

Institutionalizing Knowledge in Washington DC and the Early Republic¹

A public ceremony led by many authorities of the early republic gathered together in Washington to celebrate the public holiday declared on Saturday, May 1, 1847 to mark the laying of the cornerstone for the newly established Smithsonian Institute. The Baltimore Sun declared that the “memorable day” was a “glorious jubilee.”² A grand procession began at City Hall and consisted of the Mayor of Washington, William Seaton and several lodges of Free Masons from throughout the region. There was a large contingent of the Independent Order of Odd Fellows and adding to the pageantry was the renowned Washington light infantry unit popularly known as the “National Blues.” The music was reported to be “very fine” and the “exceedingly rich regalia, splendid banners, and other paraphernalia rendered its appearance grand and imposing.”³ As the procession advanced toward the designated public square for the new building between Seventh and Twelfth streets they passed the Presidents mansion and Capitol building where the President, his cabinet, and members of Congress as well as the Judiciary joined the procession to the mall. Upon arrival, dignitaries addressed the crowd of thousands including the keynote address delivered by George Dallas, Vice President of the United States and Chancellor of the Smithsonian. Dallas’ address recounted the congressionally

¹ This work originated with a seminar class taught by Lincoln Mullen at George Mason University in the Fall semester 2014 called Programming in Digital History/New Media. See <http://lincolnmullen.com/courses/cli3.2014/> I am greatly indebted to Professor Mullen and the students in the class that helped me recognize the importance and potential for this type of analysis as an integrated tool for the historian.

² Mercury, “Laying the Corner-Stone of the Smithsonian Institute: A Glorious Jubilee,” *The Sun*, May 3, 1847.

³ Ibid.

sanctioned purpose of the Smithsonian that had taken over a decade for the nation to discuss and define as well as the organizational structure of the new institution and the planned designs for its new building. Dallas professed to those in attendance the interconnected nature of this new institution with their government and the designs of their nation. It was to be a national institution that served “not a chosen or designated class, not the followers of a particular sage or sect, not the favorites of fortune, nor the lifted of rank, but among men, men of every condition, of every school, of every faith, of every nativity! Men!”⁴ Many hoped that the establishment of the Smithsonian Institution offered an opportunity to consolidate the chaotic information environment evident in the first half of the nineteenth century.

The proliferation of publishing and printing allowed many of the new organizations proliferating across the nation which ironically added to the sense disarray due to the multitude of conflicting messages from an overwhelming number of sources.⁵ The common belief among the citizens of the republic seemed to suggest that best means to diffuse knowledge to men was through the establishment of a robust and vibrant civil society. Civil societies offered new opportunities for citizens to expand their knowledge beyond the education acquired in their formative years and to defend their liberties against the wealthy and elites in society. Establishing and joining groups formed a crucial part of the democratic

⁴ George Mifflin Dallas, *Address Delivered on Occasion of Laying the Corner Stone of the Smithsonian Institution, May 1, 1847*. (Washington, Printed at the Office of Blair and Rives, 1847), 4.

⁵ *An Extensive Republic: Print, Culture, and Society in the New Nation, 1790-1840, A History of the Book in America*, v. 2 (Chapel Hill: Published in association with the American Antiquarian Society by the University of North Carolina Press, 2010).

experience. Alexander de Tocqueville famously observed, “Americans of all ages, of all conditions, of all minds, constantly unite.”⁶ They did this on a scale and scope that was surprising to Tocqueville, yet he found these societies necessary to a democratic society. Scientific societies were a crucial part of the development of the expanding capacity in the United States. Members joined and created scientific societies as a way to participate in the advancement of American civilization through moral improvement and by learning more about their world. The craving for new scientific wonders and knowledge gripped the populace as more people participated in manufacturing, engineering, mining, and an ever more rationalized agricultural system. The Smithsonian bequest offered an opportunity to establish a national institution designed to systematically disseminate knowledge to the nation.⁷

This hope for a national institution to promote knowledge did not happen overnight. In addition to being the site for the national government, the District of Columbia was the home of many different societies dedicated to encouraging the enhancement of civil society. Some were learned societies, or specialized organizations, dedicated to the collection and dissemination of useful knowledge in the nation’s capital. The Columbian Institute for the Promotion of Arts and Sciences is a well-known example. Others were fraternal organizations constructed around common interests like the Independent Order of Odd Fellows. One scholar recently

⁶ Alexis de Tocqueville, *Democracy in America / Translated, Edited, and with an Introduction by Harvey C. Mansfield and Delba Winthrop*, ed. Harvey Claflin Mansfield and Delba Winthrop (Chicago: University of Chicago Press, 2000), 489.

⁷ This work is being developed in my forthcoming dissertation titled *The Institutionalization of Knowledge: Debates over the national university in the early American republic*.

studied fraternal and civil societies in DC and found that these institutions offered politicians an opportunity to have a break from the intense political rancor found in the city, especially after the Mexican American War started. These groups also offered opportunities for people from different parts of the country to build relationships and alliances based on non-political issues.⁸ Some historians produced institutional histories of these societies while others characterize these institutions as regional groups with grand designs limited by parochial insights and miserly pocketbooks.⁹ Other scholars present these institutions as necessary forerunners to encourage scientific learning and early steps toward professional science. I demonstrate in this paper that there is potential for applying network analysis to organizations in order to determine if there are shared relationships between different learned societies.¹⁰

It is tempting to view science and scientific organizations as a uniting force for national progress. It is also enticing to see the proliferation of societies as evidence of an expanding democratic movement in the early republic. However, as

⁸ Rachel A. Sheldon, *Washington Brotherhood: Politics, Social Life, and the Coming of the Civil War*, Civil War America (Chapel Hill: The University of North Carolina Press, 2013), 43–46.

⁹ Richard Rathburn, *The Columbian Institute for the Promotion of Arts and Sciences; a Washington Society of 1816-1838, Which Established a Museum and Botanic Garden under Government Patronage*, Smithsonian Institution. U.S. National Museum. Bulletin 101 (Washington: Govt. Print. Off., 1917); Medical Society of the District of Columbia and Daniel Smith Lamb, *History of the Medical Society of the District of Columbia, 1817-1909*. (Washington, D. C.: The Society, 1909); Constance McLaughlin Green, *Washington: Village and Capital, 1800-1878.*, vol. 1, 2 vols. (Princeton, N.J.: Princeton University Press, 1962).

¹⁰ John C. Greene, *American Science in the Age of Jefferson*, 1st ed (Ames: Iowa State University Press, 1984); George H Daniels, *American Science in the Age of Jackson*, History of American Science and Technology Series (Tuscaloosa: University of Alabama Press, 1994).

specialized interests flourished, and the membership in specialist organizations increased, it is reasonable to ask did the opportunity for collaborative interactions between different groups of people decrease instead of increase? In other words, did the increase in the number and variety of societies promote diffusion and heterogeneous interests rather than binding groups together through singular designs that promoted national interests? Typically, scholars examine one group, or set of groups at a time. As such, historians of science frame their understanding within the context of scientific discourse while historians of religion, or politics each focus on their own niche. Therefore, examining the makeup of multiple institutions across disciplinary barriers offers an opportunity to explore a larger proportion of the community in the early American republic.

Examining multiple institutions is difficult for scholars due to the breadth of the scope of material that historians need to engage to glean insights into those institutions. Visualization strategies are useful for providing refined questions for further research. Further, they offer significant opportunities for scholars to find new uses for old sources. These sources have been sitting on shelves, in boxes, or sometimes are available online, however they have been unusable due to the limited ability of people to draw the thousands of connections between the hundreds of organizations. The use of these new methods and tools help scholars provide more nuances to their questions therefore enhancing our understanding of the past. This paper seeks to explore the make-up of the local institutions and to utilize computational methods to examine if these local institutions were more cosmopolitan in nature.

Methods

Finding and collecting evidence and data from the various organizations that existed in the early United States and Washington is a tedious project and fraught with challenges. There are limited archival sources from the organizations themselves. Some of the more complete examples include the Columbian Institute for the Promotion of Arts and Sciences and its successor the National Institution (Institute) for the Promotion of Science both available in the Smithsonian Archives. These particular institutions have membership books that compiled their membership lists at different times during their existence and both produced published lists over time. Many records of these organizations survived probably due to the advantage of having a large number of leading citizens of the republic on their rolls. Other important groups like the Medical Society of the District of Columbia that remains in existence today, records, housed at National Library of Medicine are spottier. Occasionally organizations such as the Columbian Agricultural Society published the names of their membership in their journals or other proceedings. Most typically, there seem to be hints or references to the associations in scattered newspaper accounts, memoirs, or government records.

Even when records survive there are other challenges to using them. Unfortunately, it is often difficult to discern when members joined or dropped out of these societies with the existing records. This limits the ability of a scholar to create typical graphs that indicate total number of members in a given year. Despite the restrictions of the source pool, there are ways to utilize the existing data to ask new questions from old sources. This paper demonstrates the importance of such lists to

scholars in order to confirm how computational methods can provide new uses to old sources. Additionally, communicating these methods may help uncover more relevant source pools for scholars to mine. This may provide opportunities for scholars to examine groups typically studied separately due to their geographic regions or other narrowly defined categories.

Once membership rolls are located, the data needs to be prepared in a way that will allow for computational assessment. This often means typing, or copying and pasting names into a spreadsheet. This process immediately presents the scholar with a problem when performing this type of work. The available data varies. No two organizations are exactly alike and since this is a time consuming process it requires some thought to determine what data is important to capture. Perhaps it is worth the time to capture all the data that is available however, it may be useful to be particular and only capture the data needed to answer a specific research question. For example, the American Philosophical Society (APS), the nation's oldest learned society, offers access to the membership list online. There are several ways to search and display the data, but in the end, Figure 1 demonstrates the basic data available.

Name:	Thomas Bacon
Year Elected:	1768
Residency:	Resident
Living? :	Deceased
Death Date:	5/24/1768

Name:	Lynford Lardner
Year Elected:	1768
Residency:	Resident
Living? :	Deceased
Birth Date:	1715
Death Date:	10/6/1774

Figure 1 Layout from the American Philosophical Society Member History online database.

All of these fields are self-explanatory, however the residency field requires exploration of the rules of the society of the time. After consulting the constitution and bylaws of the society, it becomes apparent that an elected member could hold one of two statuses based on the time of election. If the elected member resided in the area that became the United States and they paid the fee for membership they were then classed as resident members. If they lived outside the United States, the individual's membership was honorary and thus exempted from the fee.

Thomas Bacon	American Philosophical Society	1768	Member	Resident
Lynford Lardner	American Philosophical Society	1768	Member	Resident
Arthur Lee	American Philosophical Society	1768	Member	Resident
Francis L. Lee	American Philosophical Society	1768	Member	Resident
Samuel Bowen	American Philosophical Society	1769	Member	Resident
Richard Brooke	American Philosophical Society	1769	Member	Resident
Landon Carter	American Philosophical Society	1769	Member	Resident
Daniel Clark	American Philosophical Society	1769	Member	Resident
Myles Cooper	American Philosophical Society	1769	Member	Resident
John Jones	American Philosophical Society	1769	Member	Resident
Carolus Linnaeus	American Philosophical Society	1769	Member	International

Figure 2 Spreadsheet of member names of elected members of the American Philosophical Society

As mentioned, scholars must make choices to include all the data available or only parts of it and then explain the choices. In this case the living status and the death date seemed irrelevant to the research questions being asked and would add extra time to prepare the data. Finally, the parameters of a question need definition and then the data can be prepared. In the case of this project, the data gathered will consist of all members elected until 1850.¹¹

Determining the groups to include and the method of transcription is important because it defines the scope of the analysis. To illustrate the point it is helpful to use two other nationally significant learned societies. The American Academy of Arts and Sciences, founded in Boston, in 1780 by John Adams and other leaders in Massachusetts to promote the diffusion of knowledge served as the nation's second oldest learned society and, like the APS, intended as a universal institution of knowledge.¹² The other major scientific group was the Academy of

¹¹ The source of the membership data is American Philosophical Society <http://www.amphilsoc.org/memhist/search>. My dissertation work ends with the establishment of the Smithsonian Institute so I decided 1850 was a useful date to end my data collection for this particular project.

¹² See American Academy of Arts and Sciences, *Academy Members: 1780-present*. <https://www.amacad.org/contentu.aspx?d=941>

Natural Sciences (ANS), formed in 1812 in Philadelphia, quickly established itself as one of the preeminent scientific groups in the nation. This group styled themselves as an institution that attempted to focus on scientific study instead of a universal view of knowledge that embraced all forms of knowledge including arts and letters.¹³ Although there were differences in the categories of memberships and rules for election in the end, the three common variables of the three societies seemed to be name, organization and their common status as member. These three variables are enough to perform a simple network analysis to demonstrate the relevancy of this method.¹⁴

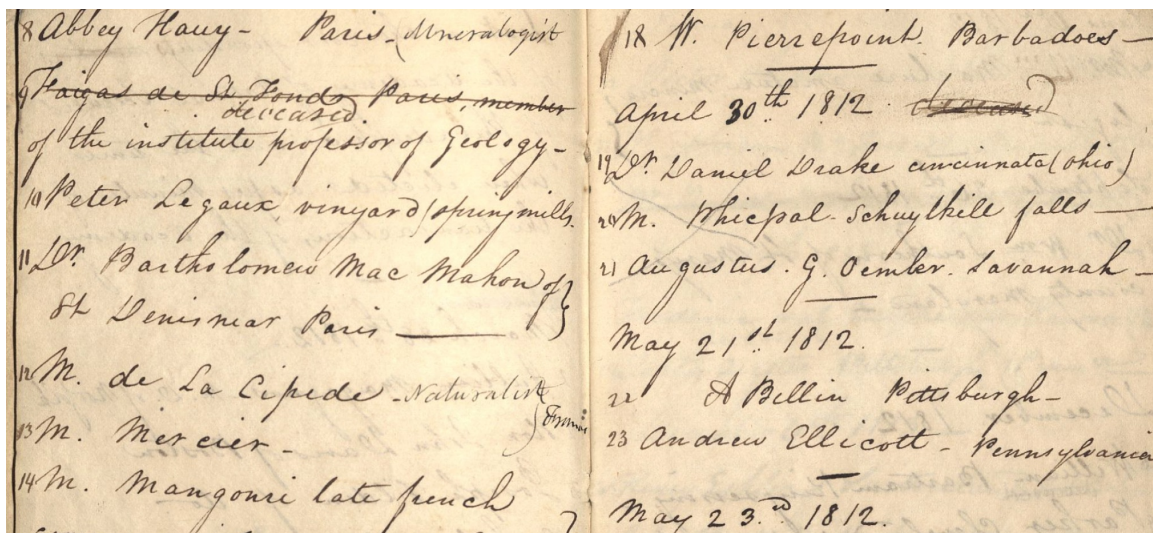


Figure 3 Sample from membership records book of the Academy of Natural Sciences Collection 142 Box 1

¹³ "List of Members and Correspondents of the Academy of Natural Sciences," *Proceedings of the Academy of Natural Sciences of Philadelphia* 8 (January 1, 1856): 17–38.

¹⁴ Still there are challenges including establishing naming conventions followed for the project. Each organization seems to have its own naming convention. For example, groups identify Samuel George Morton by full name or as S.G. Morton or Samuel G. Morton. Such inconsistencies will create problems for the network graph.

Using the computational tools allows the scholar to create different charts as a means to visualize the data.¹⁵ For example each of the three organizations mentioned include the name, organization and the date elected allowing opportunities for scholars to look for patterns of enhanced, or diminishing, activities of the organization itself. With the election date available, it is possible to graph the annual number of members elected by each group. This allows scholars to view the data to discern if there are patterns that correlate to dates.

It is often difficult to determine a conclusive pattern just from the data however, spikes or declines in the annual membership may indicate periods of time that justify close readings of published and unpublished sources for each of the societies. Interestingly the Federalist dominated American Academy of Arts and Sciences saw several precipitous declines in the election of members elected at the very time that their political party was declining due to their antiwar stance leading

¹⁵ Once the data is prepared as structured data file like in a .csv file there are several tools that are helpful to utilize. RStudio is a free and open source tool designed to work with the programming language called R that was designed for statistical computing and graphics. This tool allows users to easily load packages that make it possible to use the R programming language. The packages that are utilized in RStudio like ggplot2 and igraph allow the scholar to pass the data collected from the membership lists through and develop graphic outputs based on the need. For example, the package igraph is designed to create and manipulate graphs and analyze networks. This is a core tool in the study of network science, which relies on the identification of nodes and their connections called edges. See Scott B. Weingart, "Demystifying Networks, Parts I and II," *Journal of Digital Humanities*, March 15, 2012, <http://journalofdigitalhumanities.org/1-1/demystifying-networks-by-scott-weingart/>; Hadley Wickham, *Advanced R*, The R Series (Boca Raton, FL: CRC Press, 2015); Eric D. Kolaczyk, *Statistical Analysis of Network Data: Methods and Models*, Springer Series in Statistics (New York ; London: Springer, 2009), <http://mutex.gmu.edu/login?url=http://dx.doi.org/10.1007/978-0-387-88146-1>; Elijah Meeks, "More Networks in the Humanities or Did Books Have DNA? | Digital Humanities Specialist," accessed October 11, 2015, <https://dhs.stanford.edu/visualization/more-networks/>.

to the Hartford Convention. In fact, the AAAS does not appear to recover until 1822. The scholar may use this visualization to ask the question why does the AAAS recover during that period and more importantly what makes the association grow significantly after 1840? At the same time, the APS appears to have a steadily increasing and stable growth of membership. Perhaps the most interesting question is what accounts for the vibrancy of the new ANS and the dramatic decrease in number of new members elected from 1835 until 1842? These observations often lead to questions instead of answers. Is the decline of the AAAS related to the decline in the first party system? Is the increased membership in the ANS a portent of interest by many in specialized scientific knowledge and a decline in the universal knowledge learned society? Is there a backlash against this move toward specialization? Do members want to control the exclusivity of their membership? **Figure 4** certainly pinpoints periods within the 1812-1850 range to focus on and perform close reading of sources to view what changes are occurring for these groups.

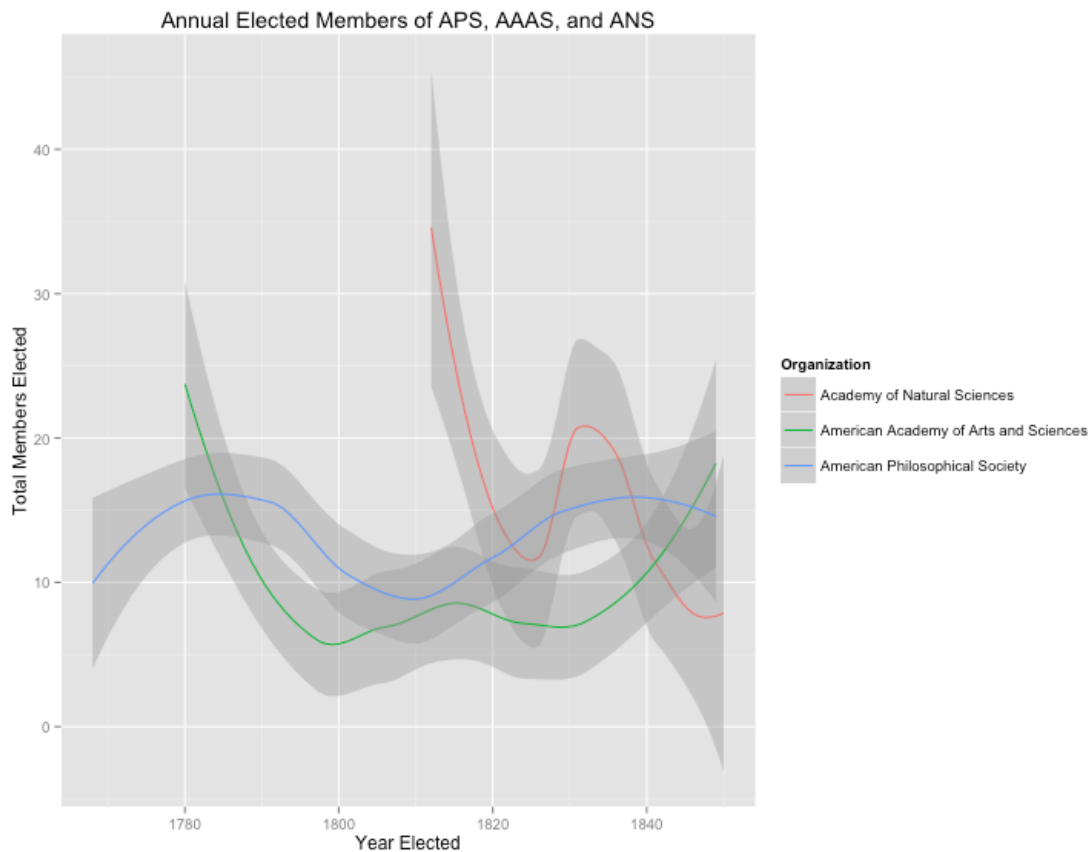


Figure 4 Number of new members elected annually in the American Philosophical Society, American Academy of Arts and Sciences and the Academy of Natural Sciences.

Network Analysis

Another way to use this data is to perform a network analysis that compares shared membership between the different groups.¹⁶ The network graph in figure 5 below consists of 7,298 names and 14 organizations. The thickness of the edges indicates more connections between different institutions. For example, Boston's American Academy of Arts and Sciences and Philadelphia's American Philosophical Society had significant overlap of members. This is somewhat surprising based on

¹⁶ See <https://github.com/georgeoberle/networkspresentation> for the processes and data archive.

the analysis of scholars like Linda Kerber's work that suggest the Federalists from the American Academy of Arts and Sciences studied and privileged different types of knowledge than the Jeffersonians of the American Philosophical Society.¹⁷ In addition, there are significant connections between Philadelphia's Academy of Natural Science and the American Philosophical Society, however there was less of a connection between the American Academy of Arts and Sciences and the Academy of Natural Sciences. This fits patterns identified by scholars suggesting that regional connections were often strong between different groups. In addition, they make the case that there was significant overlap between the different societies throughout the country, which helped to sustain them.

This network graph also provides a visualization of the size of each organization represented in the list based on the total of the number of members. For example, the American Philosophical Society is obviously the largest single group in the graph while the Medical Society of the District of Columbia is the smallest. This helps distinguish the relative size of the groups. Coloring the nodes of organizations located in Washington red also offers an opportunity to differentiate them from organizations in other parts of the republic. The largest Washington societies included the American Association for the Advancement of Science formed in 1848. The strongest connection on this graph was with the Boston based American Academy of Arts and Sciences.

¹⁷ Linda K Kerber, *Federalists in Dissent; Imagery and Ideology in Jeffersonian America* (Ithaca [N.Y.]: Cornell University Press, 1970).

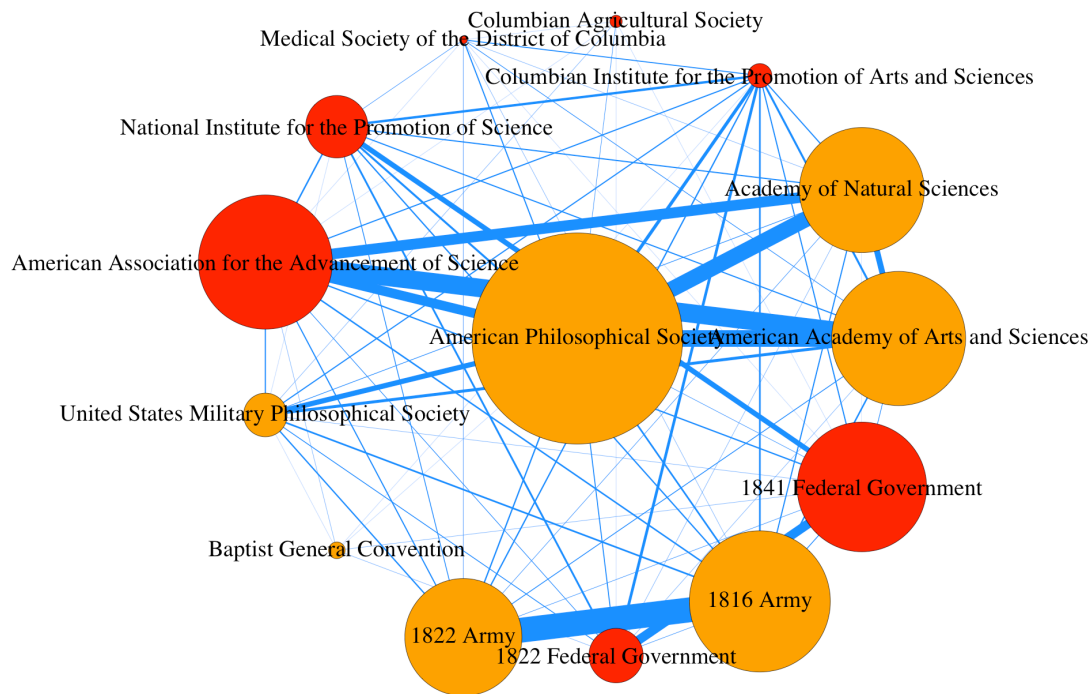


Figure 5 Network graph of selected early American societies and groups. 1811-1850

The network graph also indicates other possibilities to consider. The earliest American learned societies emphasized knowledge as interconnected and with a universal character. They viewed scientific learning as visible and empirical and believed that there was no place for controversy in the natural world. Many believed that contention and debates belonged in the realm of the rhetoric of the clergy and were evidence of corrupt ideals. Instead of engaging in these metaphysical discussions, many valued the importance of collecting, preserving, and displaying knowledge of their physical environment such as reporting the characteristics of

natural phenomenon. For example, the American Philosophical Society rarely took an official position on any matter including scientific questions. Instead, the typical report in the *Transactions of the American Philosophical Society* delivered findings in an encyclopedic manner. Some scholars view this as a demonstration that both the Federalist and Republican members generally held a similar worldview. They viewed the natural world as a perfectly logical and systematically constructed world. This understanding of the world created a common understanding of science as being utilitarian and designed in order to improve human conditions. Often these men expressed this notion of utilitarian knowledge as useful knowledge. This useful knowledge was important for advancing their understanding of civilization and was especially important to the development of a republic. The affinity toward mutual membership may support these claims.¹⁸ It seems likely that these existing institutions reinforced each other's worldview and this resulted in shared membership.

Clearly, *Figure 5* demonstrates that the groups in Washington are generally isolated from each other as well as other national institutions especially the earliest organizations. For example, one of the earliest groups known was the Columbian Agricultural Society. This group published the first periodical to be mainly devoted to agriculture in the United States. Their records appear to be lost, however their periodical *The Agricultural Museum*, included the names of at least sixty members

¹⁸ Henry F. May, *The Enlightenment in America* (New York: Oxford University Press, 1978), 197–222; Brooke Hindle, *The Pursuit of Science in Revolutionary America, 1735-1789* (Chapel Hill: Published for the Institute of Early American History and Culture, Williamsburg, Va. by University of North Carolina Press, 1956), 190–215; John C Greene, *American Science in the Age of Jefferson* (Ames: Iowa State University Press, 1984).

that received their publication. The publication included core society documents like their Constitution and proceedings, as well as the proceedings of other societies, essays on agriculture, manufacturing and the arts, and a variety of other information. The society published volumes between 1810-1812 resulting in at least 39 issues. The leaders of the institution included Thompson Mason, Charles Carroll, John Mason, David Wiley and George Washington Parke Custis. Although the group ultimately failed due to the War of 1812 one scholar makes the claim that, the interests and goals of the institution survived in the form of later societies like the Columbian Institute and the Washington Botanical Society in 1817 and even on into the Jacksonian period eventually becoming the National Institute for the Promotion of Science.¹⁹

Washington D.C.'s Columbian Institute, established with the intent to become the nation's learned society, was designed as an institution to promote universal knowledge. It had unfortunate timing since it was establishing at a time when specialized societies began to abound. This is evident even by the change in scientific societies like the Academy of Natural Science.²⁰ The network graph indicates that there are connections shared between many societies. One of the most surprising observations in the graph show that despite the limited size of D.C.'s

¹⁹ Rathburn, *The Columbian Institute for the Promotion of Arts and Sciences; a Washington Society of 1816-1838, Which Established a Museum and Botanic Garden under Government Patronage*; Harold T. Pinkett, "Early Agricultural Societies in the District of Columbia," *Records of the Columbia Historical Society, Washington, D.C.* 51/52 (January 1, 1951): 32-45.

²⁰ A. Hunter Dupree, "The National Pattern of American Learned Societies, 1769-1863," in *The Pursuit of Knowledge in the Early American Republic: American Scientific and Learned Societies from Colonial Times to the Civil War*, ed. Alexandra Oleson and Sanborn Brown (Baltimore, MD: Johns Hopkins University Press, 1976), 21-32.

Columbian Institute it had more connections, twelve, with other organizations than some larger groups like the American Philosophical Society who had ten. The succeeding group National Institute for the Promotion of Science had only ten. What is surprising is that the Columbian Institute and the National Institute shared limited connections. This is likely due to the incomplete status of their membership rosters.

Network maps are also useful to test assumptions made based on anecdotal evidence. One scholar stated the “status as the federal capital brought into...residence many men of learning, ability and distinction from all parts of the country. These belonged mainly to the civilian and military branches of the Government, and to both houses of the national legislature.”²¹ The implications of this are far reaching. It suggests that federal employment led to increasing the scientific activity of the city, at least in the form of membership to the learned society. This is certainly understandable. Reading the names on the membership list there are many names familiar to historians of early Washington, however, this may lead to false assumptions. One way to test the statement is to use the membership list of the Columbian Institute and the list of government employees available via the *Official Register of the United States*.²² For this project the data gathered from the

²¹ Rathburn, *The Columbian Institute for the Promotion of Arts and Sciences; a Washington Society of 1816-1838, Which Established a Museum and Botanic Garden under Government Patronage*, 19.

²² The scope of the publication is massive and Congress mandated by law that for the government to publish it every two years to coincide with the establishment of each new congress beginning in 1816. The full publication, sometimes known as the *Biennial Register* or the *Blue Book* consists of a complete listing of all civilian and military employees as well as the agents of the federal government. These lists can

government employees based in D.C. during 1822 sufficed for a snapshot.²³

Comparing the linkages between the two groups shows only 16 common members despite having 265 government employees working in Washington and 116 members of the Columbian Institute. Thirteen percent of the membership is a small percentage of the overall membership and directly contradicts the earlier claim. Even when looking at the connections between the 1816 and 1822 officers in the US Army the linkages do not strongly support the establishment of the connections needed to promote the type of partnership with the local scientific community.

Examining the relationships of organizations with the U.S. Army officers offers opportunities to explore if the Army offered a means to diffuse knowledge across the country. The sample in the above network graph includes two sample groups of the US Army officers as reported in the *Official Register*. These men held diverse connections with different organizations in the period. These connections were relatively limited with no more than a few shared members, however the diversity of the types of institutions are indicative of the diverse functions of the Army as a group of engineers and soldiers with diverse medical and scientific needs that came from across the nation. It suggests that the Army helped link different groups together to spread knowledge. Finally, the strongest connection on the chart is between the 1816 and 1822 Army groups. One hundred and forty four common members in the U.S. Army officer corps remained in the period between the end of the War of 1812 through the so called era of good feelings.

be massive. The 1816 publication, the shortest one, was 176 pages and consisted of approximately 6,327 names.

²³ John P. Deeben, "The Official Register of the United States, 1816-1959," *Prologue* 36, no. 4 (Winter 2004): 50-55.

Finally this network graph is useful to examine how interconnected the Washington DC groups were with the rest of the nation. The graph shows that there are limited connections between the groups in DC with the major learned societies in the republic like the APS, AAAS and the ANS. It is certainly clear that those three institutions had many more shared relationships with each other thus suggesting that the scientific expertise in the early republic resided primarily outside of the federal city. Washington did not have an institution with significant overlapping membership with the leading groups of the nation until the creation of the Joseph Henry's American Academy for the Advancement of Science. The graph shows connections with the APS, Boston's AAAS, and the ANS, however there is limited connections between the Academy for the Advancement of Science and the National Institute for the Promotion of Science despite the fact that both proclaimed similar interests and resided in the same city. This suggests distinctions between their definitions of science existed between the groups.²⁴

After the many failures for learned societies to flourish in the nation's capital the establishment of the Smithsonian in union with the founding of the The American Academy for the Advancement of Science led to what one scholar called a "level of maturity" for American society to develop an important combined voice to enhance scientific progress. A new professional type of scientist separated from political interests, unlike those members of the National Institute needed to guide

²⁴ Sally Gregory Kohlstedt, *The Formation of the American Scientific Community: The American Association for the Advancement of Science, 1848-60* (Urbana: University of Illinois Press, 1976).

scientific policy for the nation.²⁵ The assumption is that the new group offered a separation from chaos of the political realm. Like in an earlier period the world of scientific truth had no place for controversy. The politics of citizens and the state became a new expression of the distrust caused by discord between different groups.

It is important to understand the limitations of network analysis. For example, the Columbian Agricultural Society's short lived existence certainly is a factor emphasizing the few connections made in this particular network graph. Still the fact that it effectively ended during the War of 1812 did not necessarily mean that it did not develop a long lasting impact. The group had connections to the Medical Society of the District of Columbia, both the 1822 and 1841 executive branch of the government in Washington, the American Association for the Advancement of Science, and the failed United States Military Philosophical Society. Interestingly, however there is no connection with the Columbian Institute's membership, meaning that there may have been different groups of citizen interests in different types of scientific pursuits.

Work for the future

This work indicates that there is potential for applying network analysis to organizations to determine if there are shared relationships between different learned societies. Finding the data is a challenge. At this point there are several groups that I need to add to this study and there are several lists yet to be

²⁵ A. Hunter Dupree, *Science in the Federal Government, a History of Policies and Activities to 1940* (Cambridge, Mass: Belknap Press of Harvard University Press, 1957), 115–119.

discovered. This work required access to membership data, however the biggest challenge with this is to find a way to normalize the data. Different organizations collected different kinds of data for their membership purposes. Further, different individuals utilized different naming conventions meaning it is difficult to discern if names that are abbreviated in one organization are the same people identified in other rolls. There are significant gaps in the archival record leaving several organizations like the Washington area International Order of Odd Fellows and the Washington Bible Society that seem to have no records of their membership that remain. Still the greatest opportunity that these methods offer historians is the opportunity to break out of traditional analysis of studying only like types of associations. Too often, we allow modern categories of understanding dictate our study of the past. For example, we study scientific societies alone instead of comparing them with the emerging antiquarian societies or the agricultural or other fraternal associations. This method of analysis will allow us to use old sources in new ways and to perform new analysis on old questions.

Appendix: Identified D.C. Societies²⁶ without membership lists:

Enosinian Society –Columbian College
Washington Relief Society 1830
Female Union Benevolent Society of Washington City
Washington Monument Society
Washington Literary Society
Washington Library Company
Washington Female Orphan Society
Washington Orphan Asylum
Washington Botanical Society
Washington Bible Society
Washington Benevolent Society of Young Men
Washington Art League
Washington Art Association
Columbia Typographical Society
Washington area International Order of Odd Fellows
Mechanics Institute
Consumers Protective Association
Columbian Institution for the Deaf, Dumb and Blind
Columbian Hospital for Women and Lying in Asylum
American Tract Society
American Colonization Society

²⁶ Societies identified using Constance McLaughlin Green, *Washington: Village and Capital, 1800-1878*. (Princeton, N.J: Princeton University Press, 1962).