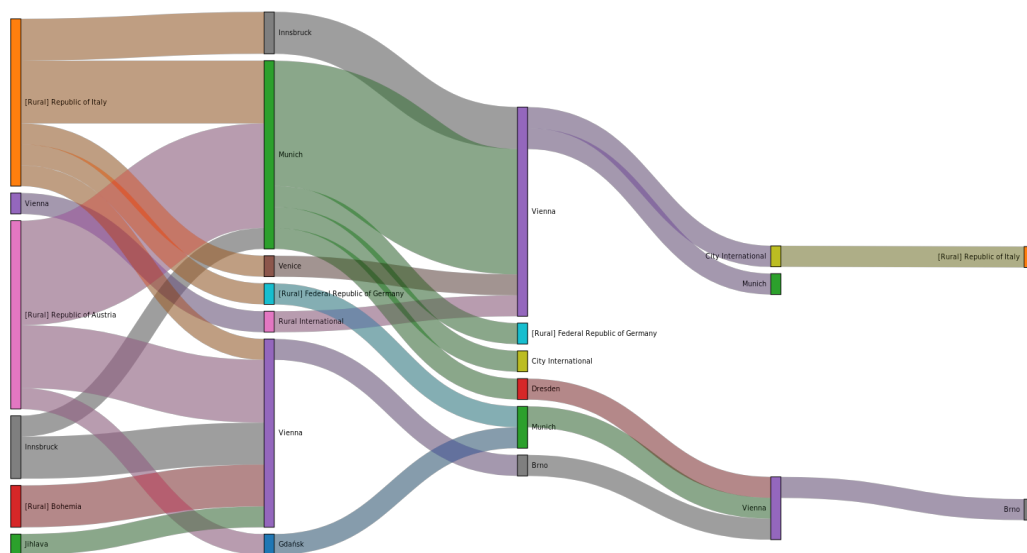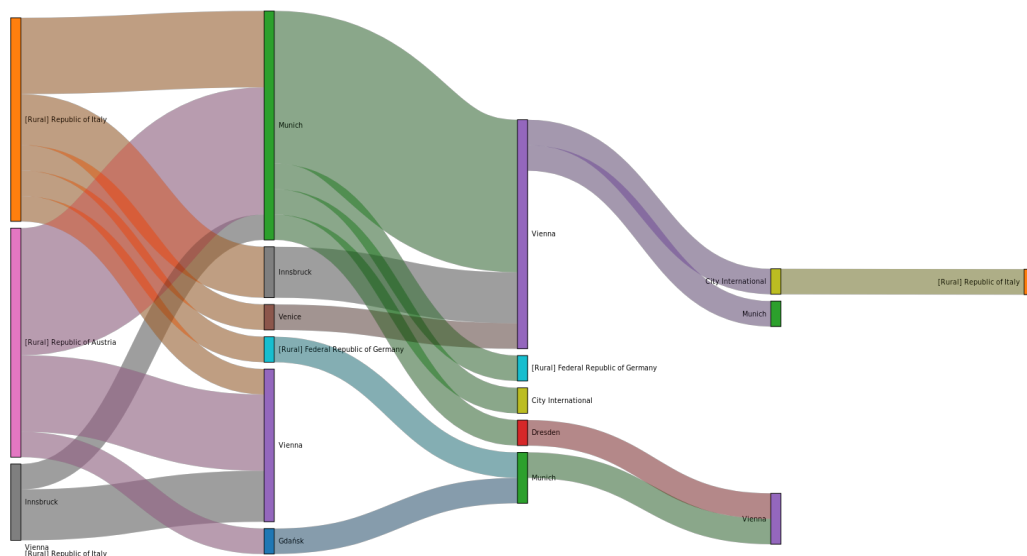
Figure 8. The alluvial diagram shows the subsample of persons born within the border of Tyrol. In this case all places of Southern Tyrol such as Bolzano, Ainet or Sarnthein are subsumed under the category "[Rural] Republic of Italy" (categorized according to modern borders). The places categorized as "[Rural] Republic of Austria" are places of birth in Northern (or Eastern) Tyrol such as Kitzbühl, Reutte in Tirol, Hall in Tirol or Schlitters. Nearly two thirds of this small subsample come from today's Austrian federal state Tyrol. One third was born in Southern Tyrol. It can be noted that artists who were educated in Innsbruck or Munich moved at least one step further compared to those who directly went to Vienna. Conversely, the other group could be characterised as being spatially less mobile. (graphic of the authors)

As a next step, this mobility pattern is extended by adding the group of artists who had died in Tyrol (figure 9). This aspect, on the other hand, additionally visualises artists who immigrated to Tyrol. In principle, the migration patterns of these 30 persons who were born or have died in Tyrol are quite similar to the 21 persons with their place of birth in Tyrol.

A second promising subsample can be found in those persons who were born or have died in the region of Bohemia.[57] In the "Künstlerhaus" data collection there are 52 persons which meet these criteria. They represent 16 % of all 325 Bohemian artists in the ÖBL. Besides Vienna, Prague is the most important node within the person-place network (figure 10). Historically seen, Bohemian art is deeply rooted in the tradition of Austrian art. Famous Austrian artists of Bohemian origin such as Franz Rumpler (born in Tachov) and Josef Matthias Trenkwald (born in Prague) were teaching at Austrian art academies

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[57]   The persons were selected by using *HistoGIS* data one more time. See *HistoGIS*, https://histogis.acdh-dev.oeaw.ac.at/shapes/shape/detail/3604 (accessed 14 November 2018).

in the 19ᵗʰ century as well as many artists born in Austria such as Friedrich von Amerling or Josef von Führich were studying at the art academy in Prague.

Figure 9. The alluvial diagram shows the subsample of persons who were born or have died within the border of Tyrol. Including the other relation type ("was place of death"), makes it possible that those artists who immigrated to Tyrol are also visualised (e.g. Ferdinand Kruis, Emanuel Stöckler or August Prokop). Emanuel Pendl (Meran to Vienna) and Karl von Blaas (Nauders to Vienna) belong to the group of emigrants. (graphic of the authors)

Artist associations situated in Vienna like the Künstlerhaus, the Secession or the Hagenbund followed this tradition in fostering these links through exhibiting Bohemian artists and vice-versa (e.g. in the S.V.U. Mánes). Art dealers and galleries built upon these networks their business beyond the borders.[58] In the year 1918, as the end of the Habsburg Monarchy was sealed, and the Republic of Austria was founded, the art historian Hans Tietze wrote an article in a journal for historical studies named *Österreich* about the future of Austrian art history. There, he addressed the question of the identification of Austrian artists aptly.

> In a certain sense, an artist belongs not only to the people from whom he descend, but also to the people who offered him the opportunity to develop his skills and in whose art life the trace of his days on earth lives on; thus Tilgner cannot be separated from Austrian art and Pettenkofen not from Hungarian art. Throughout the XIXᵗʰ century, the rich interaction continues undiminished by immigrant or emigrant artists, by students who learned from their neighbours,

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[58] The galleries Miethke, Würthle and Neue Galerie were exhibiting Bohemian artists among others. The first secretary of the Vienna Secession Franz Hancke (1873–1909), to give one example, used this network to set up his own business 1907 in Breslau.

by masters who exerted influence through their work, and there the net of all these numerous threads should not have densified to inextricability.[59]

After illustrating these numerous ties between Vienna and the region of Bohemia, the question arises how Vienna is represented in the biographical data of this subsample. Are these artists mainly migrating from Bohemia to the capital city of the Habsburg monarchy? Which role plays Prague? Following the analyses of the group of Tyrolean artists, another question can be asked. Is it possible to identify a group of significant size which moved differently to the majority (e.g. like those artists from Southern Tyrol) or not?
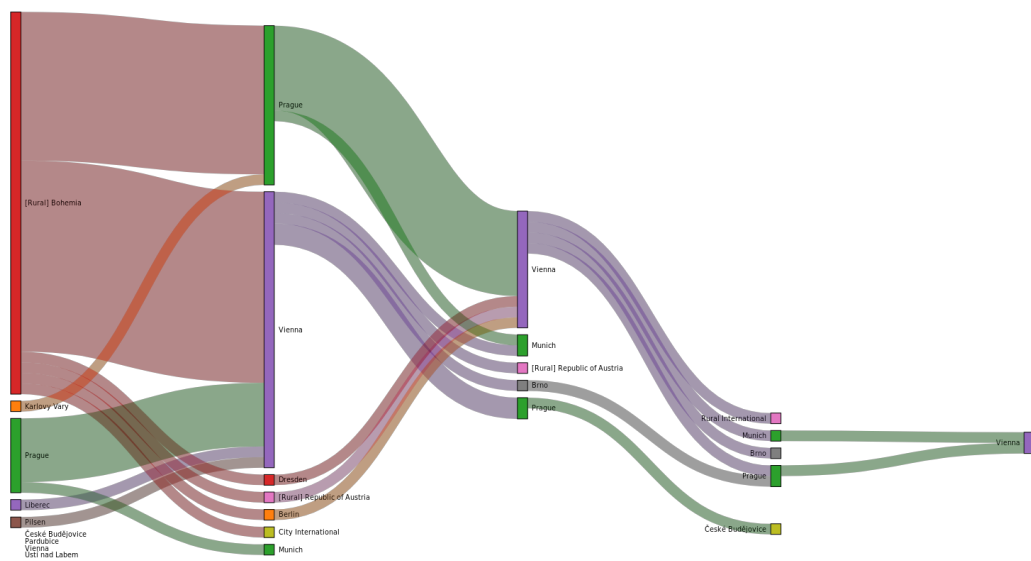
Figure 10. The alluvial diagram shows the subsample of persons who were born or have died in Bohemia. More than two thirds of this group were born on the countryside of Bohemia ("[Rural] Bohemia"). Besides Prague, artists of this subsample were born in the larger cities of Karlovy Vary, Liberec and Pilsen. Munich, as it was expected, played a much lesser role than in the subsample of Tyrolean artists. A larger share of this subsample migrated to Prague and stayed there or moved forward to Vienna in the next step. The other part of those artists born in rural places as well as artists born in Prague already migrated to Vienna in a first step, the vast majority of them remained there. From the first group, and this is an interesting fact, the data shows a migration to Vienna only as a third step. Some of them returned later once again to Prague. This pattern, of moving forth and back, can be noted as significant for the group of Bohemian artists. (graphic of the authors)

Deduced from Tietze's quote, it must be noted that biographical data can already be used for the identification of transnational actors such as Victor

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59   Hans Tietze, "Das Problem der Österreichischen Kunstgeschichte", *Österreich. Zeitschrift für Geschichte* 1 (1918/1919), 59–60.

Tilgner or August Pettenkofen.[60] By including the analyses of migration patterns, researchers can distinguish not only between individual actors, but also between different types of spatial "mobilities". This has been demonstrated rudimentarily by the subsamples of the Tyrolean artists and the Bohemian artists. At this point it is possible to connect this research with the concept of "Cosmobilities". According to Panters understanding of this concept, Sarah Panter et al. write that it has to connect "local rootedness, transcultural orientations and global entanglements with insights on mobility" in order to overcome "one single master narrative".[61] In this point the biographical networks, maps and migration patterns presented in this article can be seen as an addition as well as a possible starting point for future (cos)mobility research.

5   Conclusion

Besides the fact that the methods for the retrieval of biographical data are still under development, recent achievements in this field and best practice examples have to be discussed.[62]

As it is mentioned above, the sample was compiled according to two criteria: Firstly, the biography in the ÖBL had to describe the life of an artist. Secondly, the membership in the Künstlerhaus had to be proven. Because of this sampling method, Vienna, compared to other cities, plays a significant role in the migration networks of these artists.

In the field of historical network research, however, first concepts for the application of biographical data are emerging. One approach would be to follow the idea of *A Network Framework to Cutural History*. To achieve this, the biographical data must be enhanced in order to examine the migration patterns in detail, both historically and statistically. In contrast to historical network research a wider range of historical sources are used to write the biographies. We therefore remind that by working with biographical data their genesis always has to be considered. Another possibility would be to use this data in a different application and enrich catalogue data as it is collected in exhibition databases (e.g. Hagenbund, Artl@s, Exhibitions of Modern European Paintings etc.). In this scenario, questions of cultural transfers as they are asked by spatial art history or social history of art could be answered.

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[60]   This idea has already been put forward at the course of the presentation "Tracing transnationality through a biographical dictionary" at the conference ESSE 2018 (seminar "Transnational Biographies in Europe", Masaryk University Brno).

[61]   Panter, Paulmann, and Szöllösi-Janze, "Mobility and Biography", 10.

[62]   See Antske Fokkens, Niels Ockeloen, and Serge ter Braake, *BiographyNet*, http://www.biographynet.nl/ (accessed 27 April 2018); Jonas Kuhn and André Blessing, *Textual Emigration Analysis*, http://clarin01.ims.uni-stuttgart.de/tea/ (accessed 27 April 2018).

The automatic retrieval of information from the corpus of ÖBL biographies requires the testing of a variety of tools and methods. The success, however, depends strongly on the adaptation of corpus-specific characteristics such as the language used, or the content described in the biographies. It is obvious that those approaches will play an important role in the near future. Two subsamples of the "Künstlerhaus" data collection, namely the Tyrolean and Bohemian artists, were chosen to develop additional research tracks and to test what assumptions can be drawn from such data analyses. Both subsamples of the "Künstlerhaus" data collection represent 10 to 16 % of the overall share of these two population groups within the ÖBL, so patterns can already be identified. The actual data analyses will become possible at that moment all biographies have been annotated either manually or automatically.

Nevertheless, the aim of this paper was to show how biographical data can be generated and how methods of historical network analysis as well as historical migration analysis can be applied. In this way, the potential of this particular kind of resource should be demonstrated and become visible for future research within the realm of digital art history.

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