

## RECONSTRUCTING HISTORICAL NETWORKS DIGITALLY: NEW APPROACHES, OPPORTUNITIES, AND EPISTEMOLOGICAL IMPLICATIONS OF SOCIAL NETWORK ANALYSIS

Conference at the German Historical Institute Washington (GHI), October 25-27, 2018. Organized by the GHI in cooperation with Stanford University. Made possible by support from the Deutsche Forschungsgemeinschaft (DFG) and the Friends of the GHI. Conveners: Matthew Hiebert (GHI), Simone Lässig (GHI), and Katherine McDonough (Stanford). Participants: Mollie Ables (Wabash College), James Boyd (University of Bristol), Arno Bosse (Oxford University), Prim van Bree (LAB1100), Daniel Burckhardt (GHI), Hendrikje Carius, (University of Erfurt), Alessandra Celati (University of Verona), Fabian Cremer (Max Weber Foundation), Seth Denbo (American Historical Association), Tom Ewing (Virginia Tech), Lisa Gerlach (Ruhr University Bochum), Mark J. Hill (University of Helsinki), Oliver Kiechle (Heinrich-Heine-University Düsseldorf), Geert Kessels (LAB1100), Rachel Midura (Stanford University), Jens Pohlmann (GHI), Jessica Otis (George Mason University), Atiba Pertilla (GHI), Andrew Ruis (University of Wisconsin), Martin Stark (University of Trier), Justin Dolan Stover (Idaho State University), Suzanne Sutherland (Middle Tennessee State University), Ville Vaara (University of Helsinki), Scott B. Weingart (Carnegie Mellon University), Jennifer Serventi (National Endowment for the Humanities), Thorsten Wübbena (DFK Paris), Duygu Yildirim (Stanford University).

The first panel, *Capacities and Limitations of SNA Models for History*, was chaired by Katherine McDonough. Mollie Ables, in her presentation “Musicians’ Networks and the Tourism Industry in Early Modern Venice,” discussed her work reconstructing a bimodal network of musicians and their institutional and guild associations using Gephi on the basis of archival sources that include employment records, guild rosters, and tourist guides. The network, made available at [www.musiciansinvenice.com](http://www.musiciansinvenice.com), reveals the cultural power dynamics at work in early modern Venice. In “Mapping the Post: Networks of Published Postal Itineraries, 1545-1684,” Rachel Midura presented visualizations of postal networks in the early modern period that were generated on the basis of a 1700 route database she derived from postal itineraries. Tracing the extension and international expansion of these networks, Midura showed the central hubs in this “communication revolution,” making apparent also how political events affected it over the period. In the final talk of the panel, “Modeling the

Dynamics of a Rural Credit Market in the 19th Century,” Martin Stark presented interdisciplinary research employing longitudinal stochastic actor-oriented modeling (SAOM) for overcoming limitations of traditional historical SNA in modelling change over time. Focusing on a small German village between 1830 and 1850, a time when mortgage laws underwent reformation, a social network constructed from mortgage records revealed significant expansion and decentralization of the credit market. This is in line with established research that has determined new legislation initiated a transformation of the market, suggesting the effectiveness of the SOAM methodology for simulating trustworthy historical research processes.

The second panel, *Collaborative Approaches*, chaired by Seth Denbo, began with Suzanne Sutherland’s paper “Discovering Microhistories in Big Data: Network Mapping and Humanities Projects.” Sutherland discussed her sub-project within “Mapping the Republic of Letters,” using Palladio to study the Italian intellectual networks of seventeenth-century polymath Athanasius Kircher, visualized through the correspondence data from 2000 letters. For Sutherland, social network visualizations provide a structural guide in her research, adding depth to readings and preserving context and nuance within her inquiry. James Boyd, in “Sourcing Historical Networks: Contemporary Networks and Controlled Crowdsourcing,” presented his research into collaborative networks behind the nineteenth-century technological development of the steam ship. His network-analysis-based approach and the development of a public-facing site to collect further data reveals forgotten actors in a historiographical shift from the biographical to social and personal history. Jessica Otis’s “Six Degrees of Francis Bacon: Gender, Social Network Analysis, and Early Modern Britain,” the final paper of the session, discussed the challenges of examining gender and the lives of women in Bacon network data. Named Entity Recognition was reinforcing biases on how women were identified, transforming women into edges rather than nodes, prompting intervention into the ontological construction and scope of the data, particularly through targeted crowdsourcing.

The final panel of the day, *Technical and Methodological Innovation*, was chaired by Jens Pohlmann. Mark Hill, in his presentation “Intellectual and Material Networks in Eighteenth Century Britain: The ESTC as Historic Relic,” discussed the distillation through metadata extraction of the over 480,000 English Short Title Catalogue documents into a social network of 87,000 agents, representing also their

roles in relation to specific texts. In this transformation of the ESTC from a record of historical data to a representation of actual historical networks, changes within knowledge production and publications over the eighteenth century can be traced in ways inaccessible to traditional biography and secondary sources. In their presentation “Concepts and Potentials of Graph-based Data Structures for Analyses of Historical Networks,” Thorsten Wübbena and Fabian Cremer discussed their development of a graph-based model for locating relationships between entities in the Sandrart.net electronic edition. Creating a plugin to import artwork data from Wikidata into the model for visualizing connections further demonstrated the utility of graphs for finding flaws and gaps in data. Scott Wiengart, in the final panel presentation, “An Ideal Historical Network Analysis Toolkit,” assessed existing network analysis tools as not fully meeting the disciplinary needs of historians. An ideal historical network analysis toolkit would provide: affordances for accounting for biases and data uncertainty, multiple forms of connections, temporality with varying granularity, representation of perspectival differences, an interface to evidence, unstructured source extraction, and a workflow process that includes data entry and cleaning.

The fourth panel, *Subversive Connections*, was chaired by Atiba Pertilla, opening the second day of the conference portion of the event. Alessandra Celati, in her presentation “A network of dissident physicians in the confessional age: Research perspectives and methodological challenges,” discussed the creation of her database of sixteenth-century Italian physicians who were members of dissident movements from the 1520s (<https://celati-netdis.github.io/>). Drawing on various sources including inquisition trials, private correspondence, published books, and notaries, Celati maps the circulation of ideas within Venetian dissident movements, showing physicians as a bridge between aristocratic and working-class networks. Oliver Kiechle, in his paper “The emergence of a digital social network: Communication and cooperation in early Usenet,” explained the use of social network analysis within his study of early Usenet from 1979. Approaching 2 million Usenet messages as a knowledge network, Kiechle uses social network analysis in investigating the nature of the system’s cooperative structures and in informing the questions he creates for oral history interviews. In the panel’s final presentation, “Guerrilla Networks, Mobility, & Environmental Damage during the Irish Revolution,” Justin Stover discussed his use of various network analysis tools in tracing over time the diverse built and natural

environmental damage of the Irish Revolution. Historical network research facilitates for Stover the extension of his analysis from the geography and intensity of revolutionary violence to the operational dynamics of guerilla networks.

The fifth and final panel of the conference, *Implications for Historical Inquiry*, was chaired by Jennifer Serventi. Tom Ewing, in his paper “Using Digital Humanities Tools and Network Analysis to Understand a Global Influenza Epidemic, 1889-1890,” examined the global construction and circulation of knowledge arising from the Russian flu epidemic. Ewing documented the relationship between the actual number of recorded deaths and the rhetoric of the epidemic, explored through a network of terms derived from a corpus that includes newspapers and medical journals. Duygu Yildirim, in “Scholarly Engagements and the Nature of Knowledge Construction in Seventeenth-Century Constantinople,” presented her study of cross-cultural scholarly engagement between Ottoman scholars in seventeenth-century Istanbul and Europeans. Applying social network analysis to the problem presents data collection challenges, insofar as correspondence networks in the Western sense do not here pertain; Yildirim focuses analysis on how certain text were recommended, exchanged, and interpreted. In the final paper of the conference, “Academic Networks at Hebrew University (Jerusalem), 1925-1945,” Lisa Gerlach discussed a component of her doctoral project involving social network analysis in nodegoat of 150 letters of recommendation. Gerlach’s visualizations show central actors within a transnational recommendation system and how these networks changed over time with respect to purpose, topics, and persons.

Each panel was followed by rich discussion that carried over into breaks, meals, and the closing session of the conference. One recurrent observation was the capacity of network research to help develop new arguments through the use of historical sources that cannot simply be read and to approach existing sources at greater scale. Discussion also pointed to the usefulness of digital methods in helping locate biases and gaps in sources, while also posing new dangers such as algorithmic bias and the challenges of conveying critique, of power imbalances or imperialism for example, within a visualization. Also highlighted was the importance of collaboration within historical network research for heightened efficiency and depth of inquiry. Here, it was underscored, historians must treat archivists, librarians, and tool developers as intellectual equals.

The advancement of tools specific to historical network analysis was showcased by the day of workshops preceding the conference, with participants also cognizant that further developments to more fully model the specific disciplinary needs of historians would be advantageous. Discussion also addressed the often “revolutionary” expectations of digital history by historians on the outside looking in, where confirmation of a hypothesis using new techniques, for example, is often perceived not to justify the resource intensiveness of computation-based approaches. In this context the challenges of sustainably funding historical network research also arose, for while traditional research costs are “hard-funded” through libraries, salaried positions, conferences, travel funding, and publishing models for physical books, DH researchers typically require grants to do their work, which also serves to support the administrative and infrastructural development of their institutions. In establishing sustainability and advancement for the field, participants also pointed to the value of holding an international event focused on digital humanities methodologies, appreciating the unique opportunities for exchange that a forum on the digital reconstruction of historical networks was able to provide.

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