

# Chapter 6. Social Network Analysis and Feminist Methodology

Patricia Fancher

UNIVERSITY OF CALIFORNIA, SANTA BARBARA

Michael J. Faris

TEXAS TECH UNIVERSITY

We choose to open with the often-cited words of Sara Ahmed on the politics of citation, which she defines as “a rather successful reproductive technology, a way of reproducing the world around certain bodies” (“Making”). By attending to citational practices, Ahmed marks how academic work continues to colonize knowledge production. She also articulates alternative citational practices that reproduce the knowledge of marginalized scholars. She asks us to do the same:

When we think this question “who appears?” we are asked a question about how spaces are occupied by certain bodies who get so used to their occupation that they don’t even notice it. They are comfortable, like a body that sinks into a chair that has received its shape over time. To question who appears is to become the cause of discomfort. It is almost as if we have a duty not to notice who turns up and who doesn’t. Just noticing can get in the way of an occupation of space. (“Making”)

In both of the research projects discussed in this chapter, we use social network analysis (SNA) as a feminist digital reading methodology that has helped us to ask the question “who appears?” and to sit in that discomfort noting the continued whiteness that occupies feminist and queer spaces. In our use of SNA, we create visualizations that allow us to answer “who appears” within citational practices, wherein we both focused on the reproduction of whiteness through citational practices. Based on these visualizations, we recognize our duty to notice who appears and who does not. We are able to identify whose voices are included, and who is being excluded from academic and professional discourses. This chapter introduces feminist SNA methods and methodologies by putting digital research methods of SNA in conversation with feminist methodological concerns.

In order to theorize the potentials for feminist SNA, we outline the methodological choices we made in our research projects, focusing on each project’s goals, study designs, limitations, and challenges. First, Trish outlines methods for digital archival research using SNA to study the practices of solidarity, inclusion, and exclusion within a community of early 20th-century women physicians

(published in *Peitho*; access Fancher et al.).<sup>1</sup> The second, conducted by Michael (initial results published in *Peitho*; access Faris), is a citation network analysis of queer rhetoric studies that uses SNA in order to explore citation patterns for how the field builds on the work of scholars of color (or, how it often fails to). Based on these research projects, we outline several affordances of feminist social network analysis for scholars of digital writing and rhetoric, especially centering community, outlining circulation of discourse, and documenting exclusions and marginalization. We recognize that our academic and embodied positionalities inform our research, methods, and analysis. We are both white, queer, feminist scholars who are studying communities that are also predominantly or exclusively white. These positionalities informed the communities we selected for study, the questions we asked, and our methodologies. Our research methods are designed to analyze and redress the racist practices that reinforce the reproduction of whiteness. At the same time, we recognize that our own experiences and biases inform our research, likely creating blindspots or misinterpretations that we are working collectively and individually to assess and redress. Before turning to our specific research projects, we define SNA, situate it in rhetoric and writing studies, and explore how feminist methodological interventions can assist in SNA methods.

## What Is Social Network Analysis?

Social network analysis is commonly used to study community formation and dynamics, in and outgroups, organizational communication, and digital communities (especially through social media). SNA approaches these phenomena through the model of *networks*, which Duncan Watts has famously defined as “a collection of objects connected to each other in some fashion” (28). That is, a network consists of two fundamental features: 1) *nodes*, or individual agents or objects (such as people, organizations, social media accounts, texts, and so forth), that are connected through 2) *links* or *edges*, or connections of some sorts.

To help explain social networks, we provide a sample graph in Figure 6.1. This figure shows a citation network of the authors cited by Eric Darnell Pritchard in their 2012 article “Yearning to Be What We Might Have Been: Queering Black Male Feminism.” Visualizations of social networks are often displayed as graphs like this one, with nodes represented by dots (or other images or icons) and links or edges represented by lines between those nodes. In this graph, edges connect Pritchard’s node to the nodes that they cite using directed edges. Edges are *directed* when there is a unidirectional relationship (like a citation or a reply on Twitter) and are undirected when there is a reciprocal relationship (like two texts

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1. We follow Jay Timothy Dolmage’s model of avoiding metaphors of sight and hearing when referring readers to other sources. In *Academic Ableism*, he uses “access” instead of “see” when suggesting such sources (193n1).

that are cited together, or two students in the same class in a network of students). Edges can also represent data about the relationship between two nodes. For instance, in this graph, we've increased the width of the edge proportionally for how many texts by an author that Pritchard cited. Pritchard cited 3 texts by E. Patrick Johnson, so that edge is wider than other edges. (This is called an *edge weight*.)

Nodes, too, can be visualized to represent data. In this graph, we've represented each node's weighted in-degree through the size of the node. A node's *degree* is calculated by how many nodes it is connected to. Its *in-degree* is calculated by how many directed edges link to it, and its *out-degree* is a measure of how many nodes it links to. A *weighted* version of these includes the weight of those edges. So, for example, Johnson has an in-degree of 1 and a weighted in-degree of 3. Pritchard, though, because this is a rather simple network, has an in-degree of 0 but has an out-degree of 26 (they cite 26 authors) and a weighted out-degree of 30 (because they cite Johnson three times, Dwight McBride twice, and David Ikard twice).

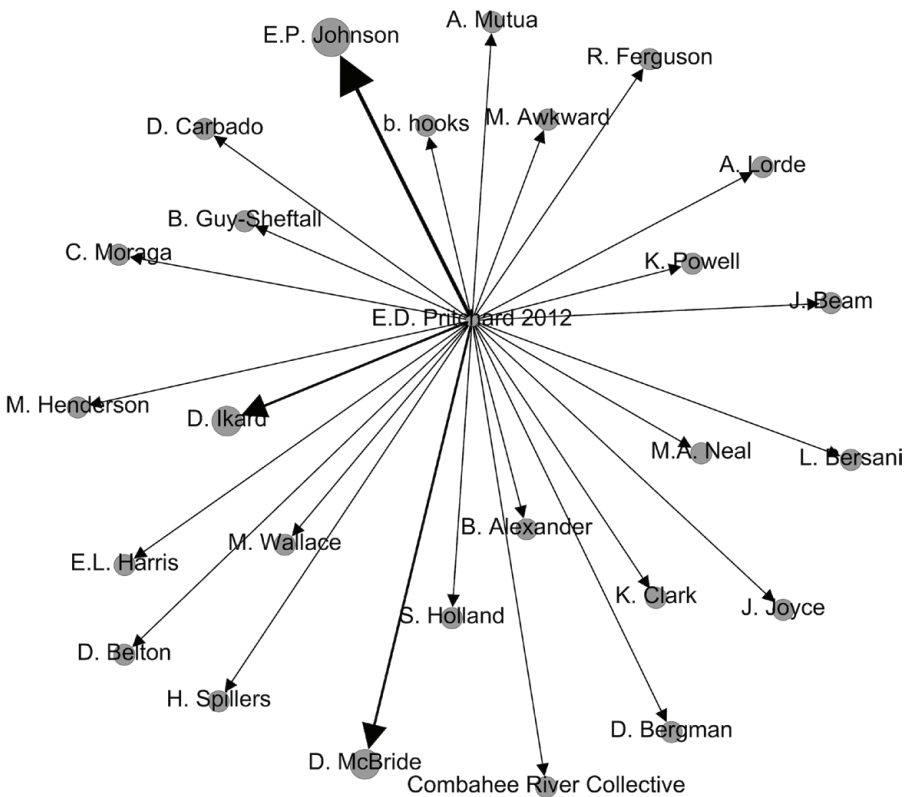


Figure 6.1. A citation network visualization showing what authors are cited by Eric Darnell Pritchard in their 2012 article "Yearning to Be What We Might Have Been: Queering Black Male Feminism."

A few other things to observe about social networks and their visualizations: Graphs can be *unimodal*, meaning they include only one type of node (like a network of students), or *multimodal*, meaning they include at least two types of nodes (like a network of students and teachers). The graph in Figure 6.1 is multimodal: It has a node type that represents specific texts (Pritchard's 2012 article) and a node type that represents cited authors. Network visualizations can also incorporate other features to help creators and audiences understand them, including the use of color (perhaps to visualize communities within a network) or the use of icons to represent different types of nodes.

In addition to visualization techniques, SNA uses algorithms and analytics to understand relationships in a network and the network holistically. Generally, these measurements attend to either 1) "the network as a whole" in order "to see and measure aspects of whole structures" or 2) "the ways that individuals are embedded in networks" (Hanneman and Riddle). Measurements that attend to the whole network typically ask questions of size; density (how well connected are actors in the network); connectivity, or what Robert A. Hanneman and Mark Riddle call the "texture" of the network (patterns of how nodes are connected in the network); clustering; and cliques or subnetworks. Measurements that attend to individual nodes embedded within the network typically ask questions related to how well connected a node is and how authoritative (influential) or central the node is to the whole network or to a subnetwork. Some of these measurements are simple mathematics—like counting a node's degree, or how many other nodes it's connected to—while others require algorithms that recursively go through the data, such as Google's PageRank (which measures the authority of a webpage based on the authority of texts that link to it). (For accessible introductions and overviews of these concepts, access Hanneman and Riddle; Kadushin; Scott.)

SNA has become quite popular over the last few decades—particularly because of the publication of popular books like Duncan Watts's *Six Degrees* and Albert-László Barabási's *Linked*, but also because many digital humanities scholars have found SNA useful as a distant reading method (access Jänicke et al. for an overview of many of these approaches). SNA can highlight trends and patterns that might not otherwise be observed, whereas close reading places those trends in particular historical and embodied contexts. Further, distant reading practices like SNA can afford the opportunity to notice what Matthew Kirschenbaum calls *provocations*, or those "outlier results" that could lead a researcher to attend to questions or aspects of texts or a dataset they might have otherwise ignored (1).

SNA has been deployed as a method or suggested method in rhetoric and writing studies, though much of this work is suggestive, and it has many resonances with the work in rhetoric and writing studies that overlaps with DH methods and considerations (Mueller, *Network Sense*; Ridolfo and Hart-Davidson). In *Digital Rhetoric: Theory, Method, Practice*, Douglas Eyman suggests that

SNA “provides a powerful set of tools for digital writing research” (103). Jordan Frith also advocates SNA as a useful method to complement Actor-Network Theory and Activity Theory in technical communication research, suggesting that its “focus on how people are influenced by their social network” assists in “decentering individuals” and attending to social structures (292).

Scholars in the field have turned to SNA to understand and complicate the concept of student participation in composition classes (Omizo), to visualize and analyze public health communication (Stephens and Applen), and to compare online social networks that emerge during times of crisis (Baniya). And, while not drawing on the methods of SNA for analysis, the Writing Studies Tree (<https://www.writingstudies-tree.org>) visualizes the discipline of writing studies as a network (access Miller et al.). Much of this work helps scholars to develop what Derek Mueller calls *network sense*: “Recognizing forms and patterns in data fosters network sense; we begin to be able to see those distributed, circulating and non-obvious formations previously compromised by a lack of field-wide record keeping” (*Network Sense* 62). While SNA has been among those methods adapted in rhetoric and writing studies, few if any SNA studies in the field are explicitly informed by feminist methodologies.

While these applications of SNA do support a networked sense of rhetoric, Gabriela Raquel Rios reminds us that metaphors of mapping and ecology erase physical land and bodies as sites of rhetoric. She insists on returning to the land as a site of rhetoric:

This is an indigenous concept of relationality that is similar to the notion of ecologies—of networked relationships existing among various human and non-human objects—however, this indigenous concept relies on a relational ontology at the level of kinship quite literally. As such, land-based literacies are literal acts of interpretation and communication that grow out of active participation with land. (64)

Our visualizations also remove communities represented from land. However, we do acknowledge the land on which both of us work, live, and write. Trish lives on the unceded territories of the Chumash people. She walks along the shores that the Chumash historically have and continue to embark in *tomols* across the channel rich with life. She puts her hands into the rich soil and grows food on the land that the Chumash cultivated and thrived upon before white colonizers enslaved them to build the Spanish Missions and the colonial infrastructure that continues to attract tourists and school groups into Santa Barbara. Michael lives and works on historic Numunuu Sookobitu (the Comancheria), the lands occupied by the Numunuu (Comanche) in the 19th century. The local vineyards that produce the wine Michael and his colleagues drink, the six-lane roads in Lubbock he drives on, the Spanish Renaissance-style buildings he works in on campus, and the cotton fields he passes while driving out of

town all reside on the Llano Estacado (the Staked Plains), where the Numunuu once hunted buffalo before Spanish, Mexican, Texan, and U.S. American settlers brought smallpox and cholera epidemics, wiped out the buffalo, and eventually relocated the Numunuu to reservations after decades of wars. We honor and express gratitude to the Indigenous people who are the rightful stewards of the lands we occupy.

## Social Network Analysis and Feminist Methodology

A major challenge that comes with network visualizations is that they are often misread or presumed to transparently represent reality. This challenge is especially significant for feminist researchers who have long critiqued claims of objectivity. Mary Fonow and Judith Cook define critiques of objectivity to be a central tenant of feminist methodology (2213), as does Gisa E. Kirsch's important work on ethics in feminist methodology. Kirsch instead features the subjective, embodied experience of the researcher as central to knowledge claims (4-5).

However, there's a lure to data visualizations that can lead a researcher or a reader to believe they're viewing unmediated reality with what Donna Haraway calls a "gaze from nowhere" (581). As Desiree Dighton explains, drawing on the work of Haraway, Catherine D'Ignazio and Lauren F. Klein, and Johanna Drucker, "visualizations interpellate users into a particular perspective/ideology by a seeming lack of subjective authorship and the illusion that the viewer has control over the display and, perhaps, the underlying data" ("Rhetoric and Feminist"). While Dighton here is explaining the lure of interactive visualizations (which network graphs can be), her point extends to all network graphs: They can be read as unmediated reality without a subjective author and can give readers a sense that they understand the data.

Indeed, in some ways, SNA seems antithetical to methodologies of feminist rhetorical research, which have been so consistently committed to embodiment, particularity, and the nuance of particular people and communities. In her introduction to a collection on feminist methodologies for rhetorical research, Eileen Schell consistently returns to central themes of embodiment and emotion, as well as care (4). To be clear, SNA does not include the nuance of lived experience. Another risk of SNA as a set of methods, like other quantitative approaches, is that it can flatten complex relationships (Frith 295; Fuhse and Mützel 1078). Further, Leah DiNatale Gutenson and Michelle Bachelor Robinson have demonstrated that digital reading methods often replicate and reinforce the erasure of Black women in the archives.

At the same time, while Schell and many other feminists in rhetoric do center emotion and embodiment as key methodological concerns, Schell and K.J. Rawson's collection on feminist methodology has movement as its central theme because feminist methodologies often require us to attune ourselves to movement within communities and require feminist researchers to adjust to adopt ethical,

feminist research methods. Importantly, SNA can visualize community dynamics and movement. Given the importance of solidarity and intersectionality for feminist research, SNA is a valuable method for asking questions about solidarity, inclusion, and exclusion. Ultimately here, we follow Sandra Harding, who in her often-cited chapter “Is There a Feminist Method?” warns against defining a method (“techniques of gathering evidence”) as feminist or not and suggests instead that the power of feminism lies in methodology, or “theory and analysis of how research should proceed” (2). She suggests that traditional or familiar methods could be deployed (and perhaps even required in some situations) along with “new methodologies and new epistemologies” (2). Thus, we suggest that SNA can be useful as a digital research method in conjunction with feminist methodologies, especially those that attend to questions of power, community, solidarity, justice, and inclusion.

To date, scholars of feminist rhetoric have not used SNA as a method, though we argue that SNA shares many of the same goals and purposes as their feminist methodologies. Feminist methodologies are “oriented toward cohabitation; acknowledge the dynamic construction of relationships within and across locations and between people as constituting knowledge and values” (Ryan et al. 11), while SNA methods “share the view that agency is networked and relational” (Frith 292). SNA can support feminist scholarship on “social circulation,” introduced by Jacqueline Jones Royster in *Traces of a Stream* and expanded upon by Kirsch and Royster, which interprets “overlapping social circles in which women travel, live, and work are carried on or modified from one generation to the next and give rise to changed rhetorical practices” (Kirsch and Royster 660). Feminist historiography of rhetoric has increasingly placed an emphasis on recovering not only individual women rhetors but also recovering their networks and analyzing their discourse as ecological (Dingo; Gaillet and Bailey; Graban and Sullivan; Hallenbeck; Royster and Kirsch, *Feminist Rhetorical Practices*; Ryan et al.; Schandorf and Karatzogianni). This shift is critical for feminist research because it situates rhetors within broader communities and social networks, thereby highlighting collective agency, circulation of discourse, and the importance of solidarity. Researching feminist rhetoric from an ecological and networked perspective opens possibilities for drawing on digital humanities methods and adopting distant reading methods rather than traditional close reading methods (e.g., Enoch and Bessette; Gatta; Graban; Losh and Wernimont; VanHaitsma). Further, by combining feminist (especially intersectional feminist) methodologies with SNA methods, we can heed the calls of feminists of color and other critical theorists to put digital humanities and digital rhetoric methods and methodologies in conversation with cultural rhetorics (Cedillo; Haas, “Toward a Digital Cultural Rhetoric,” “Wampum”; Sano-Franchini), intersectional feminism (Bailey; Bailey et al; Bianco; DeVoss et al.; Losh and Wernimont; Perez), queer theory (Keeling), critical race theory (McPherson), cultural criticism (Liu; Sayers), and decolonial methodology (Kim; Medina and Pimentel; Nakamura).



SNA may also be of particular interest to feminist scholars who are contributing to emerging research methodologies that utilize digital reading and analysis. Jessica Enoch and Jean Bessette invite feminists doing historiographical work to consider distant reading to generate “evidence, we contend, that might help us track the social circulation of women’s rhetorical activity through time and space” (143). Scholars of feminist rhetorics have widely adopted DH methods for feminist historiography and especially for digital archival methods (a few examples include Enoch; Enoch et al.; Graban and Rose; Graban and Sullivan; Gutenson and Robinson; Ramsey-Tobienne). Building on these models of digital feminist reading methods, we offer our research methods as case studies on how SNA can be used to further feminist rhetorical research.

### Feminist Networks in Archival Research: Trish’s Methods

Over a period of 3 years, I collaborated closely with Gesa Kirsch and Alison Williams to design a feminist digital humanities project studying the writing of women physicians in the *Woman’s Medical Journal* (WMJ) from 1900-1919. Our co-authored article, “Feminist Practices in Digital Humanities Research: Visualizing Women Physician’s Networks of Solidarity, Struggle and Exclusion” published in *Peitho*, presents research from both distant reading and close reading to study the evolving community of women physicians, their rhetorics of solidarity, and the limits of that solidarity, including racist exclusion. Much in the way that contemporary feminists use Twitter or Facebook, these early 20th-century women physicians used the WMJ as a social networking site to connect, share, and support each other. Once we began thinking of this archival material as a form of pre-social media, it was then easier to imagine how to use digital reading methods to study the community. Our project is an unusual application of SNA because the source material is historical and archival. SNA is most commonly used to study digital networks, especially on social media. With careful reading and detailed hand coding, we were able to make these archival materials accessible to digital research methods.

This project was inspired by the speculative work on networked rhetorics and digital humanities of Royster and Kirsch, which began well before I began collaborating. Royster and Kirsch imagined the possibilities for using digital tools to facilitate the analysis of social circulation. They imagined that the *Woman’s Medical Journal* could be fruitful for a “a rich digital social history project, then, would attempt to identify, aggregate and map women’s social and professional circles by creating visual maps (geographical and other), Venn diagrams, bar graphs, and other forms representations” (“Social Circulation” 176). They suggested that the purpose of feminist digital humanities research would be to step “back from the specificity of rhetorical analysis of artifacts and processes of communication to gather other layers of evidence in order to detect larger patterns of action” (176).



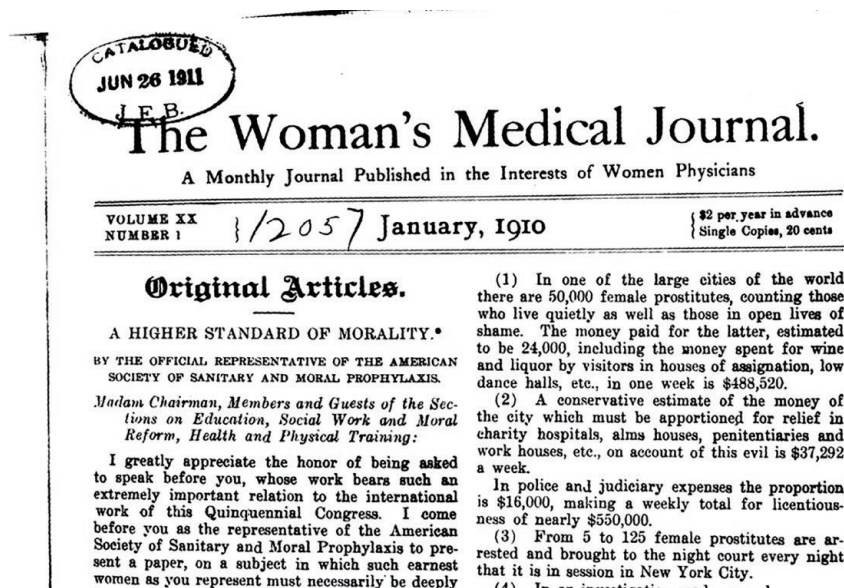


Figure 6.2. Image of the title page of the January 1910 *Women's Medical Journal* from the digital archive in the *HathiTrust Digital Library*.

With Royster and Kirch's earlier chapter as an invitation to future research, Kirsch, Williams, and I began to plan how we could visualize women's professional communities. Our collaboration became an exciting challenge and fruitful opportunity to apply digital humanities methods for feminist archival research. While I came with more technical expertise and familiarity with digital research methods, Kirsch has a long career thinking about feminist methods and the ethics of those methods. Her expertise became a key guiding set of questions as we developed our research project and designed the methods.

While we did experiment with several possible visualization models, SNA allowed us to best identify patterns and changes in the community. With SNA, we first began to address questions such as the following:

- Around whom is the community centered?
- Who is marginalized?
- What clusters of actors support each other?
- Who has relative power or influence in the community?
- Because we coded for institutions and we analyzed the social network within historical context, we were also able to address questions like the following:
- What professional or governmental organizations supported or excluded women?
- What historical events corresponded to relative success or struggle for women physicians?

Overall, the goal was to visualize a community, analyze its politics of inclusion and exclusion, and place those dynamics in social and political contexts.

### *Data Entry: To Code or Not to Code*

To create SNA, we first needed to code the *Women's Medical Journal* (WMJ) to isolate the people and institutions named. In order to do this, we made choices about who to include, how to code, and how much content to include. First, we created trial coding strategies and visualization prototypes. We attempted different strategies for coding that initially focused solely on the WMJ's announcements, which often included the highest concentration of names. However, we found that this process excluded too many members of the community and prioritized announcements over scientific articles and editorials. We then shifted to include every person and every institution named. However, this quickly became too time consuming so that the coding process was taking more time than we could allow. Instead, we decided to include a sample size of up to five people and up to five institutions per article, announcement, or report. For most content, this included all people or institutions. However, when coding reports with long lists of names, we excluded some names.

We coded all original content, which included articles, reports, announcements, items of interest, editorials, and abstracts. We did not include advertisements because this is paid content and is less representative of the community of women physicians than the original content. However, the WMJ also published a directory of what they considered to be every woman physician<sup>2</sup> practicing medicine in each state. This was an exciting inclusion because it meant that we could create a network that included readers as well as writers and leaders in the professional network. However, there were several hundred women physicians included in the directories. Coding so much content was very time consuming. In the end, we decided not to include the names in the directory network because, while these women were listed as members of the community, they may have been more passive readers and not active leaders in the community. When we included them, the visualization became so dense and diffuse it was difficult to interpret and identify trends. This means that, to save time and identify trends, we excluded readers from the network.

We included all original content for every monthly issue of the Journal for the years of 1900, 1910, and 1919. In total, this included 36 issues, 1017 pages, and 745 separate articles or announcements. We used a Google form that created a spreadsheet to make the coding process easy and consistent. We coded each article for metadata (page, date, link to article in archive). Then we coded for actors, defining actors as both any person who is named in the journal and any institution that is named. Institutions most typically included medical

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2. We later discovered that the directories only include white women. More on the scale of racist exclusion in the section on analysis.

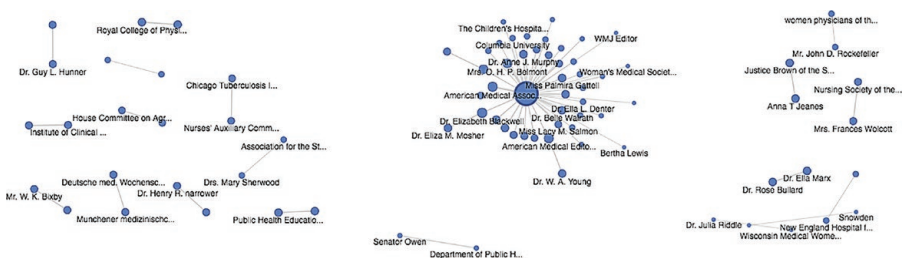
schools and universities, hospitals, professional organizations, and state and regional medical societies, community groups. To say this was a time-consuming process is an understatement. We spent much of the summer and fall of 2018 coding pages meticulously. I also paid undergraduate research assistants to aid in this work. Even after coding, many hours were spent cleaning up the spreadsheet. Errors in spelling and formatting were present in the original source and were often introduced in the coding process, and these had to be identified and corrected.

### *Visualizations: Prototyping and Programming*

Before programming the final versions of the SNA, we prototyped visualizations using Google Graph. From these prototypes, we were able to ensure that SNA was in fact going to be a useful method to address the questions we were pursuing.

To make the visualizations, we collaborated with recent University of California, Santa Barbara data science student Raul Eulogia, who created the graphs and taught me how to create these as well. I worked closely with Raul on several versions of the visualization to revise the color, proximity, and interactivity of the visual. We processed the data in R using social network analysis and igraph packages. This included loading the igraph, networkD3, and htmltools packages. Programming in R created a still image of the social network. To make the visualization interactive, we added force-network JavaScript.

The SNA graphs the relative power and significance of people and institutions named in the *WMJ*. Each actor is a node in the network. We color-coded the nodes so that people were purple, and institutions were yellow (this is an example of a bimodal network). The location of each node is determined by the number of times they were named in the *WMJ* and by the number of connections, which are represented with the line. Connections were identified whenever people or institutions were named together in the same article or announcement. Therefore, the nodes in the center are people or institutions that are both named frequently and are named along with several other people or institutions.



*Figure 6.3. Early SNA prototype of just one-month of 1900 Women's Medical Journal made in Google Graphs.*

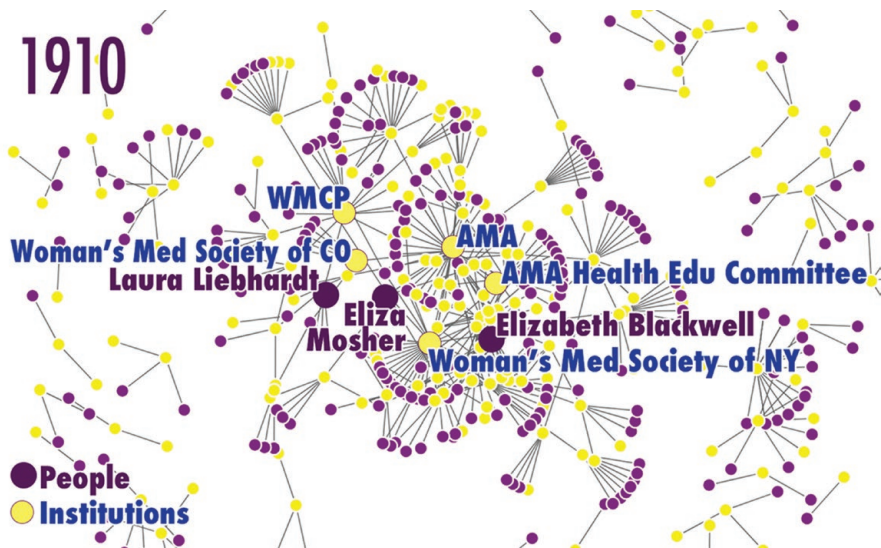


Figure 6.4. SNA of people and institutions who are named in the 1910 issue of the *Women's Medical Journal*. The nodes in the center were named more frequently and were named in connection with more people and institutions. I added labels to three of the most often mentioned women, who were all key leaders in the professional community of women. I've added labels to the most often mentioned professional communities.

### Analysis

As we turned to analysis, we began to look specifically for Black women in this network. From our secondary research, we knew that Black women graduated from the same medical schools as the most famous and well-connected white women (Aptheker; Hine). We know they worked together in the same hospitals and women's clinics. However, not a single Black woman was included in our coding of the *Women's Medical Journal* 1900, 1910, or 1919. In our initial analysis, we thought that this exclusion could be a reflection on our incomplete coding. But no, we were able to search in the digital archive and found Black women were entirely excluded from the *WMJ* during our sample years. From there, we expanded to search the *WMJ* for every single year from 1900–1920. In the 240 *WMJ* issues published between 1900–1919, six African American women are included.

Before completing the SNA, we expected that Black women would be marginalized. Once completed, the SNA helped us to see the exact scale of exclusion, which was total exclusion in the years we included in the SNA. In that way, the SNA offers further evidence of the erasure of Black women from the professional community of women physicians. As Tessa Brown argues in her cultural rhetorics critique of white feminist discourse, there is an “ongoing and unresolved history of white supremacy in the United States women’s activism” (234). The

WMJ supported white supremacy, and the SNA is further evidence of this white supremacy. However, it is important to note that we needed to ask those additional questions and expand the scope of our research to fully document the scale of erasure. As Ahmed has taught us, we need to ask, “who appears?” as well as “who does not appear?” (“Making”).

SNA was a useful method for visualizing the community, its points of solidarity, and locations of power. It took our experience as feminist researchers to look not only at what was in the visualization but also at who was excluded from the visualization. Gesa, Alison, and I are all three white feminists. And we were studying a community of white feminists. During parts of our research study, we failed to question the whiteness of the community we were studying. However, we benefit from the excellent research of Black feminists who call on us to do better and be accountable for the racist practices of white feminism. We hope to especially account for Audre Lorde’s pointed questions, “What woman here is so enamoured of her own oppression that she cannot see her heelprint upon another woman’s face? What woman’s terms of oppression have become precious and necessary to her as a ticket into the fold of the righteous, away from the cold winds of self-scrutiny?” (63). Our own positionality and awareness of the long history of white feminist exclusion of Black women informed our analysis and the efforts to recenter Black women within a reimagining of the SNA. From this experience, I was also moved to turn the same critical eye to my own syllabus, especially in a writing and gender studies course, and revise the central questions and reading material to center the contributions of Black feminist intellectual and activist traditions. However, I also know that my whiteness can act as a blinder, preventing me from seeing and understanding experiences of racism, and this can shape and inform my own research and analysis. I can commit to continuing to listen, learn, and do better as I move in gratitude for the intellectual and emotional labor of feminists of color in our field and my life.

### Queer Co-Citation Analysis: Michael’s Methods

In 2015, my coauthor Matthew Cox and I published an ambitious annotated bibliography of rhetoric and writing scholarship that attended to LGBTQ+ issues. I spent much of 2014 reading this scholarship as we worked toward organizing and annotating it. I was, at the same time, also becoming interested in SNA and its possibilities for assisting in understanding networks—whether networks of activity like Twitter conversations or scholarly networks like subfields of rhetoric and writing studies.

My initial experiences with SNA led me to think it might be a useful method for approaching citation practices in queer rhetorical studies. I was curious about citation practices for two reasons. First, as I read all this queer rhetoric scholarship, it seemed that English studies scholars and communication studies rhetoricians were barely in conversation with each other, and I wanted to understand



this conversation (or lack of). Second, I experienced a “felt difficulty” (Takayoshi et al. 100) that feminists of color and queers of color were largely being ignored or under-cited in this set of texts Matt and I had collected. As I explain below, my research started to focus on this second question: Was queer rhetorical studies as white in its citational practices as I intuited? Where and how often are scholars and activists of color cited in this field?

So, I turned to citation network analysis as a potential method to explore these questions. I was inspired in part by studies (some formal and some informal) like Dan Wang’s co-citation analysis of economic sociology syllabi to determine if the subfield had developed a canon, Kieran Healy’s maps of co-citation networks in philosophy exploring conversation within the discipline (“A Co-Citation”) and gendered patterns of citations (“Lewis”), Jonathan Goodwin’s co-citation network analysis of literary and cultural theory journal citations (which showed that if the feminist journal *Signs* was removed from the corpus, the majority of most-cited authors in the network were men), and others. (Much of this work was introduced to me by Collin Gifford Brooke during his networks and rhetorics workshop at the 2015 Rhetoric Society of America Summer Institute.) Whereas citation network analysis works through networks of who is citing which scholars or texts, a co-citation network analysis studies what authors are cited together (more on this later). My project is still in progress (in 2018, I became writing program administrator of Texas Tech’s First-Year Writing Program, so I have been focusing on that instead of finishing this project), but the process has been useful in thinking through feminist methodologies and SNA, and I published some initial results in *Peitho* in 2018 and have continued to update my data (slowly) over the following years.<sup>3</sup>

### *Data Collection: Defining the Network*

An important “first” step for me—which iteratively became a series of steps that were never really “first”—was to define the network. I began by entering data about the works cited and references list for all roughly 200 entries in Matt’s and my bibliography. But queer work in the field continued to be published, so I started adding more recent work, as well as work that Matt and I had accidentally overlooked. When I first began presenting on this data, I soon realized that I had so many errors (e.g., mistyped names, either because of my data entry errors or because an author had misspelled something) in my spreadsheets that the dataset was likely inaccurate, and any conclusions I might start to draw wouldn’t have much validity.

I returned to the spreadsheets and cleaned up the data, and I decided pretty soon that I couldn’t possibly make progress if I kept such a large corpus to start with. So, I had to make methodological decisions about what texts to count as

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3. Studying citation practices is not new in rhetoric and writing studies, though few have used citation network analysis. For previous studies, access Detweiler; Goggin; Mueller, “Grasping”; Phillips et al.; Reinsch and Lewis; Reinsch and Reinsch; Smith, “Points,” “Strength.”

“queer rhetorics.” I first decided that for the time-being, I would focus on scholars who identified more with English studies than with communication studies, which isn’t a precise science at all (because what about rhetoric departments not housed in English or communication?). And I decided I’d include publications by rhetoricians that were published in venues that weren’t rhetoric-centric (which might be impossible to be exhaustive about). A further question I had to address was: what about scholarship that is questionable in its focus on queerness, sexuality, LGBTQ+ issues, and so forth? Ultimately, I had to make a lot of decisions about what texts belonged in this network I was calling “queer rhetorics,” and I can’t make any claims for objectivity here.

Importantly, SNA researchers make many choices about defining networks and analytic approaches. Defining the network was an important choice I made. Determining the boundaries of a network and the types of ties to include is an important methodological choice. Edward O. Laumann et al. provide one of the most useful metatheoretical discussions of defining a network’s boundaries. The boundaries of a network are anything but self-evident, they argue, and a researcher must be careful about how they are defining those boundaries (64). Laumann et al. explain that there are two general approaches for defining a network. First, a *realist* approach determines the network by participant perception. For example, the boundaries of a network of a church choir would be determined by members of the choir. Second, a *nominalist* approach determines inclusion in a network based on the researcher’s theoretical concerns (65-66). Building a network based on my perceptions of the subfield of queer rhetorics (what Mueller would call my “network sense” of the field; access also Brooke 100) constitutes a nominalist approach, as I was less interested in whether a scholar identified their publication as queer rhetorics than I was in the question of if their article or book chapter addressed issues of LGBTQ+ rhetorics, sexuality, or queerness. That is, I was defining the network as the researcher (which has its limitations, of course, because of my own situatedness in the field and subject position).

Another aspect of defining the network was what constituted nodes and links or edges in the network. Citation network analysis combines citation analysis from information sciences with SNA approaches from sociology (De Bellis 142-43, 156-66; de Solla Price; Otte and Rousseau; Small). A citation network is typically a directed network with author or source text nodes connected to the authors or texts they cite. Co-citation analysis, however, explores relationships between texts or authors that are cited together in the same text. First proposed by Henry Small in 1973, co-citation network analysis is useful in determining which authors or texts are frequently cited together, which can help to understand a field, discipline, or subfield and the circulation of ideas within those networks. After playing with the data, I decided to focus on the co-citation network because it would help give me a sense of which scholars were cited together frequently and which scholars were rarely cited. That is, I could get a sense of what sort of conversations queer rhetoric publications were entering by who these publications were co-citing.



### *Data Entry: To Code for Race or Not?*

As I began to work on this project, I moved away from the first question above (about disciplinarity between English studies and communication studies) for the time-being and focused on the second question about how inclusive citation practices were in queer rhetorics regarding race. Was the field as white in its citational practices as I intuited it to be? A few very important questions emerged as I considered coding the data: I didn't feel I could justifiably code cited authors for race or ethnicity. While many authors publicly state their racial or ethnic identity in publications, for others, I would have to work under assumptions. I knew I couldn't assume anyone's racial or ethnic identity, so I decided I wouldn't code for that and instead I would test what analytic and visualization methods provided with the minimal data provided.

Consequently, my data entry became quite simple: I entered data in a spreadsheet for source text and cited author. Then, for some spreadsheets, I asked a friend who knew Python to write a script that turned these author-text spreadsheets into co-citation spreadsheets, and for others, later in the process, I manually did this myself.

I do want to note that while the data was quite simple, the data collection and entry was quite laborious. I've lost track of how many hours I've spent on entering, organizing, and cleaning up data. There are more automated ways to create data for citation networks if one is defining a different network. For instance, due to indexing by sites like Web of Science, data can be scraped for different journals and then cleaned up by the researcher. But because my network spanned different journals (many of which aren't indexed) and book chapters (few of which are indexed), it was not possible to automate this data collection.

### *Visualization and Analysis*

As I considered how to analyze and visualize this network, I made a variety of choices. First, I chose to use the open-source software Gephi (<https://gephi.org>) to conduct network analytics and visualizations, mostly because the learning curve was not too steep (especially after watching some online tutorials) and because it was free and open source. Second, I had to decide what I was looking for in this co-citation network in order to explore the prevalence of queers of color and feminists of color in the network. I was, then, mostly interested in questions of inclusion, visibility, and power. I was, to be explicit, interested in citation practices in queer rhetoric because citations have power. As geographers Carrie Mott and Daniel Cockayne write, "Careful and conscientious citation is important because the choices we make about whom to cite—and who is then left out of the conversation—directly impact the cultivation of a rich and diverse discipline, and the reproduction of geographical [or, in our case, rhetorical] knowledge itself" (955). Ahmed, too, has argued that citation practices matter, as we discussed in our introduction (*Living* 15-16; "Making"), and Ange-Marie Hancock encourages us to understand citation practices as a matter of "stewardship," or a matter of caring for the intellectual traditions we are working from and within (22).

Consequently, I decided to do a rather simple network analysis: first, I conducted a raw citation count of authors to determine just who were the most-cited authors in the text. Next, I ran an algorithm to determine who the most authoritative authors were in the co-citation network. Authority in a network is akin to Google's PageRank: a node is deemed more authoritative the more it is linked to by other authoritative nodes (thus the need for an algorithm, which iteratively runs through the data to determine authority; access Kleinberg). Third, I decided to run a community detection algorithm to see if certain groups of cited authors seemed chunked together (this specific one is called modularity class; access Blondel et al.). (I decided on these three after playing with the data and running as many different metrics as possible on the data in Gephi that I could.)

I also made decisions about visualizing the co-citation network. Figure 6.5 shows the entire co-citation network as of September 2019: 2,951 cited authors connected via edges when they're cited together (from 201 journal articles and book chapters published between 1981 and 2017). Importantly, this network is too busy for readers to understand or to make much knowledge from (and indeed, Alexander R. Galloway observes that most network visualizations look the same [85]).

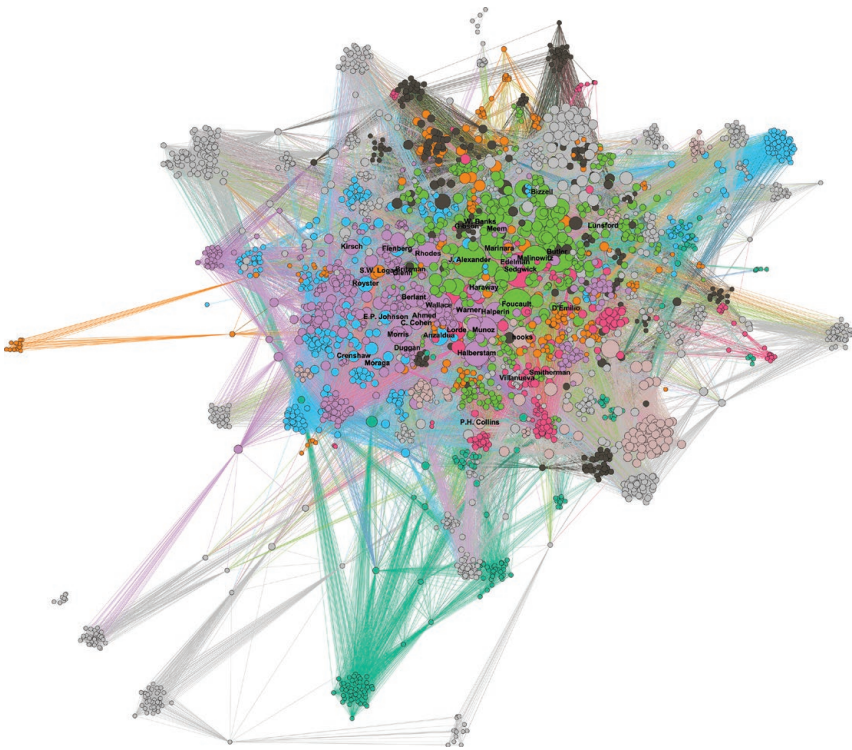


Figure 6.5. The entire co-citation graph, showing 2,951 unique nodes (cited authors) connected by edges marking co-citation.

I also made decisions to make the visualizations accessible for analysis and readers. One choice I made in a conference presentation was to apply a filter to the visualization to show only authors who had an edge weight of at least 3, meaning authors were cited along with another author at least 3 times. I also chose to only label the authors who were most authoritative in the network. (Labeling more would have led to too cluttered a visualization.) This visualization is displayed as Figure 6.6. I also decided it would be worthwhile to share visualizations of communities within the network (Figure 6.7) to show how in the network, scholars of color seem to be clustered together frequently, meaning there seems to be a conversation in the field about “queerness” and “sexuality” and separate conversations about race and queerness/sexuality.

Since I’m still adding to the network and playing with data, I don’t want to draw firm conclusions, but I will, as Mueller and Kirschenbaum suggest, point to provocations drawn from the network. That is, following Mueller, I understand visual models not as “proofs, finally, but provocations; not closures, but openings; not conclusions or satisfying reductions, but *clearings* for rethinking disciplinary formations—they stand as invitations to invention, to wonder” (*Network Sense* 4). What sorts of genealogies of queer thinking are queer rhetoricians turning to? Where and how does the field draw on the contributions of queers and feminists of color? (José Esteban Muñoz has observed that too many histories and genealogies of queer thinking ignore the contributions of feminists of color [21-22]). How are scholars acting as stewards of intellectual traditions in ways that honor the contributions of queers and feminists of color? And, if we turn back to close reading, when queers and feminists of color are cited in this body of scholarship, is their work engaged with thoroughly, or is it a passing reference?

These questions continue to drive this project. For now, I can say, given the network I’ve created so far, that scholars and activists of color are not as authoritative in the co-citation network as white scholars. José Esteban Muñoz, bell hooks, Gloria Anzaldúa, and Audre Lorde are authoritative in the network, but the next most authoritative scholar of color in the network is Jacqueline Jones Royster, ranked at 40th, and then E. Patrick Johnson at 53rd. Surprisingly, Cherrie Moraga is barely cited in the network, and most of her citations are by Eric Darnell Pritchard. The most authoritative authors in the co-citation network (at this point in the study) are largely white scholars who don’t make race central to their work (though some do nod to race in important ways). As a white cisgender man, I’ve found this analysis useful as a teacher and a scholar of queer rhetorics. For instance, when I taught my first graduate course on queer rhetorics in 2015, graduate students observed that the reading list was whiter and more men-centric than they anticipated (and I laud them for this observation). Now, in all my classes, I make explicit efforts (and am transparent with students about this) to include more scholars of color. After all, graduate courses are one of the avenues through which graduate students become enculturated into the conversations and citational practices of a field and consequently build a mental map of the field’s network (Brooke 100).

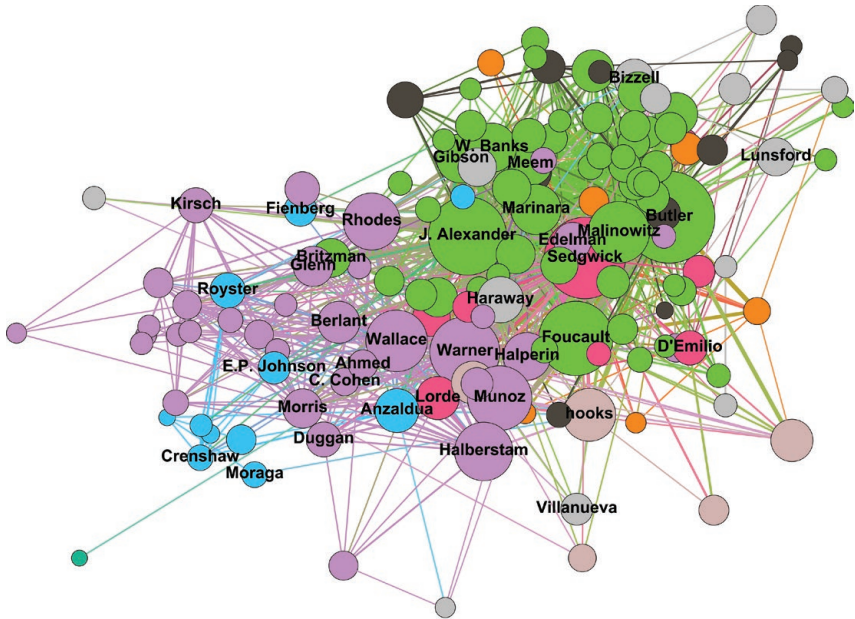


Figure 6.6. The co-citation network graph, filtered to show only nodes that are co-cited at least 3 times. The most authoritative nodes in the network are labeled with their last name.

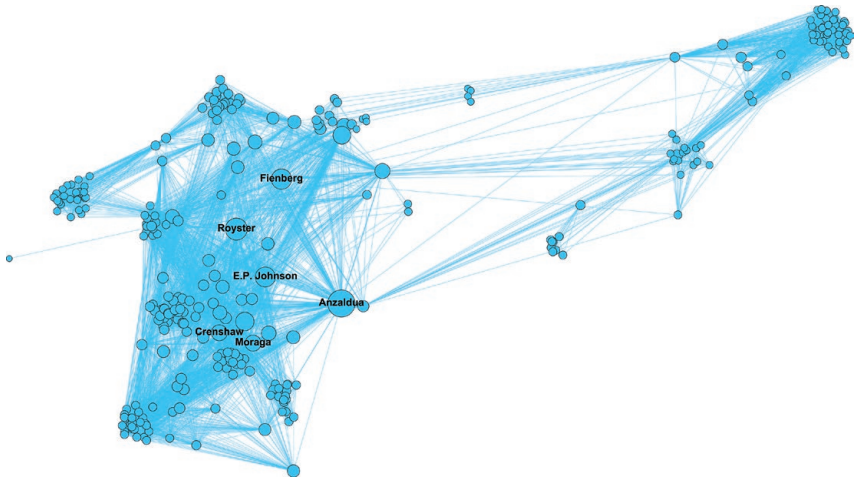


Figure 6.7. One of the modularity classes of the co-citation network, showing that scholars of color tend to be co-cited in clusters or communities. This cluster includes mostly scholars of color: Gloria Analdúa, Cherríe Moraga, Kimberle Crenshaw, Jacqueline Jones Royster, E. Patrick Johnson, Shirley Brice Heath, Roderick Ferguson, Jasbir Puar, Samantha Blackmon, Eric Darnell Pritchard, Karma Chavéz, Adam Banks, Angela Haas, Elaine Richardson, and Gwedolyn Pough (most of whom are unlabeled).

## Conclusion

Throughout this chapter, we have stressed that SNA is not simply collecting data and representing the reality of networks but rather a matter of choices researchers make about how to define the network, what data to include, how the data is collected, how the data is organized and coded, how the data is visualized and presented to readers, how the data is analyzed, and perhaps most importantly, what questions are asked of this data. In closing, we want to suggest three key feminist methodological principles for SNA.

First, feminist SNA should attend to *questions of power*—specifically to both examine power and to challenge it. As D’Ignazio and Klein write in *Data Feminism*, a feminist approach to data science “begins by analyzing how power operates in the world” (22) by asking questions of who: Who is doing the work? Who is marginalized and who is recognized? Who benefits and who is harmed within the network? (47). But it is not enough to simply examine power: Feminist SNA must be “commit[ted] to challenging unequal power structures and working toward justice” (49). Feminist SNA can be useful in examining and challenging power by exploring questions of circulation, community formation, ingroup and outgroup dynamics, inclusion and exclusion, and who is central or authoritative within networks and who is excluded and marginalized. However, when SNA is used without asking questions about power and exclusion, the visualizations can be used to replicate inequitable power structures and normalize existing authority.

Second, feminist SNA can attend to *embodiment* and *emotions*. Whereas SNA is typically more data-driven, there are many affordances for feminist SNA for the incorporation of embodiment and emotions. This can be done through aesthetics of the visualization, which can be emotionally evocative. Each time we have presented on our visualizations at conferences, the first response is always to the aesthetics of the visualization. They are appealing because they are pretty. The networks are complex, delicate, and intricate. Before even identifying the trends and patterns, our audiences respond first on an emotional level to the design of the visualizations (access Gavia on information visualizations as art).

Importantly, we find that, especially when used for feminist research, SNA is most effective when used alongside qualitative network methods and feminist rhetorical analysis, as well as personal narrative that place the trends and provocations within embodied experiences. Together, these multiple methods can help to situate the embodied and emotional experiences within a broader social network as well as grounded in people’s experiences. (And, we might add, data visualization for social networks does not always have to be digital; access Golluhue and Xiong-Gum; Haas, “Wampum.”) Finally, these methods included significant embodied labor and collaborative labor, which feminist scholars can discuss at length (access D’Ignazio and Klein, chapter 7, on documenting the labor of data collection and analysis). Data do not exist all by themselves. Our labor created and crafted data into usable material for visualizing these communities and framing our research questions.



Third, and relatedly, feminist SNA should *acknowledge and complicate the choices* researchers make in determining and defining a network, collecting and coding data, selecting and deploying algorithms for analysis, and visualizing a network. In her writing about feminist methodologies, Harding urges researchers to place themselves “in the same critical plane as the subject matter, thereby recovering the entire research process for scrutiny in the results of the research” (9). For Michael’s project, he quite literally placed himself on the same plane as the subject matter because his work is included in the co-citation network that he studies. Therefore, he includes his own citational practices under critical inquiry within the evolving community of queer scholars of rhetoric. In the archival research, Trish and her co-authors Gesa Kirsch and Allison Williams are separated by 100 years from their subject matter. However, they placed themselves on the same plane as the subject matter by applying strategic contemplation to assess the networks composed in their methods and citational practices. While asking questions about inclusion and exclusion in the *Women’s Medical Journal*, they also asked those questions of our own citational practices, recognizing who they were citing most frequently and whose voices we sought to amplify.

We invite future researchers to build upon our early models of feminist social network analysis. We offer these two case studies as instructive examples and realize that both are limited in scope. Future research could use SNA to study feminist communities on Twitter or online professional networks of feminists in rhetoric and composition. A wide array of archival and digital communities could be studied with SNA to study the social circulation, networked rhetoric, and velocity of rhetorical tropes and memes. We hope the SNA methods that we have outlined here will help feminist researchers to continue to foreground questions about community, social network, solidarity, inclusion, and exclusion in feminist rhetorical research.

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