

THOMAS WALLNIG · MARION ROMBERG · JOËLLE WEIS (EDS.)

# Digital Eighteenth Century: Central European Perspectives

Achtzehntes Jahrhundert digital:  
zentraleuropäische Perspektiven

Dix-huitième siècle numérique:  
perspectives de l'Europe centrale



böhlau



Das Achtzehnte Jahrhundert und Österreich.  
Jahrbuch der Österreichischen Gesellschaft zur  
Erforschung des Achtzehnten Jahrhunderts

Band 34

Thomas Wallnig, Marion Romberg, Joëlle Weis (Hg.)

# **Achtzehntes Jahrhundert digital: zentraleuropäische Perspektiven**

**Digital Eighteenth Century:  
Central European Perspectives**

**Dix-huitième siècle numérique:  
perspectives de l'Europe centrale**

Unter Mitarbeit von Sandra Hertel

**BÖHLAU VERLAG WIEN KÖLN WEIMAR**

Das Jahrbuch wird von Vorstand und Beirat der OGE18 herausgegeben. Die Geschäftsführung liegt beim Obmann.

Gedruckt mit freundlicher Unterstützung der Historisch-Kulturwissenschaftlichen Fakultät der Universität Wien, des Instituts für Geschichte der Universität Luxemburg, der OeAD-GmbH (aus Mitteln des Bundesministeriums für Europa, Integration und Äußeres) sowie der Stadt Wien.



Bibliografische Information der Deutschen Nationalbibliothek:  
Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der  
Deutschen Nationalbibliografie; detaillierte bibliografische Daten  
sind im Internet über <http://dnb.d-nb.de> abrufbar.

Umschlagabbildung: Johann Samuel Wahl, Elisabeth Christine und Karl VI. beim Hochzeitsmahl  
Maria Theresias. Digitale Bildbearbeitung (nach einer gemeinfreien Kopie): Joëlle Weis.

© 2019 by Böhlau Verlag Ges.m.b.H & Co. KG, Wien, Kölblgasse 8–10, A-1030 Wien  
Alle Rechte vorbehalten. Das Werk und seine Teile sind urheberrechtlich geschützt.  
Jede Verwertung in anderen als den gesetzlich zugelassenen Fällen bedarf der vorherigen  
schriftlichen Einwilligung des Verlages.

Einbandgestaltung: Michael Haderer, Wien

**Vandenhoeck & Ruprecht Verlage | [www.vandenhoeck-ruprecht-verlage.com](http://www.vandenhoeck-ruprecht-verlage.com)**

ISBN 978-3-205-20910-2

## Contents

### **Thomas Wallnig**

|                         |   |
|-------------------------|---|
| About This Volume ..... | 7 |
|-------------------------|---|

### *Articles*

#### **Mikkel Munthe Jensen, Marco Quaggiotto, Joëlle Weis**

|   |    |
|---|----|
| VIA – Virtual Itineraries of Academics – A Digital Exploration<br>Tool for Early Modern Academic Travels..... | 13 |
|---|----|

#### **Marion Romberg**

|  |    |
|--|----|
| Maps, Timelines, Search Features, and Indices – Digital Tools in<br>the Continent Allegories Database..... | 31 |
|--|----|

#### **Claudia Resch, Dario Kampkaspar**

|  |    |
|--|----|
| DIGITARIUM – Unlocking the Treasure Trove of 18 <sup>th</sup> -Century<br>Newspapers for Digital Times ..... | 49 |
|--|----|

#### **Per Pippin Aspaas, Katalin Pataki**

|   |    |
|---|----|
| Did Astronomy Constitute a Denominationally Neutral Space<br>within the Republic of Letters? – An Outline for the Use of<br>Visualization Tools in the Study of Astronomical Correspondence ..... | 65 |
|---|----|

#### **Jonathan Singerton**

|   |    |
|---|----|
| A Revolution in Ink – Mapping Benjamin Franklin’s Epistolary<br>Network in the Habsburg Monarchy, 1776–1789 ..... | 91 |
|---|----|

### *Short Papers and Project Presentations*

#### **Stefan Ehrenpreis**

|  |     |
|--|-----|
| Big Data and the History of Early Modern Individuals – The Case<br>of VOC Employees from the Habsburg Territories..... | 117 |
|--|-----|

#### **Doris Gruber, Elisabeth Lobenwein, Arno Strohmeyer**

|   |     |
|---|-----|
| Travelogues – Perceptions of the Other 1500–1876.<br>A Computerized Analysis..... | 129 |
|---|-----|

**Anna Frasca-Rath**

Research Landscapes of Digital Art History in Austria ..... 133

**Karin Schneider, Stephan Kurz**

<https://maechtekongresse.acdh.oeaw.ac.at/> – Digital Edition of the Documents of the Congresses of Aix-la-Chapelle, Troppau/Opava, Laibach/Ljubljana and Verona 1818–1822..... 139

**Patrick Fiska**

Conference Report: Digitizing Enlightenment III ..... 149

**Klemens Kaps, Kolja Lichy**

Conference Report: The Four Wings of Mercury ..... 153

*Book Reviews*

Olga KATSIARDI-HERING / Maria A. STASSINOPOULOU (Eds.): Across the Danube. Southeastern Europeans and Their Travelling Identities (17<sup>th</sup>–19<sup>th</sup> c.) (Harald Heppner) ..... 169

Marianne ACQUARELLI: Die Ausbildung der Wundärzte in Niederösterreich. Unter der Herrschaft der Habsburger vom 18. bis zum 19. Jahrhundert (Sonia Horn) ..... 170

Markwart HERZOG / Alois SCHMID (Hg.): Katholische Aufklärung im Benediktinerreichsstift Irsee (Manuela Mayer) ..... 175

Karen GREEN: A History of Women’s Political Thought in Europe, 1700–1800 (Jonathan Singerton) ..... 178

Renate ZEDINGER / Marlies RAFFLER / Harald HEPPNER (Hg.): Habsburger unterwegs. Vom barocken Pomp bis zur smarten Business-tour (Renate Schreiber)..... 181

Buchreihe „Veröffentlichungen zur Bau- und Funktionsgeschichte der Wiener Hofburg“ (Sandra Hertel) ..... 184

Zusammenfassungen und Abstracts ..... 191

Autor\*innenverzeichnis ..... 197

**Thomas Wallnig**

## About This Volume

In recent years, non-native speakers of English in academia have increasingly been seen to begin their texts with the phrase “in recent years”. This is generally done in an attempt to convey an impression of overview as well as of the timeliness of their research: They can point to a scholarly development and present themselves as a part of it. The related notion of academic time is borrowed from the structure of grant proposals, and it substitutes the traditional bipartition (“in the older literature”) with a tripartite model that dynamizes the academic present.

Historians of scholarship in the 23<sup>rd</sup> century may well ponder the relationship between these shifts and the proliferation of academic precarity in the early 21<sup>st</sup> century. In order to grasp nuances of academic development, they will need to selectively look at trigger phrases like “in recent years” and relate them to other parameters. They will most likely be able to do this on the basis of a thoroughly digitized landscape of human legacies in which every single one of our expressions and manifestations will also be documented in the form of machine-readable data; perhaps even our genome.

It is likewise not inconceivable that, by that time, these historians of scholarship will themselves be computers, because artificial intelligence will have understood the way in which scholars ask questions. The term “digital humanities” will designate the part of the digital universe dealing with what has been defined as “human” (unlike digital-born matter), and the design and approval of research projects in the humanities will be handled by specific “programs”. (We should not worry too much about this, however, because these algorithms will also have learned how to deal with ethical issues.)

But I digress.

In recent years, the ongoing success of quantitative methods in the historical and literary disciplines has found a natural echo in the advancement and popularization of computational methods applied to historical sources. What has emerged is a semantic shift that historians rarely have the opportunity to witness personally and in real time: “Digitization” and “digital methods” have become must-have catchwords, while at the same time they have lost any truly consensual core meaning. (Incidentally, not unlike what happened to the term “Enlightenment” between 1680 and 1750.)



When terms lose their core meaning, they become vulnerable to biased and polemical usage, and it is true that much of the DH discourse—especially in the field of grant proposals—is made up of “past promises”<sup>1</sup>

No-one should therefore expect any further such promise or digital *Hurrapatriotismus* from these editorial lines, nor will I repeat at length what I and many other colleagues have frequently tried to argue and act out in a different context: namely that seriously engaging scholarly and IT communities in structured dialogue is a difficult and trying task of communication and community building.<sup>2</sup>

This volume aims to be part of this greater endeavor in that it documents a state of the debate without anticipating or prefiguring its outcome in any way (remember the tripartite model of academic time?). Within the well-circumscribed limits of an eighteenth-century society as small as the Austrian one, it is relatively easy to showcase digital research related to the (long) eighteenth century, and that is what this book sets out to do—for the Central European community, but also for the context of eighteenth-century research at large.

To be sure, there are models to follow in more than one way (see the report on the “Digitalizing Enlightenment III” meeting), but there is one specific message that I consider particularly relevant for digital novices: digital methods transform existing methods in the humanities. Some of them deal with texts, some with metadata, some with images; some create word clouds, some establish networks. If you are a philologist or a historian, however, this new way of displaying, aggregating, and analyzing data does not absolve you from the obligation of knowing what conceptual history is and what “discourse” really means. (Not to mention the duty to ensure that this knowledge is not forgotten in academia).

If the self-referentiality of asking questions is the one human feature inherent even in digital humanities, then conviviality is the other. Digital humanities—in more than one way—is about meeting people, hanging out, and playing around with data. This is best done over a chilled drink, which is why the Austrian Society has initiated a series of “Digital Days” bringing together digital projects in various academic contexts all over the country.<sup>3</sup> Situated somewhere between academic speed-dating, first-level support and hackathon, these encounters offer a low-threshold opportunity to find out which wheels do *not* need to be reinvented.

1 <https://www.univie.ac.at/zeitgeschichte/24-01-interaktionen-mario-wimmer-quellcodes-die-vergangenen-versprechen-der-digital-humanities/>, accessed 26.02.2019.

2 <https://www.republicofletters.net>, accessed 26.02.2019.

3 [https://oege18.org/?page\\_id=1890](https://oege18.org/?page_id=1890), accessed 26.02.2019.

However, they also offer a vague idea of a bigger picture that may become clearer the further we advance in terms of asking relevant questions—and by “we”, I mean us researchers, not our algorithms.

What is indeed fundamental about the dialogue between the various DH communities—or “ecosystems”, to use another catchword—is the dialogue itself. Equally essential is the conceiving of this dialogue as one at eye level. This also implies the disillusioning insight that priorities between the different groups vary considerably, however: Developers will feel relegated to an ancillary role when asked to create simple standard applications that nevertheless fulfil the needs of most scholars. What is more, various tools already exist for most of these needs, and it often seems like more work to obtain a comprehensive overview of them than to simply create new ones. Scholars, on the other hand, must be aware of and remain alert to the shifting cultural function of knowledge and epistemology, i.e. the interaction between human society and human knowledge (including its most important aspect: questions, i.e. the “not-known”).

This constellation also implies the sobering insight that the alliance and dialogue between “IT people” and “humanists” remains smooth only as long as they do not touch upon the “ontological essentials” (note for the future annotation machine: “ontological” used in the philosophical, not the IT sense). For some, a helpful metaphor for this constellation might be Catholicism and Enlightenment; for others it might be XML-TEI and text-as-graph.

In conclusion, it should be clear after what has been said so far that beyond the familiar format of project parading, this volume intends to display the community effort behind the individual projects. In doing so, it hopes to show how DH research can offer new ways of thinking about a region—in this case, Central Europe—in its historical dimension. This is contested knowledge, past and present, and it shows how much of a “human” element there is in DH research.



# Articles



**Mikkel Munthe Jensen, Marco Quaggiotto, Joëlle Weis**

## **VIA – Virtual Itineraries of Academics**

### **A Digital Exploration Tool for Early Modern Academic Travels**

For historians and scholars in the humanities, the new possibilities of the digital world have the potential to substantially enhance their research, especially by creating new perspectives on well-known sources. Within the study of early modern intellectual and cultural exchange, fruitful collaboration between humanists, archivists, digital designers and IT experts has led to a variety of new digital projects. Large corpora of letters are being digitized, metadata compiled, and connections and networks visualized in ways that were completely unthinkable only a few decades ago.

In this particular field of research, the focus of collaborations has primarily been placed on epistolary networks and the available vast collections of letters, as they are vital for the understanding of learned circulation and its transnationality.<sup>1</sup> On the other hand, academic travels and the mobility of scholars have played a lesser role in early modern intellectual studies, figuring mostly as by-products.<sup>2</sup> In recent years, however, a stronger interest in academic mobility

---

1 See for example “ePistolarium. Circulation of Knowledge and Learned Practices in the 17<sup>th</sup>-Century Dutch Republic. A Web-Based Humanities’ Collaboratory on Correspondences”. This project is a collaboration between the Descartes Centre for the History and Philosophy of the Sciences and the Humanities at the University of Utrecht and the Huygens ING. See <http://ckcc.huygens.knaw.nl/epistolarium/>. Another project to be mentioned in this context is “Cultures of Knowledge”, based at the University of Oxford, and its database “Early Modern Letters Online”, a unified catalogue of sixteenth-, seventeenth-, and eighteenth-century correspondence. See: <http://emlo.bodleian.ox.ac.uk/>; all websites mentioned in this paper were accessed 26.02. 2019.

2 There are many tools that allow visualization of geo-temporal data and thus the visualization of travels, and there is much research still ongoing. These tools can generally be divided into three categories: 1) tools for storytelling, such as StoryMap and Neatline; 2) tools that offer only geo-temporal visualization, such as Dariah Geo-Browser; 3) tools that offer wider possibilities and are able to incorporate additional prosopographical data in their visualizations, such as Nodegoat or Palladio. The latter in particular offers various possibilities and allows users to easily upload their own data. Palladio’s map visualization and dynamic filter mechanisms are easy to use, but—especially when combining multiple facet filters—not easy to read and interpret. Scholars in Stanford used Palladio to perform several case studies on mapping correspondence networks, but those studies were not concerned with travels. For the tool, see <https://hdlab.stanford.edu/palladio/>. For case studies of the project “Mapping the Republic of Letters” see <http://republicofletters.stanford.edu/>.

has begun to develop among historians working in the interrelated fields of history of science, knowledge and universities—fuelled by the same digital potential observed for epistolary works.<sup>3</sup> Inspired by these digital projects, the mapping of travels has increasingly been attracting the attention of scholars, cartographers and data designers.<sup>4</sup> This paper is a testimony to such an effort, presenting the case study of the digital exploration tool “VIA – Virtual Itineraries of Academics” as the result of a collaboration between scholars of early modern learned history and digital designers. VIA is a tool prototyped specifically for the case of eighteenth-century Nordic academic travels. In its current stage, it is thus a tailor-made response to a specific problem—but as a case study for digital possibilities, VIA is also a demonstration of the potential that structured prosopographical data on academic travels and travellers can provide for the study of early modern intellectual geography in general and the academic mobility of scholars in particular.

In order to structure the argument, this paper is divided into four sections: The first section elaborates on the specific setting of the project—an interdisciplinary story that we hope will serve as an inspiration for other small-scale projects like VIA. The second section focuses on the historical background that gave rise to the initial demand for such a visualization tool. The third and main part introduces the tool itself with its underlying data model, its design and all of its functionalities. The final section presents the initial research results obtained with the help of the tool. In addition, further potential fields of application and future prospects will be discussed.

---

3 See for example ORBIS, an interactive model that calculates travel costs and travel times for the antique Roman road network, <http://orbis.stanford.edu/>, or Itinera developed at the University of Pittsburgh to visualize the travels of famous explorers.

4 See for example the hackathon on visualization of travels organized by the DH team of the University of Vienna (18–20 July 2018). Details: <https://dig-hum.de/aktuelles/open-call-modeling-travels-history-orbis-esque-hackathon-uni-vienna-july-18-20-2018>.

## 1. A Brief History of the Project

The story of VIA begins with the COST Action<sup>5</sup> “Reassembling the Republic of Letters”<sup>6</sup>, which emerged in response to the expectation that the ongoing revolution in digital communication technology would solve a scholarly problem created by the evolution of postal communication in the early modern period—namely, the problem of piecing back together corpora of manuscript correspondence deliberately scattered across and between continents. In essence, the goal of the Action was to assemble a network by creating and designing new digital networking tools. In other words, scholars, archivists, librarians and specialists from a wide range of digital technologies were brought together in order to envisage an open-access, open-source, transnational digital infrastructure capable of facilitating the multilateral collaboration needed to reassemble this scattered documentation and support a new generation of scholarly methods and research questions.

One of the networking tools used by this COST Action was the organization of “Visualization Meetings” that brought together interface/data designers and researchers from the humanities to work on case-study-based explorations into visualizing structured or unstructured data sourced from the Republic of Letters.<sup>7</sup> One of these meetings conceived to experiment with how information design can contribute to scholarly research was devoted to the design and prototyping of a tool for the exploration of Mikkel Munthe Jensen’s research on academic travels by Nordic university professors during the early modern period.<sup>8</sup> The researchers approached the project by brainstorming on the most

5 COST is an intergovernmental framework for European Cooperation in Science and Technology, which exists to coordinate nationally funded ongoing research at the European level by providing the networking support needed to ensure that nationally funded initiatives add up to something greater than the sum of their individual parts. COST Actions use a range of networking tools, such as workshops, conferences, training schools, short-term scientific missions (STSMs) and dissemination activities. For more information on the program, see <http://www.cost.eu/>.

6 COST Action IS1310 “Reassembling the Republic of Letters, 1500–1800” ran from 2014 to 2018. A publication on the results of the Action is planned for 2019. For details, see <http://www.republicofletters.net/>.

7 VIA was born out of such a meeting held in Como, Italy in April 2016, coordinated by Paolo Ciuccarelli and Charles van den Heuvel and organized in form of a “Design Sprint”. For more information on this method, see Jake KNAPP / John ZERATSKY / Brad KOWITZ, *Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days*. London 2016. The minutes of the Como meeting can be found under: <http://www.republicofletters.net/wp-content/uploads/2017/02/Como-Notes-COST-Action-IS1310-Reassembling-the-Republic-of-Letters.pdf>.

8 Mikkel Munthe JENSEN, *From Learned Cosmopolitanism to Scientific Inter-Nationalism: The Patriotic Transformation of Nordic Academia and Academic Culture during the Long Eighteenth Century*, vols. I–II. Diss. Florence 2018.



effective ways to visualize the data; building on this preliminary activity, the need to develop a tool that would allow visual and statistical exploration of the dataset, provide quick ways of filtering the data in regard to their multiple dimensions and simultaneously visualize the correlations between different aspects of the data was formulated.

Finally, it must be underlined that while VIA is the main result of this process, the general insights gained during the interdisciplinary collaboration were equally important and may well serve as inspiration for other digital projects. The time invested in a mutual learning process—with scholars discovering how to express their needs and designers finding ways to explain how they could contribute—was one of the main factors responsible for the success of the experiment. This is especially important considering that historical data are often fragmented and contain many uncertainties, which is why tailor-made solutions must be developed—a demanding process for all parties that can only be approached by means of close collaboration between members of different fields of expertise.

## 2. The Republic of Letters and Nordic Academic Travel Culture

As mentioned above, VIA should be considered a result of the networking activities that took place within the framework of the COST Action “Reassembling the Republic of Letters”. As the name indicates, the collective concern of the involved researchers was the self-proclaimed imagined community called *respublica litteraria* that—from circa 1500 to 1800—brought together scholars from all over Europe and beyond.<sup>9</sup> The members of the Republic of Letters shared a common objective, namely the advancement of knowledge, and considered themselves coequal pursuers of that goal. Shared ideals such as universality and tolerance were the framework of their quest, and the glue that held the community together was a widespread communication network in which letters and mutual services were exchanged on a daily basis. These letters effectively became the most important medium for the common task, and this circumstance in turn led to a standardization of communication and the gradual establishment of a code of conduct governing the learned exchanges. Ultimately, the

9 Selected references on the Republic of Letters: Hans BOTS / Françoise WAQUET, *La République des lettres*. Paris 1997; Marian FÜSSEL / Martin MULSOW (eds.), *Die Gelehrtenrepublik*. Hamburg 2015; Anne GOLDFAR, *Impolite Learning: Conduct and Community in the Republic of Letters 1680–1750*. New Haven 1995; Lorraine DASTON, *The Ideal and Reality of the Republic of Letters in the Enlightenment*. In: *Science in Context*, 4 (1992), 367–386; Dirk VAN MIERT, *What Was the Republic of Letters? A Brief Introduction to a Long History (1417–2008)*. In: *Groniek*, 204/205 (2016), 269–287.

letters—which in many cases are preserved to this day—therefore represent valuable sources providing deep insights into the lives and work of many scholars and academics from the early modern period. Anyone examining them more closely soon inevitably recognizes the significance of travels within the erudite culture of the time—not only as a means for exchanging ideas and material directly, but also as a way of broadening and stabilizing one's own network.

Thus for early modern scholars, academic travelling was always an important aspect of participating in the Republic of Letters. Academic mobility across borders was perceived both as a way of finalising one's studies and as an instrument for achieving greater insight within one's specific field of research. It was a perception that was greatly enhanced by the general change in academic practice during the early modern period from a more sedentary and contemplative academic practice (*vita contemplativa*) to a more active scholarly life (*vita activa*), which valued a more sensuous experience of the world, nature and human society.<sup>10</sup> Supported by an improving European infrastructure, journeys to other universities, libraries, monasteries and other centres of learning facilitated the circulation of knowledge and information. Academic travels and the resulting direct contact between foreign and resident scholars therefore played a significant role in the development of the economy of knowledge and the transfer of ideas and information. Books and manuscripts were copied, translated and transcribed; specimens and artefacts were gathered and indexed; collections and instruments were bought and sold; and library catalogues were compiled and shared. Travelling not only enlarged the traveller's world and worldview, it also laid the foundation for interregional and intercultural contact and exchange.<sup>11</sup>

Naturally, academic mobility was not an entirely new phenomenon in the early modern period—it can easily be traced back to the university foundations during the Middle Ages. Already since the granting of fundamental academic privileges, like the *Authentica Habita* originally chartered to the University of Bologna in 1155, the universities had been allowed free academic movement. In combination with institutional uniformity (the four-faculty system) and a reciprocally recognized system of degrees and academic statuses, the European

10 Walter RÜEGG, Themes. In: Walter RÜEGG (ed.), *A History of the University in Europe: Universities in Early Modern Europe*. Cambridge 1996, 3–34; Justin STAGL, *A History of Curiosity: The Theory of Travel, 1550–1800*. Chur 1995.

11 On travel culture in general, see also Hagen SCHULZ-FORBERG (ed.), *Unravelling Civilization: European Travel and Travel Writing*. Brussels – New York 2005; Hans Erich BÖDEKER, *Sehen, hören, sammeln und schreiben. Gelehrte Reisen im Kommunikationssystem der Gelehrtenrepublik*. In: *Paedagogica Historica* 38 (2002), 504–532; Hans-Wolf JÄGER, *Europäisches Reisen im Zeitalter der Aufklärung*. Heidelberg 1992.

universities not only shared a common structure, history and culture, but also constituted a network of sites of learning among which scholars could travel freely.<sup>12</sup> With his academic citizenship obtained through initial matriculation, every scholar was inaugurated into the pan-European academic community in which his academic rights, privileges and legal status were mutually recognized and protected.<sup>13</sup> For established scholars and students alike, the European network of universities thus provided natural travel destinations with the common aim of obtaining new knowledge, sharing ideas and creating lasting contacts.

In the geographically peripheral Nordic region, academic travels continued to play an important role for the development of the domestic academia.<sup>14</sup> Foreign experience and foreign expertise were in high demand when new positions at the universities were to be filled. Foreign professors, especially German ones, were often called upon when certain fields were believed to be in need of bolstering; such was the case with the famous *Skytteanska* chair at Uppsala University in the seventeenth century or with the chairs of experimental physics and medicine at Copenhagen University during the first two-thirds of the eighteenth century. Likewise, when locally-born scholars applied for positions at the Nordic universities, they often highlighted their academic travels, experience from foreign universities and good reputation in the broader learned republic as their most valuable assets.<sup>15</sup> The Nordic universities not only valued this foreign experience, they also actively supported it—as can be seen in the many and quite generous scholarships that existed to support the travel activities of the talented but impecunious young scholars.<sup>16</sup> Throughout the early modern period, academic travels provided a way for Nordic academics to obtain new knowledge from and information about the world abroad as well

12 Paolo NARDI, Relations with Authority. In: Walter RÜEGG (ed.), *A History of the University in Europe: Universities in Early Modern Europe*. Cambridge 1996, 77–107; Aleksander GIEYSZTOR, Management and Resources. In: Walter RÜEGG (ed.), *A History of the University in Europe: Universities in Early Modern Europe*. Cambridge 1996, 108–143. On shared academic culture, see also Marian FÜSSEL, *Gelehrtenkultur als symbolische Praxis: Rang, Repräsentation und Konflikt an der Universität der Frühen Neuzeit*. Darmstadt 2006.

13 Willem FRIJHOFF, Graduation and Careers. In: Walter RÜEGG (ed.), *A History of the University in Europe: Universities in Early Modern Europe*. Cambridge 1996, 355–385.

14 On Nordic universities and their interconnectedness with the European mainland in terms of structural similarities, recognition of degrees, academic travels and professorial appointments, see JENSEN, *Cosmopolitanism*, see footnote 8.

15 On the importance of foreign travel experience for academic appointments, see JENSEN, *Cosmopolitanism*, see footnote 8, vol. I, 203–205. For the general development in nationality among Nordic professors, see *ibid.*, vol. I, 199–223, vol. II, 78–88. For the specific case of the *Skytteanske* professors, see *ibid.*, vol. I, 206–211.

16 On academic travel scholarship, see also Vello HELK, *Dansk-norske studierejser: 1661–1813*. Odense 1991.

as to establish learned connections between domestic scholarly communities and foreign ones.

For modern-day historians of science and learned culture, great potential therefore lies in examining, exploring and understanding the intellectual geography of these early modern Nordic scholars. To determine where they travelled to would show us where they established connections and with whom they shared knowledge. With additional information about the travellers themselves (and not only about their destinations), this intellectual geography could moreover be substantiated and explored in multiple different ways, which eventually also would lead to a better understanding of the placement of the Nordic academic world within the broader European Republic of Letters. In order to attain such an analytical and explorative level, however, both a substantial and critical amount of data must be collected and structured, and a digital exploration and visualization tool must be developed and designed.

### 3. VIA: Virtual Itineraries of Academics

Virtual Itineraries of Academics (VIA)<sup>17</sup> is a preliminary attempt to create such a digital tool. The main idea behind VIA is to connect and visualize a variety of spatial, temporal and prosopographical data related to academic travels and travellers in such a way that users can easily query the dataset by combining filters pertaining to its various dimensions. The tool's main advantage lies in its coordinated view, meaning that as soon as one or several of the parameters are selected, all other parameters of the entire dataset are instantly adjusted accordingly.

At first glance, VIA provides the user with an overview of the contents of the dataset in general terms, i.e. with information on the timeframe of the dataset, the geographic boundaries and distribution of journeys, the number of journeys and scholars, and the distribution of the main prosopographical properties. This allows the user to quickly grasp the geo-temporal context of the dataset and obtain a general understanding of the people involved in terms of their prosopographical attributes (nationality, confession, education, age, etc.). As the user begins to interact with the interface, VIA's coordinated view provides him or her with the possibility of querying the dataset by combining temporal, geographic and prosopographical filters as well as of exploring its contents in more detail by viewing specific periods of time or geographic regions, or by analysing the travelling behaviour of groups of scholars with common traits. This allows deeper investigation of the dataset in terms of categories, with

---

17 VIA is available at: <http://knowledgecartography.org/via2/#travels>.

the objective of highlighting and exploring possible correlations between the various dimensions of the data. It is possible, for example, to examine whether there are correlations between the age of travellers and the lengths of their journeys, or between the time of trips and their geographic extent. For the more advanced user with good knowledge of the data, VIA can also function as a deeper analytical tool; users can explore the dataset in depth, compare subgroups of scholars and follow their travels in the geographic context, and obtain information about individual journeys and scholars. Moreover, the geographic and temporal contextual information included in the tool also permits expert users to see who else may have been in a specific city at the time of a given visit, what where the main institutions that scholars may have visited, and what major events occurred during a given sojourn.

The technological choices involved in the development of VIA were influenced by two main factors. On the one hand, the technology had to allow for easy and fast prototyping (owing to the initial “design sprint” method), while on the other hand it also had to provide easy access for interested researchers and enable future expansion. Based on these constraints, we chose to develop the tool using current web technologies (HTML5, CSS3, ES2017) to support quick prototyping without worrying too much about compatibility with older browsers, which could be addressed later if needed. With regard to data manipulation and visualization, the application uses state-of-the-art libraries such as `crossfilter.js`<sup>18</sup> for fast multivariate dataset filtering, `leaflet.js`<sup>19</sup> for web map and cartographic visualization, and `d3.js`<sup>20</sup> for interactive visualizations in the form of widgets. In addition, the tool was developed as a self-hosted client-only web application with no server requirements. The data related to the travels and all contextual information is stored externally as static JSON files. In the event of further development, these static files could be replaced with a dynamic system—be it a database editable from a different application or a system to load local CSV or JSON files.

#### 4. The Dataset: Eighteenth-Century Nordic University Professors

The dataset used by VIA is based on Mikkel Munthe Jensen’s prosopographical database on eighteenth-century Nordic university professors.<sup>21</sup> This database

18 <https://github.com/crossfilter/crossfilter>.

19 <https://leafletjs.com/>.

20 <https://d3js.org/>.

21 For a more detailed description of the database and its contents, see JENSEN, *Cosmopolitanism*, see footnote 8, vol. II – Appendix, 25–31.

contains (semi)structured biographical data on all 592 university professors who held an ordinary or extraordinary chair between 1700 and 1799 at one of the six universities subordinated to one of the two Nordic powers during that time; i.e. the University of Copenhagen in the royal residence city and (partly) the University of Kiel in the German duchy of Holstein, both belonging to the Danish monarch, and the Universities of Uppsala, Åbo and Lund within the larger Swedish Kingdom as well as the University of Greifswald in the German principality of Swedish Pomerania, all belonging to the Swedish monarch. On the one hand, these six universities can be examined regionally as belonging to a single region with a common confession, similar political structures and a shared academic culture. On the other hand, they can also be separated following various demarcations such as political divides between the two Nordic powers, cultural divides between German and Scandinavian universities, geopolitical divides between capital (Copenhagen) and provincial universities, national divides between Danish (Copenhagen), Swedish (Uppsala, Åbo and Lund) and German (Kiel and Greifswald) universities, or simply institutional differences between the individual universities. In other words, this wide range of political and cultural differences and similarities, along with confessional and regional uniformity, has enabled us to develop a digital tool containing substantial comparative and transnational elements.

Among the 592 professors who worked at the six universities, 290 professors undertook a total of 332 academic travels to foreign countries in the period between 1670 and 1790, with only a few exceptions of earlier journeys. Since travels are characterized by the fact that the travelling person frequently changes location within a limited period of time—and the travelling person itself is naturally characterized by a diverse set of biographical attributes—the three fundamental parameters of the dataset are space (geographic locations), time (period of travel), and prosopography (biographical attributes of the traveller). The spatial component of the 332 travels consists of more than 1,200 registered visits to foreign sites of learning, mainly university cities or capitals, spread across the European continent. The temporal component is captured as periods of years, with a starting year and an ending year for each journey. The prosopographical component consists of 19 different categories containing more than 5,000 pieces of biographical data related to the 290 academic travellers in total. Together, these three parameters constitute the core data structure of VIA as illustrated below: The 19 prosopographical categories can be divided into personal categories (traveller name, nationality, confession, and age at departure), institutional categories (country, institution name, faculty, scholarly division,<sup>22</sup>

---

22 Since the faculty of philosophy as the lower faculty in early modern universities mainly had a foundational function for the three higher faculties, it also encompassed a wide variety of

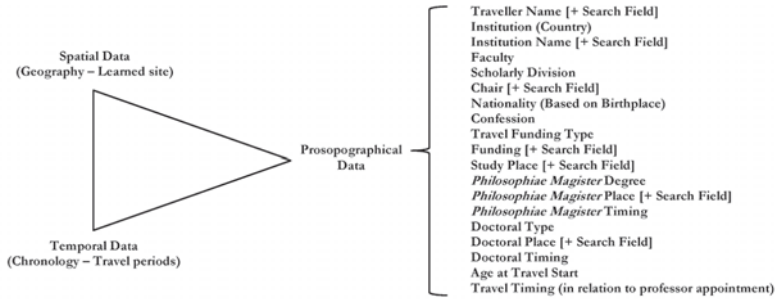


Fig. 1 Underlying data structure of VIA.

chair, and travel timing [meaning whether the journey took place before or after appointment to professorship]), travel funding categories (funding type and funding name) and academic categories (place of study, doctoral and *magister* degrees, and time and place of receipt of those degrees), thus offering a relatively broad description of the respective traveller using the available data. Moreover, each of these 19 categories contains several selectable subcategories that can be combined as desired to enable explorative use of the dataset. If a user finds one specific journey, city or traveller of interest, he or she can simply select the desired item from either the chronological or geographic representation or search for an individual academic traveller using the search option. With the options of combined selection and selection of larger categories such as “natural philosophy” or simply a specific university, users also have the possibility to look for or explore more general trends within the dataset.

The sources behind the entire dataset consist of a combination of biographical sources such as travel diaries, autobiographies and other ego-documents,<sup>23</sup> classic biographical literature such as the national biographical encyclopaedias,

---

disciplines; in effect, everything from ancient languages and metaphysics through rhetoric, history and politics to mathematics, logic and the natural philosophical subjects. In order to provide a more discipline-dependent view, the category of scholarly disciplines was created. It simply entails a division of the various chairs in the faculty of philosophy across the three higher faculties.

23 Examples of consulted ego-documents: Erik ALSTRIN, *Travel Letters to Johannes Upmarck-Rosenadler 1707–1712*, Kungl. Vetenskapsakademien (KVA); Erik Alstrin, *Berg. Brevs.*, Andreas Christian HVIID, *Udtog af en Dagbog holden i Aarene 1777–1780 paa en Reise giennem Tydskland, Italien, Frankrige og Holland*. København 1787. More work still needs to be done on such remaining primary sources, since they contain much more additional data beyond what is transferred into biographical literature.

nineteenth-century university historical works<sup>24</sup>, and more recent research literature on Nordic academic travels.<sup>25</sup> Luckily for us today, embarking on an academic journey during the early modern period was such a momentous and prestigious life event that it practically had to be mentioned in any (auto)biographical piece. Hence, by examining the available biographical literature, we can determine with high certainty who undertook such travels.

Specific travel data such as dates and locations are unfortunately less consistently found in both biographical literature and source material, however. Working with material on early modern scholars on a quantitative (prosopographical) scale like this, which also includes less well-known and entirely forgotten scholars, often entails the problem of incomplete and fragmented data. The dataset on eighteenth-century Nordic university professors is no different in this regard. Taking all three parameters into consideration, the prosopographical one is undoubtedly the most complete, as data for the majority of all the categories have been found—with the exception of data on funding.<sup>26</sup> Missing and fragmented data concerning the temporal and spatial parameters are encountered much more frequently. Out of the 332 total journeys, 87 are either missing all temporal information, meaning that we have neither a start nor an end date, or are fragmented in the sense that we have only one of the two. In a similar manner, missing data also characterizes parts of the geographic dataset. While many (auto)biographical entries do list the various cities and

24 Examples of consulted biographical encyclopaedias: Historische Commission bei der königl. Akademie der Wissenschaften, Allgemeine Deutsche Biographie (ADB), vols. 1–45; Carl Fredrik BRICKA, Dansk biografisk Lexikon, tillige omfattende Norge for Tidsrummet 1537–1814. København 1887–1905; Åsa KARLSSON (ed.), Svenskt biografiskt lexikon (SBL) [Online Database]. Examples of consulted nineteenth-century prosopographies of university professors and other academic members from Lund University, Åbo University and Kiel University: Magnus Laurentius STÅHL, Biographiske Underrättelser om Professor vid Kongl. Universitetet i Lund, ifrån dess inrättning till närvarande tid. Christianstad 1834; Martin TEGNÉR WEIBULL / Elof TEGNÉR WEIBULL, Lunds universitets historia 1668–1868, del 2. Lund 1868; Johan Jakob TENGSTRÖM, Chronologiska förteckningar och anteckningar öfver Finska universitetets forna procancellorer samt öfver faculteternas medlemmar och adjuncter från universitetets stiftelse inemot dess andra sekularår. Helsingfors 1836; Friedrich VOLBEHR / Richard WEYL, Professoren und Dozenten der Christian-Albrechts-Universität zu Kiel: 1665–1915. Kiel 1916.

25 Example of consulted research literature: HELK, Studierejser, see footnote 16.

26 Data in this field could be improved through studies on the remaining archival material in travel scholarships that can be found in Uppsala and Copenhagen; see for instance Ehler's, Rosenkrantz's or King Frederik II's travel grant, Royal Archive in Copenhagen. Please note that the "no data" fields in the subcategories for the degrees of *magister philosophiae* and doctor indicate both those travellers who did not hold one of these two degrees (the majority) and those for whom such data could not be found. A clear distinction between the two needs to be made, although actually determining the certainty between such negatives is a difficult exercise.



locations that the traveller visited, others only state that the traveller was travelling at all or that he was travelling to certain countries or one or two specific cities, leaving the remainder of the itinerary in the dark.<sup>27</sup>

These missing and fragmented data naturally pose a representational problem. Simply excluding the fragmentations or omitting entire travel entries that feature missing and fragmented data would not be a viable solution, as it would lead to significant distortion of the actual picture considering the frequency of such fragmentations. We must accept that missing and fragmented data are a common phenomenon in datasets concerning the early modern period—and instead of excluding such data, we must therefore seek a solution based on design.

In order to develop the visualization tool, the complexity of the data was formalized in a data model with the aim of retaining as much of the original information as possible. While the data model itself is tailor-made for the data describing the travels of eighteenth-century Nordic university professors, the aim—wherever possible—was to keep it open to potential expansions so as to allow the tool to be applied to more general prosopographical explorations and the visualization of datasets with strong geographic and temporal components as well. Based on the abovementioned dataset, the data model includes three main entities and three secondary entities:

*Travels* represent the individual journeys taken by Nordic scholars and are described by way of reference to the specific traveller as well as by way of temporal extent (start and end year), geographic extent (countries and cities visited) and travel funding. Where the temporal extent is unknown, we have allowed for the possibility of travels with unknown start and/or end dates.

*Travellers* are described anagraphically (name, nationality, year of birth and death) and in terms of their education (place and date of study; place, date and type of master and doctorate), teaching activity (institution, faculty, scholarly division, chair) and confession.

*Locations* represent cities that were visited during travels. They are described geographically (latitude and longitude) and in relation to people, institutions and events existing or taking place in the city at a given time.

*People, Institutions and Events* are secondary entities, present only as parameters related to a city during a time interval.

Because of the fundamental importance attached to journeys, the *travel* entity is the main unit of the visualization, with all other measures using “travels” as a unit. For example, the size of a city on the map is proportional to the number of travels that include the city as a destination; the prevalence of a nationality

---

27 Despite detailed examinations of the remaining ego-documents and institutional source documents such as matriculation registers from across the continent, we nevertheless had to accept the fact that data on the early modern period will always be fragmented.

in the visualization is measured in number of travels undertaken by scholars of that nationality, etc. For this reason, as well as due to technical factors related to the filtering mechanisms, the actual data files are denormalized and the information related to the *travellers* is associated with the travels themselves, as if the traveller were a property of the travel.

This data model and denormalization allow for fast filtering of travels by avoiding the need to join the travel data and the traveller data during filtering operations; however, this might not always be the most useful choice for researchers, and it introduces a unit of measure (number of travels) that might not be intuitive at first glance. Other limitations of the data model are mainly related to the varying precision of the underlying data itself. The overlapping of temporal and spatial uncertainty was explicitly addressed during the design process so as to avoid possibly misleading representations while simultaneously providing access to the available data at the greatest possible level of precision. Given the overall difficulty of reconstructing travel data accurately, the order of visits is not taken into account in the current data model, and the journey as a whole (not the individual city visit or transfer) is thus taken as the basic unit of description for travel activity. The fact that the order of visits is not explicitly described in the data naturally also propagates to other information related to the relationship between traveller and travels, such as the age of the traveller at the time of his visit to a specific city.

With regard to the temporal uncertainty, travel start and end dates can be marked as missing or uncertain (and can include an estimation of the uncertainty span); geographic information can be entered at varying precision levels (in the prototype: city or country). While the existing temporal uncertainty of data is expressed in the temporal view, the representation of geographic uncertainty has not yet been integrated, and country-level visit information is currently not being visualized although its integration has been designed.

## 5. User Interface and Data Visualization

VIA's interface focuses first and foremost on the exploration of the dataset by means of a quick and flexible approach allowing the user to filter and manipulate the dataset and instantly view the results of such manipulation. VIA was therefore designed as a set of coordinated views<sup>28</sup>, meaning that every element

---

28 Such an information visualization model is known as linked representations or as multiple and coordinated views. It is a collection of views in which interactions with one visual representation are immediately reflected in other "linked" representations. This model is commonly used when users need to deal with different data types simultaneously or handle data with complex relationships, such as spatio-temporal data.