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Bridge Over Troubled Waters? The Most "Central" Members of Psychology and Philosophy Associations ca. 1900

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Abstract

There are many different ways to assess the significance of historical figures. Often we look at the influence of their writings, or at the important offices they held with disciplinary institutions such as universities, journals, and scholarly societies. In this study, however, we took a novel approach: we took the complete memberships, ca. 1900, of four organizations – the American Psychological Association, the Western Philosophical Association, the American Philosophical Association, and the Southern Society for Philosophy and Psychology – and visualized them as a network. We then identified individuals who "bridged" between two or more of these groups and considered what might be termed their "centrality" to the psychological-philosophical community of their time. First, we examined these figures qualitatively, briefly describing their lives and careers. Then we approached the problem mathematically, considering several alternative technical realizations of "centrality" and then explaining our reasons for choosing eigenvector centrality as the best for our purposes. We found a great deal of overlap among the results of the qualitative and quantitative approaches, but also some telling differences. J. Mark Baldwin, Edward Buchner, Christine Ladd Franklin, and Frank Thilly consistently emerged as highly central figures. Some more marginal figures such as Max Meyer, and Frederick J. E. Woodbridge, Edward A. Pace, Edward H. Griffin played interesting roles as well.

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In June of 2013, it was reported that the National Security Agency (NSA) of the United States had been surreptitiously collecting information about the phone calls of millions of Americans (Greenwald, 2013). The Obama administration defended itself against accusations of having illegally breached citizens' privacy itself by claiming that it had collected only "metadata" – phone numbers, locations of the phones, and the times and lengths of calls – not the actual contents of the conversations. In response to this justification, a sociologist at Duke University named Kieran Healy wrote a satirical article entitled "Using Metadata to find Paul Revere," in which he posed as a London-based British intelligence officer in 1772 who had been instructed to identify leaders of the underground revolutionary movement in the American colonies. The hitch was that he had to do this armed with no information about the situation beyond the membership lists of seven suspicious organizations, a reasonable 18th-century approximation of metadata.

Using some basic matrix arithmetic and an algorithm to convert the matrices into networks, Healy was easily able to finger one Paul Revere as a central figure whom the British Army should watch more closely – this some *three years* before the Boston silversmith made his famed "midnight ride." Although Revere belonged to five of the seven groups under suspicion, more than all but one[1] of the 254 other people in the list, the thing that most alerted Healy to Revere's importance was his mathematical "centrality" to the network: he was an individual who seemed to bridge between groups that, because they did not have members in common, might otherwise have been only

[1] Joseph Warren, who also belonged to five groups, would die at the Battle of Breed's Hill just two months after Paul Revere's ride.

faintly aware of each other's activities. Put another way, Revere seems to have been a key factor in coordinating otherwise disparate revolutionary groups into a coherent movement. And Healy could infer all this from nothing more than membership lists and a little math.

Just as in Healy's historical fiction, in authentic historical studies we want to identify significant figures, individuals who are "central" to the activities and developments of, in our case, the discipline of psychology. In the past, we have often relied heavily on characteristics such as intellectual influence (e.g. scholarly publications) and institutional prominence (e.g., department chairs, journal editors, association presidents) in our determinations of "significance." It is more difficult to examine the softer, less formal networks of relationships that can bind together otherwise disparate groups. Some of this can be found through careful examination of the personal correspondence of individual figures but, valuable as such investigations are, these archival studies are so labor-intensive that they nearly always focus on a small number of prominent figures (e.g., the "Great Department" at Harvard, the APA Council, Yerkes' "Committee on the Psychological Examination Recruits"). It would be helpful if there were a rigorous means of examining, for instance, *all* of the members of several related psychological and philosophical associations simultaneously in order to identify the most promising candidates for further investigation.

In this article, we took the membership lists of four closely-related scholarly associations – the American Psychological Association (hereafter AΨA), the Western Philosophical Association (WΦA), the American Philosophical Association (AΦA), and the Southern Society for Philosophy and Psychology (SSΦΨ) – and applied the same treatment to them that Healy had to the memberships of American revolutionary groups in order to discover whether the most "central" figures in psychology and

philosophy at the turn of the 20th century were those who are conventionally considered to be the most significant according to their publications and offices. If the two lists differ, the question is who are the people we found on the list of "central" figures, and what can we learn about the history of psychology by investigating them more closely?

The Four Associations

The early history of the AΨA is well known to most historians of the subject (see, e.g., Evans, Sexton, & Cadwallader, 1992). Early in 1892, G. Stanley Hall invited a few dozen scholars and scientists to join him at Clark University for a preliminary meeting about establishing a national association of psychologists. The motivations for forming a psychological association were multiple, but it was an era in which several specialty societies were breaking away from the older, somewhat amorphous American Association for the Advancement of Science. As scientific knowledge rapidly grew and became technically more complex, scientists were gradually abandoning their identities as generalists and becoming increasingly "siloed" into specialized topics of interest. The American Society of Naturalists, for instance, came together in 1886.[2] The American Physiological Society formed in 1887. The American Association of Anatomists began in 1888 (breaking away from the Naturalists). Even some humanists were doing it: the American Historical Association was founded in 1884.[3]

Hall was as attuned as anyone to the outward signs of a modern scientific discipline and, in the late 1880s, having a disciplinary journal and association were among the key markers. So, in 1887, he founded the *American Journal of Psychology*. Five

[2] Succeeding the earlier Society of Naturalists of the Eastern United States, which had been founded just three years earlier.

[3] Interestingly, the American Philological Association (now the Society for Classical Studies) dates all the way back to 1869.

years later, he decided that it was time for an American Psychological Association as well.

We know neither exactly how many people Hall invited to his preliminary meeting nor even how many attended but, by the end of the meeting, the new AΨA had 31 members. They were mostly from the northeast – five from Clark itself and four from nearby Harvard. From the West, though, there was John Dewey (Michigan), William L. Bryan (Indiana), George T. W. Patrick (Iowa), Harry K. Wolfe (Nebraska), Joseph Jastrow (Wisconsin), and Frank Angell (Stanford). The initial group of AΨA members were mostly at American schools, though there were also J. Mark Baldwin and James G. Hume from Toronto, and T. Wesley Mills from McGill in Montréal. There were no southerners.[4] There were no women. They did not all call themselves "psychologist" either. Several went by the title of "philosopher," and nearly all of them hailed from philosophy departments. Two were physician-alienists from the McLean Asylum near Boston: Edward Cowles and William Noyes.

In December of 1892, the newly formed organization held its "First Annual Meeting" at the University of Pennsylvania. Eleven new members were admitted, all from northeastern U.S. colleges but for three: (1) Charles S. Peirce, who no longer had an academic affiliation, having been released by Johns Hopkins earlier that year (though he was living in eastern Pennsylvania); (2) Charles A. Strong, who was the philosopher at the newly-opened University of Chicago (and son-in-law to its patron, John D. Rockefeller); (3) John Murray (misreported in the meeting minutes as "James"), who was the mental philosopher at McGill.

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[4] There were two, it should be noted, from the ever-liminal cities of Baltimore (E. H. Griffin) and Washington DC (E. A. Pace). Baldwin had been raised in South Carolina during Reconstruction, but he had been educated from high school on in New Jersey, and his family's historical connection was to Connecticut.

The Second Annual Meeting of the AΨA, held at Columbia University in New York, saw the admission of 14 new members, including the first two women, Mary Whiton Calkins and Christine Ladd Franklin. Again, the new members were all northeasterners but for James R. Angell of Minnesota, Earl Barnes of Stanford, Henry H. Donaldson of Chicago, and Alfred H. Lloyd of Michigan. The AΨA would grow rapidly in the coming years. By 1900, just eight years after its founding, it boasted 125 members.[5]

Although the origins of the AΨA are well-known, the origins of the philosophical organizations are somewhat more obscure to most historians of psychology. Because there were various proposals during the 1890s to isolate or even expel philosophers from the AΨA (see, e.g., Sokal, 1992), it is often assumed that this was the primary motive for philosophers to form organizations of their own. In point of fact, however, none of the efforts to dislodge philosophers from the AΨA met with the general approval of membership. Many members considered themselves to be both philosophers and psychologists. Indeed, it was not really decided at that time whether psychology would become a separate discipline or, instead, remain a branch of philosophy, though one with an experimental component (see esp. Wilson, 1990). Perhaps counter-intuitively, it appears to have been *geographical* factors, rather than intellectual ones, that led to the formation of the first academic philosophical association in the U.S.

In 1900, a group of 46 philosophers agreed to found a new organization called the Western Philosophical Association (WΦA). Its first president was Frank Thilly, an ethicist at the University of Missouri. Their first meeting was held on the first two days of January 1901 at the University of Nebraska. It cannot be the case that the main

[5] Reports of most early AΨA meetings, including lists of new members, were published in the February issues of *Psychological Review*.

impetus for this development was a sense of rejection from the AΨA because only 10 of the AΨA's 125 members lived west of the Mississippi river at that time. Of those 10, just 6 joined the WΦA. These were Thilly himself, Norman Wilde, an ethical and political philosopher from Minnesota, and four well-known psychologists: George Patrick and Carl Seashore of Iowa, Harry Wolfe of Nebraska, and Max Meyer of Missouri.

Perhaps surprisingly, psychological topics were prominent among the talks given at the WΦA's first meeting: Thilly's presidential address was on the mind-body problem. Patrick's paper was on the psychology of profanity (see Patrick, 1901). E. L. Hinman gave a talk on the will. J. D. Logan spoke on the "psychology of style." T. L. Bolton and C. A. Elwood presented on the psychology of imitation. Indeed, the only two papers *not* on obviously psychological topics were one on Greek philosophy by Minnesota professor Frederick J. E. Woodbridge and another about the just-deceased Unitarian theologian James Martineau by the Rev. John R. Brown of Kansas City. Given that WΦA members were not, in the main, from the AΨA and that many WΦA talks were on topics that would have been acceptable at AΨA meetings, it seems safe to conclude that that forces behind the creation of the WΦA were largely geographical in nature; they didn't want to have to take long, expensive train rides to the east coast just to share their work with their colleagues.

The formation of the American Philosophical Association (AΦA) the following year (1902) took a somewhat different path. Presided over by Cornell philosopher James Creighton, the AΦA appeared on the scene with a robust membership of 98. Of those, fully 62 were also members of the AΨA, nearly *half* of the older group's membership. There is little evidence, however, that the early AΦA was composed of the disaffected members of the AΨA. If that had been the case, one would expect the AΨA's membership to have plummeted the following year. Instead, there was actually an

increase of eight. Creighton himself had been a member of the AΨA since 1895, and he continued to be one after the formation of the AΦA. In addition, several significant AΨA figures were also charter members of the AΦA: J. Mark Baldwin, Mary Whiton Calkins, James McKeen Cattell, John Dewey, G. Stanley Hall, George T. Ladd, Henry R. Marshall, Hugo Münsterberg, Josiah Royce, Edward L. Thorndike, Margaret Floy Washburn, and Robert S. Woodworth. Perhaps surprisingly, William James was among those who refused to join the AΦA at first, complaining that:

> I don't foresee much good from a philosophical society. Philosophical discussion proper only succeeds between intimates who have learned how to converse by months of weary trial and failure. The philosopher is a lone beast dwelling in his individual burrow. -- Count me *out*!" (cited in Gardiner, 1926, p. 148)

James ultimately did join the AΦA, of course, but not until 1904. He even became AΦA President in 1907.

In contrast with the WΦA, however, few of the presentations at the early AΦA meetings were of obvious psychological interest. It may be that psychology was so important a branch of philosophy in those years that the philosophers of the AΦA continued to present their psychological papers at the AΨA while giving talks on other topics at the AΦA instead.

The relationship between WΦA and AΦA turned out to be a complicated one that takes us far beyond the scope of this paper. Briefly, despite several abortive attempts to forge them into a single national organization, they were unable to arrange even a joint meeting until 1914 (even though both held joint meetings with the AΨA). For that one year, they also agreed on a joint president, James Hayden Tufts of Chicago, but the center did not hold, and they returned to their separate meetings and presidents the following year. In 1919, the AΦA more or less unilaterally declared itself to be the

"Eastern Division" of a still hypothetical Greater AΦA. The WΦA, however, did not reciprocate by voting itself to be the "Western Division." It was not until 1922 that they managed to hold a joint meeting again. In 1924, a third group, the Pacific Philosophical Association, also appeared on the scene. This development seemed to finally coax the three groups into a national, if still very lose, organization called the AΦA. In 1927, they finally agreed to have a joint (though mostly symbolic) national executive. To this very day, the three Divisions of the AΦA (now Eastern, *Central*, and Pacific) hold separate conferences in different locations and times of the year.

Our story of the organizations is not yet done, though, for in 1904, a Southern Society for Philosophy and Psychology (SSΦΨ) came into existence, led by none other than J. Mark Baldwin. Baldwin had just moved from Princeton to Johns Hopkins in the "technically northern but spiritually southern" city of Baltimore.[6] In truth, though, the prime mover behind the formation of SSΦΨ was Edward Buchner (Miner, 1931), who asked Baldwin to be president, perhaps because he thought a more prominent face would lend the fledgling organization more legitimacy and, thereby, draw a larger membership. Baldwin remained president of the SSΦΨ's for four years. Buchner served as the organization's secretary-treasurer, a job he held for six years. He became the organization's fourth president, in 1910.

Of the SSΦΨ's 36 charter members, only 7 were also members of the AΨA: Baldwin, Christine Ladd Franklin, George M. Stratton, and E. H. Griffin, all with

[6] There is no original source for this phrase, which is frequently used to describe the city's character. It was an accident of history that Maryland stayed with the Union rather than the Confederacy during the Civil War. It was south of the Mason-Dixon Line (indeed, the Line was originally established to resolve a border dispute between Maryland and its northern neighbor, Pennsylvania). The state had a brisk slave trade before the Civil War, and one of America's most vocal and persuasive abolitionists, Frederick Douglass, was born a slave in Maryland.

affiliations to Johns Hopkins; E. A. Pace of Catholic University (in Washington D. C.); Max Meyer of Missouri; and E. F. Buchner of Alabama. The SSΦΨ was not like the other three organizations, though. Indeed, in one important way it was the *opposite* of them: it explicitly aimed to hold together the tapestry of philosophy and psychology that the other groups had been endeavoring to unweave (see, e.g., Pate, 1993).[7]

Method

It is unusual to have an explicit method section in a history article. However, given the technical character of the procedures we used, it seemed advisable in this case. A rather more humorous description of it can be found in Healy (2013).[8] First, we created a matrix that had, as rows, the 226 members of all four organizations and, as columns, the four organizations themselves – AΨA, WΦA, AΦA, SSΦΨ. If person *x* was a member of organization *y*, then that cell in the matrix was coded 1, otherwise it was coded 0. Unfortunately, we could not line up the dates of the membership lists precisely. It would have been ideal to have compared them all in 1904, when SSΦΨ first appeared. However, there are no membership records for the other three organizations in that particular year. *Psychological Review* published the complete AΨA memberships from

[7] We considered adding to our set of groups Titchener's Experimental Psychologists, founded in 1904. In the end, it posed two substantial difficulties. First, there was no fixed membership. To a first approximation, Titchener simply invited to the meetings whoever he thought was worthy in a given year. Moreover, he did not invite individuals, per se, but whole laboratories. He left it to each laboratory director to decide which of his assistants and students might be brought along. The first year, 1904, it appears that he invited as many as ten laboratories, but only six or seven attended. The second problem is that, even if we attempted to reconstruct a "membership" on the basis of attendance at the first meeting, this would result in a quite small number of "members": less than 20, perhaps as few as 13. What is more, at least 7 of those were from Cornell itself (see Boring, 1938; Judd, 1904). Because the records are so poor and, in any case, the group was in no way comparable in size to the other organizations, we decided to leave the Experimental Psychologists out of this study.

[8] We modified Healy's R code, available at https://github.com/kjhealy/revere, to make it compatible with our data and our research aims. For an earlier precedent of this sort of analysis, see the classic article by Breiger (1974).

the journal's inception in 1894 until only 1902. We decided to use the membership list from 1900 (Farrand, 1901) because it was closest in time to the first membership list for the WΦA, which was published in *Philosophical Review* (Hill, 1901).[9] We also used the inaugural membership list of AΦA, which was published in *Philosophical Review* a year later (Gardiner, 1902). These three were quite close together in time. The membership list that we used for SSΦΨ came from two years afterward, when the group first met (Buchner, 1905).

Next, we multiplied this matrix by its transpose $\mathbf{A}(\mathbf{A}^{\mathrm{T}})$, resulting in a large 226×226 matrix which showed how many of the four groups each member shared with each other member. We also reversed this operation, multiplying the transpose of our data matrix by the data matrix itself, $(\mathbf{A}^{\mathrm{T}})\mathbf{A}$, resulting in a small 4×4 matrix which showed how many members each group shared with each other group. The matrices themselves are somewhat difficult to interpret. They become far more comprehensible when they are rendered as visualizations in the form of networks. There are a number of popular algorithms for laying out networks (i.e., for deciding how to arrange the nodes and edges ("links") in space, in order to maximize their interpretability). We chose to use the same layout scheme as Healy had, which is called Fruchterman-Reingold. This procedure essentially imagines the edges as "springs" between the nodes, simultaneously preventing nodes from coming too close together (and overlapping) but also from forcing them so far apart that they fly well away from the rest of the network. (The interested reader can learn more about Fruchterman-Reingold and other force-directed drawing algorithms in Kobourov, 2013).

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[9] The 1900 AΨA meeting was held in late December, less than a week before the 1901 WΦA meeting, which has held in early January.

The Networks

Figure 1 shows the relations between the four organizations in network form. As can be seen in the thickness of the edge between them, the AΨA and the AΦA had the greatest degree of membership overlap. This correctly reflects what was said in the description above: 62 common members. Just the overlap between the AΨA and the AΦA was larger than entire memberships of either the WΦA or the SSΦΨ. The other organizations had some overlap with each other, though the connection between the WΦA and the SSΦΨ was very tenuous: as we shall see, it was a single individual.

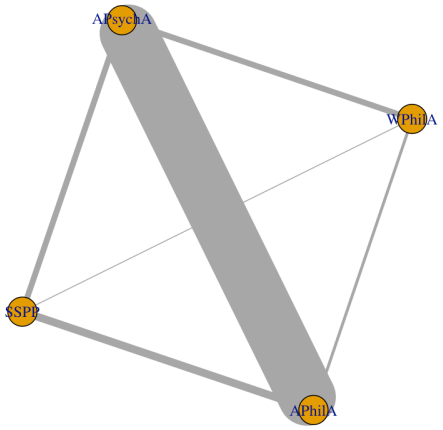


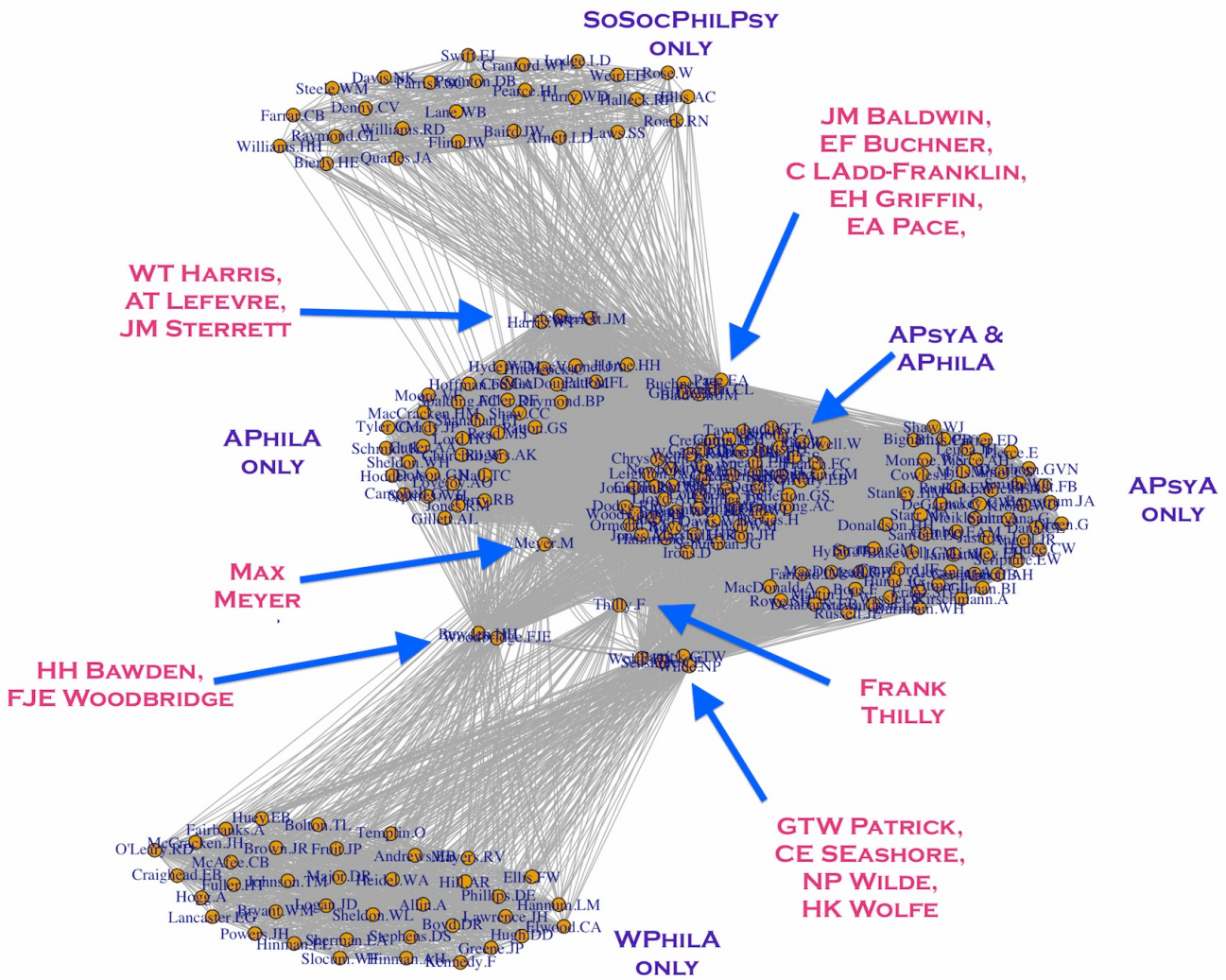
Figure 1. Network of the memberships of all four organizations.

Figure 2 shows the relations among all 226 members in network form. It is much more complex than Figure 1, and many of the individual names are difficult to read. To enhance the interpretability of Figure 2, we have annotated some of the network's more interesting features in large type. The cluster of nodes at the top of the network represent those people who were members of the SSΦΨ only. The cluster at the bottom represents those who were members of the WΦA only. The cluster to the left represents those who were members of the AΦA only. Finally, the cluster to the right represents those who were members of the AΨA only. The proportion of people who were

members of only one of the four organizations is considerable (68%). However, there is a large cluster of nodes at the center of the network as well. This represents the sizeable number of people who were members of both the AΨA and the AΦA, but not members of either the WΦA or the SSΦΨ.

Figure 2. Network of 226 members of the 4 organizations.

Selecting Candidates for Centrality Qualitatively



Apart from these five large clusters of nodes mentioned, there are a few other small clusters and individual nodes scattered about the interior of the network. These represent the people who were members of more than one of the four organizations (beyond joint members of the AΨA and AΦA only). These are, perhaps, the most interesting figures in the network because they were individuals who could serve as bridges between organizations (and, thus, between people). This makes them, in a qualitative sense, more "central" to the network and, by extension, more central to the combined community of psychologists and philosophers at the turn of the 20th century.

Joint Members of AΦA and the SSΦΨ

For instance, almost directly above the main AΦA cluster is a small group of three nodes corresponding to William T. Harris, Albert T. Lefevre, and J. Macbride Sterrett. All three belonged to both the AΦA and the SSΦΨ. Harris was a legendary figure in both philosophy and education. At the time the AΦA was founded, he was United States Commissioner of Education, working in Washington, D.C. Back in 1867, however, when he was a school teacher in St. Louis, he had founded the *Journal of Speculative Philosophy*, a periodical in which many first generation American psychologists published some of their earliest writings: William James, Charles Sanders Peirce, G. Stanley Hall, and John Dewey, among others. Harris was originally from Connecticut, born in 1835, and had studied at Yale for two years before moving west in 1857. His philosophical outlook was fervently Hegelian, and he founded the journal to promote Hegel's philosophy in the U.S. He brought this Idealist perspective to his educational positions as well, but it was not popular – perhaps it was too arcane to appeal to most people in the teaching business at that time. He was quite put out when his years of careful work in this area were overwhelmed in the 1880s and 1890s by the pedagogical theories of men who were far junior to him – Hall and Dewey in particular

(see, e.g., Ross, 1972, esp. p. 130). Harris moved back east in 1880 and was, for a time, connected with the Transcendentalist movement in Concord, MA. In 1889, President Benjamin Harrison appointed him U.S. Commissioner of Education, a post he went on to hold under four different administrations, until 1906. He folded his journal in 1893, but continued to keep up with philosophical developments, joining both the AΦA and the SSΦΨ when each was launched. By the time of the latter's appearance, however, he was in his 80th year. He would pass from the scene just five years later, in 1909.

Lefevre was not as prominent as Harris, but he was nearly as well travelled. Although born in Maryland in 1873, he earned his Bachelor's and Master's degrees at the University of Texas. He then started graduate work at Johns Hopkins, but completed his doctorate in philosophy at Cornell in 1898. After two years of further study in Berlin, he returned to teach psychology at Cornell for two years, then took a position at Tulane, in New Orleans. Finally, in 1905, he was offered a professorship at the University of Virginia, where he remained until his death in 1928. Lefevre's main works were books on the ethical theory of 18th-century British theologian Joseph Butler, and on Kant's philosophy. He served as the third president of the SSΦΨ, following J. Mark Baldwin (1904-1908) and the next person on our list, J. Macbride Sterrett.

Sterrett was born in central Pennsylvania in 1847.[10] He earned a Bachelor of Arts from the University of Rochester in 1867 and a Master of Arts from Harvard in 1870. After some study in Halle and Leipzig, he returned to the US to complete a Bachelor's of Divinity from the Episcopal Theological Seminary in Cambridge, Massachusetts, in 1872. For the next decade he served as a parish priest but, in 1882, he took a professorship in ethics and apologetics at Seabury Divinity School, outside of

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[10] Many thanks to Krista Peim, Special Collections Reference Librarian, for her assistance in locating information about Sterrett's life and career.

Minneapolis. In 1886 he received a Doctor of Divinity from Rochester and, in 1892, he moved to Washington DC to become the professor of philosophy at Columbian University (which, in 1904, changed its name to George Washington University). His works were on philosophical topics: Christian apologetics, Hegel, and British empiricism. As mentioned above, he was the second president of SSΦΨ, in 1909. That same year he became embroiled in a conflict with his university's president, Charles W. Needham, over the school's shift of focus toward professional schools. Along with several other dissidents, Sterrett was forcibly retired without pension (Needham, 1909). The Carnegie Foundation stepped in with pensions, but it also cut off contributions to the financially strapped university. Needham resigned the following year under a cloud of scandal over budgetary mismanagement (Anonymous, 1909; Novak, 2003). Sterrett, who was 62 years of age at the time he left GWU, does not seem to have obtained other academic work after that time. He died in 1923.

Joint Members of AΨA, AΦA, and SSΦΨ

Moving to the upper right of the network, we find a small cluster of five people: Baldwin, Buchner, Ladd Franklin, Griffin, and Pace. They were all members of SSΦΨ, AΦA, and AΨA. (No one in the entire network was a member of the AΨA and the SSΦΨ without also being a member of the AΦA.) The best remembered of these five is, of course, J. Mark Baldwin. Although born in South Carolina during the Civil War (1861) and raised there during Reconstruction, Baldwin's family had come from Connecticut. He went north for high school and then to attend the College of New Jersey (later Princeton University) for both undergraduate and graduate school. He spent a short time studying in Germany, mainly in Berlin under Friedrich Paulsen (a one-time student of Gustav Fechner's), though he also attended some of Wundt's lectures and may have briefly served as a subject in the Leipzig laboratory. After

completing his PhD, Baldwin held short-term posts at Lake Forest College, near Chicago, and the University of Toronto before returning to (what was by then) Princeton University for a professorship in 1893. He founded laboratories at Toronto and Princeton but his own research focused mainly on mental development and its connection with evolution (Baldwin, 1895, 1899, 1902). Baldwin was a founding member of the AΨA in 1892, and its sixth president in 1897. He co-founded *Psychological Review* with Cattell in 1894, and then created its companion publications, *Psychological Monographs* and *Psychological Index.* He also compiled a massive three-volume *Dictionary of Philosophy and Psychology* (Baldwin, 1901-1902). He was a founding member of the AΦA in 1902. In 1903, he moved from Princeton to Johns Hopkins. He encouraged Buchner to create the SSΦΨ, then served as the group's inaugural president for four years. During this time he bought out Cattell's half of *Psychological Review*, then divided the journal in two to create *Psychological Bulletin* in 1904 (Sokal, 1997). At this point, Baldwin was at the very top of his profession, having been selected to preside over the 1913 International Congress of Psychology, which was to have been the first time the U.S. hosted the quadrennial event.

Calamity struck, however, in October of 1908 when Baldwin was arrested in a Baltimore brothel. Although the matter was hushed up for a few months, it became public early in 1909 and he was forced to resign his professorship, his editorships, and his presidency of the International Congress (Wozniak & Santiago-Blay, 2013).[11] Unable to secure any academic employment in the US, Baldwin moved with his family to France, where he lived out most of the rest of his life, writing occasionally on the politics of French-American relations (Wozniak, 2009). During World War I, he and his family

[11] Indeed, the International Congress of 1913 was ultimately cancelled and, because of World War I, there was not another until 1923 (Evans & Down Scott, 1978).

were on board the *SS Sussex* in March of 1916 when it was torpedoed by a German U-boat in the English Channel. Although more than 50 were killed in the attack, Baldwin and his family survived. Thereafter Baldwin began to publicly campaign for the US to enter the war, which it did about a year later. Baldwin died in Paris in 1934.

Edward F. Buchner was born in Illinois in 1868. He earned a PhD from Yale in 1893. He wrote mostly on teaching and child development (e.g., Buchner, 1894, 1900, 1904). He also wrote one of the earliest histories of American psychology (Buchner, 1903), which he followed with annual updates for the next nine years. From 1903 to 1908 he taught at the University of Alabama. As we saw above, it was during this time that he led the creation of SSΦΨ. Not yet 40 years of age, he initially became the new organization's secretary-treasurer, ceding the presidency to the more senior and prominent Baldwin. As a prior member of both the AΨA and AΦA, Buchner presumably used these groups as models for the SSΦΨ. There was one important difference, however: whereas the AΨA and AΦA acted to separate psychology from philosophy, the SSΦΨ kept the two connected. Although this was often touted as an explicit aim of the organization, the relatively small pool of qualified scholars to draw upon in the South at the time must have also factored into the decision to create a combined organization; the SSΦΨ had just 36 members when it formed, too few to sustain two distinct organizations (Miner, 1931).[12] The problem was explicitly outlined by one of the SSΦΨ's founding members:

> Stunned by the blow received in the early sixties, our educational institutions for the most part have lain dormant, satisfied if the educational fires already lighted could be kept burning. Until very recent years no new departments were

[12] In addition, "experimental education" or pedagogy was also included in the SSΦΨ's mission statement, although the topic did not make it into the group's name.

> organized, no improved educational methods were recognized, no advanced or revolutionary ideas were tolerated. (Haywood J. Pearce, cited in Miner, 1931, pp. 3–4)

In 1908, Buchner left Alabama for a position at Johns Hopkins, where he remained for the rest of his career. He died in 1929.

Christine Ladd Franklin was well-known for her works in both logic and color vision (e.g., Ladd Franklin, 1889, 1900, 1922a, 1922b). She was born in 1847 in Connecticut and attended Vassar College. She was one of the earliest graduate students at Johns Hopkins, working under both the British mathematician James Joseph Sylvester and the American philosopher-scientist Charles Sanders Peirce. When she completed her studies in 1882, however, the school refused to grant her a PhD because she was a woman. Thereafter, she taught occasional courses at Hopkins, but could not obtain an ongoing position there. In 1891 she travelled to Germany to study color vision with G. E. Müller in Göttingen and with Helmholtz in Berlin. She returned to Baltimore where she continued to teach casually at Hopkins until 1908, when her husband, mathematician Fabian Franklin, took an editorial position with the *New York Evening Post*. In New York, she was also unable to land a regular professorship due to her sex, despite being one of the most accomplished researchers in her field. Nevertheless, she sometimes taught courses at Columbia, usually for no pay at all. She became an outspoken advocate for women's higher education, and she helped to create a number of scholarships for women at both the undergraduate and graduate levels. In 1926, Hopkins finally awarded her the PhD she had earned more than 40 years earlier. She died in 1930 at the age of 82.

Edward H. Griffin was a philosopher hired by Johns Hopkins in 1889 to replace Hall, who had left for the presidency of Clark in 1888. Griffin was born in 1843 in

Williamstown, in northwestern Massachusetts and, just like Hall, who was actually one year his junior, attended first Williams College and then Union Seminary in New York City. He returned to Williams as professor in 1872, where he was responsible, successively, for teaching Latin, Rhetoric, and Philosophy. In 1889 he was called to Johns Hopkins as Professor of the History of Philosophy and Dean of the Faculty (Anonymous, 1901). Griffin taught a course called "Logic, Ethics, and Psychology," which was required of all undergraduates, and he taught several different graduate seminars, but he seems to have supervised no graduate students of his own (Anonymous, 2005). Teaching and administration seem to have been his callings. He did not have a prolific research career: he authored six articles for the *Presbyterian and Reformed Review*, including one entitled "Psychology as a Natural Science" (Griffin, 1901). Griffin retired in 1915 and died in 1925.

Edward A. Pace was a Catholic priest and the first psychology professor at the Catholic University of America in Washington. D. C. Born in Florida in 1861, his family moved to Nova Scotia during the Civil War. He received his undergraduate education at St. Charles College in Maryland, then attended seminary in Rome. There, he earned a Doctorate of Theology in 1886. He then travelled to Germany to study psychology under Wundt, earning a PhD in 1891. Pace was immediately called to a professorship at Catholic University, where he held several administrative and editorial positions, including Dean of the School of Philosophy. He retired in 1935 and died in 1938 (Anonymous, n.d.).

Thus far, what commonalities, if any, do we find among the people who bridged between the different associations? Several of them – most notably, Harris, Lefevre, Sterrett, Baldwin, Buchner, and Pace – travelled quite widely around North America and beyond early in their lives. Often they were raised in one region, educated in

another, and then employed elsewhere again. As a result, they may well have had a better feeling for the variations among scholars and scholarship in different regions of the country than those who stayed in the Northeast (or the West, or the South) their entire lives, enabling them to better connect different kinds of people.

Joint Members of AΨA and WΦA

Moving to the lower part of the network, we find a group of four people who belonged to both the WΦA and the AΨA: Patrick, Seashore, Wilde, and Wolfe. Here again, we find a tendency toward extensive travel during youth and early adulthood.

George T. W. Patrick was born in 1857 in New Hampshire, but raised in Iowa. He attended what was then called the State University of Iowa (now just the University of Iowa), but afterward went to Yale for a Divinity degree. He then decided to pursue philosophy and psychology at Johns Hopkins, graduating with a PhD just as Hall left for Clark in 1888. The offer of a professorship in Mental and Moral Science drew Patrick back to Iowa, where he founded the tenth psychological laboratory in the US (Garvey, 1929). After a few years, though, he decided to travel again, this time to study in Berlin and Leipzig. After his year away in 1894, he returned to Iowa, where he stayed until his retirement in 1931. He served as president of the WΦA in 1903-1904. He died in 1949 (McCartney, n.d.).

Patrick hired Carl Seashore in 1897 to found a separate department of psychology at Iowa. Seashore (originally Sjostrand) was born in Sweden in 1866 and his family immigrated to Iowa in 1870. He attended Gustavus Adolphus College in southern Minnesota, graduating in 1891. Then, he went east to earn a PhD in psychology under Edward W. Scripture at Yale, which he completed in 1895. His primary research interests were perception and especially experimental aesthetics. He developed tests of musical and artistic ability, and he published widely (e.g., Seashore, 1908, 1913, 1919).

He was president of the WΦA in 1909-1910 and of the AΨA in 1911. Seashore retired in 1936 and died in 1949 (Kendall, 2012).

Norman P. Wilde was born in 1867, 25 miles up the Hudson River from New York City. He stayed close to home for college, attending Columbia in philosophy for both his Bachelor's and Master's degrees. Then he travelled to Berlin for two years of advanced study and spent a year at Harvard before returning to Columbia to complete a PhD in 1894. Although psychology was not his métier, Wilde seems to have been one of those philosophers who used the AΨA as a vehicle to connect with like-minded scholars prior to the formation of the philosophical associations. He taught at Columbia for a few years after graduating until, in 1898, he was offered a lectureship at the University of Minnesota. Minnesota had seen both John Dewey (1888-1889) and James Rowland Angell (1894-1895) pass briefly through its philosophy department. Angell had been followed by Frederick J. E. Woodbridge, who arrived in 1894 and who hired Wilde four years later. Woodbridge lasted a little longer than his predecessors – eight years – but he was eventually lured back east to Columbia in 1902. Thus, within just four years of Wilde's arrival as a mere lecturer, he became the head of Minnesota's philosophy department. He would remain there for the rest of his career. Wilde was WΦA president in 1919-1920, and he was involved in the tricky negotiations to amalgamate the WΦA and the AΦA that were underway at that time. His major work was *The Ethical Basis of the State* (Wilde, 1924). Wilde retired in 1936 and died that same year (Hull, 2013).

The final person in this group is Harry K. Wolfe, who taught intermittently at the University of Nebraska from 1889 until his death in 1918. Wolfe was born in Bloomington, Illinois in 1858 and raised there until the age of 13, when his family moved to a rural area outside of Lincoln, Nebraska. He attended the young and struggling University of Nebraska, graduating in 1880. Soon after, he went to Germany,

where he studied first with Ebbinghaus in Berlin, and then with Wundt in Leipzig, where he finished his PhD in 1886. Wolfe was just Wundt's second American doctoral student, after Cattell. Following a stint as a high school principal in California, in 1889 Wolfe was offered a philosophy professorship back in Nebraska. He opened what was just the eighth psychology laboratory in the U.S. (Garvey, 1929), but he could not convince the university that the venture was worth supporting financially. His research interests were in memory and education, but he focused mainly on assembling and administering a working department under unusually tough budgetary constraints. The situation made it difficult for him to conduct or publish much original research.

His ongoing conflict with the administration over the lack of laboratory funding finally reached a breaking point in 1895 when he was summarily dismissed by a particularly intolerant university president. Without a job to support himself and his family, he became the superintendent of schools in working-class South Omaha for several years. It would be a decade before he returned to a university position, this one in Montana. Just a year later, however, 1906, a new administration in Nebraska offered him a new professorship in education, which he accepted. In a bizarre turn of events, the man who had replaced Wolfe in the philosophy department after his 1895 firing, Thaddeus Bolton, was himself dismissed in 1907 for nothing other than being too outspoken about demanding better laboratory facilities for psychology (see Benjamin, 1991, 2003). This ironically paved the way to Wolfe's return to the philosophy department and his old, still-impoverished psychology laboratory. Given this fractious set of circumstances, things went remarkably smoothly for Wolfe over the next decade.

As the US debate over whether it should enter World War I reached its crescendo in April of 1917, Wolfe signed a petition calling on the U.S. remain neutral. As it turned out, Congress declared war on Germany just days later and anyone who was not vocally

behind the effort immediately became an object of antagonism by jingoistic political activists. Several Nebraska professors, among them Wolfe, were targeted. Eventually there was a university hearing at which Wolfe was called upon to defend himself against "disloyalty" and other vague charges. Although, in the end, he was not dismissed from the university, several of his colleagues were, and the public mood still ran against those, like Wolfe, who had signed the petition. Wolfe and his family decided to escape this ugly scene by visiting one of his brothers in Wyoming. While there, Wolfe suffered a fatal heart attack (Benjamin, 2003).

Here, once again, we see that a number of people who bridged between various psychological and philosophical organizations were people who had travelled widely during their early years and sometimes during their careers as well. Wilde was, perhaps, not as itinerant early in his career as Patrick, Seashore, and Wolfe had been. Even he, however, started in the east, studied in Europe, then spent his career in the west.

Joint Members of WΦA and AΦA

Only two people were members of both WΦA and AΦA. They are both represented by nodes in the lower left of the network. One was H. Heath Bawden, who had been student of Dewey's at Chicago and was an early champion of both functionalism and pragmatism (e.g., Bawden, 1902, 1904a, 1904b). He held brief appointments at Iowa State, Vassar, and the University of Cincinnati before being fired from the last for "holding views destructive of society" (viz., he favored the loosening divorce laws). Bawden never held an academic post again. He moved to California, where he continued writing and publishing independently (Bawden, 1910a, 1910b).

The other was Frederick J. E. Woodbridge, who was mentioned above in the description of Wilde. Woodbridge was born in 1867, in Windsor, Canada West (just months before Canadian confederation and, with it, the transformation of Canada West

into the province of Ontario). His family moved to Michigan when he was two years old. From 1885 to 1889 he attended Amherst College in Massachusetts, then he went to Union Seminary in New York City for graduate work. In 1892, he started advanced philosophical studies in Berlin. Upon his return, in 1894, he was offered a position at Minnesota, which had just lost James Angell to Chicago. As noted above, Woodbridge spent eight years in Minnesota before moving on to Columbia in 1902. Perhaps ironically, Woodbridge was elected president of the WΦA the very year he moved back east. In 1904, he and his Columbia colleague, Cattell, launched a new periodical, *The Journal of Philosophy, Psychology, and Scientific Methods* (later abridged to just the *Journal of Philosophy*). Woodbridge edited the journal until his death in 1940 (see J. A. Woodbridge, 2006). He served as president of the AΦA, 1911-1912. Philosophically, he was a naturalist and a realist, aligning him, in broad terms, with the likes of John Dewey (who joined him at Columbia in 1904) and George Santayana at Harvard. He was a prolific scholar who wrote on the themes of history, mind, and nature (F. J. E. Woodbridge, 1916, 1926, 1929, 1937, 1940). Again, here, we see two well-travelled individuals who belonged to two of our four groups.

Frank Thilly and Max Meyer

The final two people to be discussed explicitly, Frank Thilly and Max Meyer, were not connected even to small clusters of nodes. They were represented by single, isolated nodes in the lower center and lower left of the network, respectively. They belonged to three groups each. Interestingly, both spent considerable time at the University of Missouri.

Frank Thilly was born in 1865 and raised just outside of Cincinnati, Ohio. He graduated from the University of Cincinnati in 1887, and then left for advanced study in Germany, like so many other young American scholars of the era. He spent some time

in Berlin studying philosophy under Friedrich Paulsen (as Baldwin had earlier in the 1880s), but he moved to Heidelberg to earn his PhD under Kuno Fisher in 1891. Upon returning to the U.S., Thilly held a fellowship at Cornell from 1891 to 1893. He was then offered a chance to found a new department of philosophy at the University of Missouri. Thilly stayed at Missouri for eleven years, until 1904. He joined the AΨA in 1897. It was also during this time that Thilly organized and launched the WΦA, serving as its founding president, 1900-1902. He was also present in 1901 for the discussions that led to the formation of the AΦA, and he would ultimately serve as president of that organization in 1911-1912 (Gardiner, 1926). In 1904, Thilly was called to a professorship at Princeton, just after Baldwin had left for Johns Hopkins. It was not long, however, before he was offered yet another position at Cornell, where he went in 1906, and would stay for the rest of his career. Thilly wrote mainly on ethics, induction, and the history of philosophy (Thilly, 1900, 1904, 1914). He translated a number of Friedrich Paulsen's works, and he edited the *International Journal of Ethics* for a time. Thilly died in 1934 (Anonymous, 1935a, 1935b).

Meyer was born in 1873 in the same city as Hugo Münsteberg: Danzig, Germany (modern Gdansk, Poland). In 1882, Meyer went to Berlin for university and was soon studying under Hermann Ebbinghaus. Ebbinghaus did not have a professorship, however, and left Berlin for a professorship in Breslau (modern Wrocław, Poland). Meyer then became a student of Carl Stumpf. The two men worked together well for four years, conducting extensive and ground-breaking research on psychoacoustics and music. Meyer completed his PhD in 1896 (with physicist Max Planck on his committee). He stayed on as a post-doctoral assistant in Stumpf's laboratory to continue his research. In 1898, without Stumpf's permission, Meyer published an article on a technical issue about the fusion of consonant harmonies. Stumpf interpreted the article as a declaration

that Meyer had sided with his despised rival, Wundt (though Meyer denied it), and he immediately banished Meyer from his laboratory (Esper, 1966).

Left with little money, no *Habilitation* (a post-doctoral publication that is required for university positions) and, thus, with few academic options in Germany, Meyer decided to emigrate. First he went to England, but he lasted there only seven months. In 1899, he left for the U.S., where he took an unpaid fellowship at Clark and tried to work his way into the American psychological scene. He immediately joined AΨA, and he continued working on his music theory (Meyer, 1900). His habits of social interaction, however, were seen as abrasive and unpleasant by most Americans, which made it difficult for him to forge the professional relationships he needed to secure a good academic position (Esper, 1967).

Rapidly running out of money, Meyer jumped at an offer from the University of Missouri in 1900. It was not a good job – as one historian put it, "faculty salaries were low, living conditions were primitive, and the legislature repeatedly refused to appropriate adequate funds for maintenance and salaries and for such purposes as building a library" (Esper, 1967, p. 112) – but it was better than destitution. When Meyer arrived in Missouri, he met the head of the philosophy department, Frank Thilly. Meyer immediately joined Thilly's new WΦA, and he published a short monograph on the psychology of music as the first number of Thilly's new *University of Missouri Studies* (Meyer, 1901). When the SSΦΨ appeared in 1904, Meyer immediately joined it as well, eventually becoming its president in 1930.

As noted above, Thilly left for Princeton in 1904, but Meyer continued on at Missouri for decades. He was highly productive, publishing books and articles not only on his music theory, but also on the physiology of hearing and on general principles of an objective psychology that presaged behaviorism well before Watson's famous

"manifesto" (Meyer, 1911; Watson, 1913). In 1929, however, Meyer allowed a student, O. H. Mowrer (who would become an eminent psychologist in his own right), to distribute a questionnaire that, among other things, queried female participants on their views of controversial sexual matters (Esper, 1967). This set off a great eruption of outrage in the conservative community around the university. Another professor involved in the project was fired. Meyer got away with a one-year suspension, during which he taught in Chile. On his return at the end of the year, however, Meyer, by then head of the SSΦΨ, denounced the trustees of his university in his presidential address at the society's annual conference (Esper, 1967). Word of the event made it back to the trustees, of course, and Meyer was fired forthwith. (Interestingly, though, they also granted him an unpaid research professorship "on leave" so that he could collect his pension when he reached the age of retirement.) After leaving the university, Meyer worked for two years at an institute for the deaf in St. Louis. He then moved on to the University of Miami (Florida), where he arranged to teach some courses and have a little laboratory space, until 1940. He lived in Miami for another 20 years. He died in 1967 at the age of 93.

Mathematical Measures of Centrality

Thus far, we have discussed in qualitative terms 16 "candidates" for high centrality among in the network. They were "nominated" because they all belonged to at least two of the four groups: the AΨA, WΦA, AΦA, and SSΦΨ. Just seven of them belonged to three of the groups: Baldwin, Buchner, Ladd Franklin, Griffin, and Pace to the AΨA, AΦA, and SSΦΨ; Thilly to the AΨA, AΦA, and WΦA; and Meyer to the AΨA, WΦA, and SSΦΨ. (Note: no individual belonged to the AΦA, WΦA, and SSΦΨ and no individual belonged to all four groups.)

In formal network theory there are several mathematical approaches to the

question of "centrality." The simplest is "degree centrality," which measures simply the number of edges connected to any given node and declares the node with the highest number of connections (the highest "degree" in the vocabulary of network theory) to be most "central." There are circumstances in which the sheer number of connections is important, but that is not the case here because it simply measures the number of members in the groups of which a particular person was also a member.[13]

One of the problems with degree centrality is that it only takes into account those nodes that are directly connected the node of interest. Part of being "central," however, is not just who your friends are, but also who the friends of your friends are, and so on. Such indirect linkages can afford access (in the form of private news about what is current, information about your own work being spread to others, personal introductions, etc.). Thus, another approach to the question of mathematical centrality called "closeness" measures not just how many other nodes are connected to the node of interest but, rather, how short the path is, on average, form the node of interest to every other node in the network. For instance, if someone in the WΦA wanted to contact another person in the SSΦΨ, he might go through intermediaries who knew both him- or herself and the other person. Those intermediaries would be closer to members of both groups, on average, than would members of either group who did not have connections in the right places to establish a path between them (even if they had lots of links – high degree – within their own group).

Even among those who have high "closeness" to other nodes in the network,

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[13] If the edges in a network are differentially weighted (e.g., because certain connections are more important than others), one can use "weighted degree" as a measure of centrality as well. In this particular study, however, where edges simply mean that both nodes represent members of the same association, the edges are all of equal weight.

some are more important than others because they have access that is not available to many other people. These people often sit *between* groups that are, otherwise, fairly isolated from each other. These people have not only high closeness but also what is termed high "betweenness." For instance, because of the large overlap between the AΨA and the AΦA, there are lots of paths by which one might contact a member of one group from the other. In other words, lots of people are "close" to both groups; there is no one person or small group of people who are the exclusive conduits from one to the other. By contrast, the paths by which one might be introduced to a member of the WΦA from the SSΦΨ were quite limited in our network. Indeed, there was only a single person who was a member of both groups at the time we are investigating: Max Meyer. Meyer's unique status is reflected in the extremely thin edge that connects these two groups in Figure 1. Indeed, if you calculate the "betweenness" centrality of all of the nodes in the network of individuals (Figure 2), Meyer comes out with the highest score by far. The top ten in betweenness centrality were:

Name	**Betweenness**	**Cattell Ranking**[14]
Meyer.M	2049.8847	33
Thilly.F	1364.4491	--
Bawden.HH	704.7976	--
Woodbridge.FJE	704.7976	--
Baldwin.JM	631.8997	5
Buchner.EF	631.8997	48
Franklin.CL	631.8997	19
Griffin.EH	631.8997	--
Pace.EA	631.8997	--
Patrick.GTW	618.2598	24

[14] J. M. Cattell's (1903, 1933) survey of the "merit" of American psychologists. Most philosophers, of course, did not appear in that survey for obvious reasons.

As we can see, betweenness picks up pretty well many of the people who we nominated on qualitative grounds above: Meyer and Thilly, who each were unique in connecting three groups, then Bawden and Woodbridge, who (apart from Thilly) were unique in connecting the AΦA and the WΦA. After that are the five who connected the AΨA, AΦA, and SSΦΨ: Baldwin, Buchner, Ladd Franklin, Griffin, and Pace. Finally, there is Patrick, the first of four who were members of just the AΨA and the WΦA (along with Seashore, Wilde, and Wolfe).

"Betweenness" seems to start getting at what we are after here, but there is something artifactual about declaring Meyer to be most central simply because he was the only common member of two groups (the two smallest groups, at that). Is there a way in which we can combine both closeness as well as what might be generally termed a "positional importance" within the network (like betweenness) in order to keep relatively sparse portions of the network from dominating our mathematical explorations in this way?

Yes, but it requires a somewhat arcane algorithm called eigenvector centrality (see Bonacich, 2007). Eigenvectors are a means of manipulating matrices in order to determine what their most important "latent" dimensions are. One might think of this method as trying filter the dimensional "signal" out from all the dimensional "noise" that exists in sets of correlated data. For instance, if I give lots of people a diverse collection of puzzles to solve (verbal, mathematical, pictorial, etc.) and I find that, broadly speaking, one group of people are able to solve many of them, regardless of their specific content, while another group are able to solve rather few of them, I might hypothesize that there is a general factor, hidden from view, than enables people to solve puzzles, a factor that I might call "intelligence." This is, roughly, what Charles Spearman (1904) did to support his proposal of general intelligence in the early 20th

century. Indeed, eigenvectors lie at the heart of the statistical technique that Spearman invented for that purpose: primary components analysis.

In the present context, eigenvector centrality combines the intuitiveness of closeness centrality with a consideration of how "important" those close to you are themselves. As one textbook puts the matter:

> Consider two actors, A and B. Actor A is quite close to a small and fairly closed group within a larger network, and rather distant from many of the members of the population. Actor B is at a moderate distance from all of the members of the population. The farness [i.e., closeness] measures for actor A and actor B could be quite similar in magnitude. In a sense, however, actor B is really more "central" than actor A in this example, because B is able to reach more of the network with same amount of effort. (Hanneman & Riddle, 2005, Chapter 10, Centrality and power, §Closeness: Eigenvector of geodesic distances)

Computing the eigenvector centralities for each individual in the network resulted in a list topped by the five who were members of AΨA, AΦA, and SSΦΨ: Baldwin, Buchner, Ladd Franklin, Griffin, and Pace (all with scores of 1.0). Then came Thilly (0.988), who was a member of AΨA, AΦA, and WΦA. Next in this list were 53 individuals with tied scores (0.954) who were joint members of the AΨA and the AΦA. Among these were many traditional "luminaries" of the field: Calkins, Cattell, Dewey, Hall, Ladd, Münsterberg, Royce, Thorndike, Washburn, and Woodworth. Only after that large group did Meyer appear on the list (0.612) with his unique but secondary link between the WΦA and the SSΦΨ.

This measurement of "centrality" seems to capture the intuitive idea of centrality better than the previous three – degree, closeness, and betweenness. It is sensitive to "bridging" between groups, but it is not captured by a single unique "bridge" between

smaller groups (e.g., Meyer) to the exclusion of there being a number of "bridges" though between larger, more significant groups (e.g., Baldwin, Buchner, Thilly, etc.).

Discussion

In the past, historians of science, psychology included, have often judged the significance of historical figures on the basis of their intellectual influence. Of course, historians have long since embraced the importance of a wider range of factors than just intellectual ones. Institutional, material, and social elements, such as university administrations, professional associations, scholarly periodicals, technological innovations, government policies, and popular political movements now play a much larger role in the stories we tell than they did decades ago. Still, there is a tendency to bring this expanded range of influences to bear on stories in which the same basic set of individuals play the leading roles: those who ultimately had the greatest intellectual impact on the course of the discipline. In this article, we aimed to add to the cast of characters, not one at a time on the basis of our own personal interests in one or another "forgotten" figure, but on a broader basis, using digital historical methods that enable us to systematically examine the structures of large datasets that would overwhelm the cognitive capacities of the individual researcher.

When we were looking at the 16 most central candidates qualitatively, we noticed that several of them were exceptionally well-travelled. While this might well have something to with their having joined multiple groups in different regions of the country, having to move to different locations for advanced education or for a permanent academic appointment was hardly unusual at the time (anymore than it is today). The quantitative analyses, however, seemed to progressively capture interesting aspects of the structure of membership in these early associations that are somewhat difficult to articulate verbally. The eigenvector analysis especially seemed to reflect

better than betweenness what we had qualitatively grasped about the relative centrality of these individuals.

Baldwin, for instance, was not only instrumental to the start of the AΨA and the SSΦΨ. He was also the founding editor of several periodicals and the *Dictionary of Philosophy and Psychology*. Indeed, the survey of psychologists that Cattell conducted in 1903, Baldwin was voted the fifth most important psychologist in America by his peers (Cattell, 1933, pp. 1277–1278). Baldwin has historically had trouble getting full recognition for his contributions, no doubt because of the way his career was abruptly cut off, but it is interesting to see him appear so prominently here. He was not psychology's "Paul Revere," by any means, but he does seem to have been nearly everywhere the action was in early American psychology.

Buchner is even less well remembered today than Baldwin, but his role in founding the SSΦΨ and in writing several early historical articles about psychology perhaps make him worth a new look. Interestingly, although he was not exactly prominent, Buchner was hardly unknown to his contemporaries: he ranked 48th in Cattell's survey. Next on the eigenvector list, Ladd Franklin, was among the most original color theorists of her day (Furumoto, 1994), but her inability to obtain a professorship undoubtedly hampered her research and, thus, her historical profile. She was well respected in her time, nevertheless, ranking a very respectable 19th in Cattell's survey, ahead of even James Rowland Angell (22nd) and Lightner Witmer (23rd). About Griffin and Pace, I think, one can only say that they "came along for the ride" by being ready joiners-in. Their high eigenvector centrality does not reflect a hitherto unrecognized importance. They joined the AΨA when it was the "only game in town." They joined the AΦA because their intellectual inclinations ran more toward the philosophical than the experimental. Then they joined the SSΦΨ because both lived and

worked for decades on the boundary between North and South and, for Pace, perhaps because he was a southerner by birth. Neither Griffin nor Pace ranked in the top 50 in Cattell's survey.

Thilly we have already discussed, and the reason for his position seems clear enough. He was an active "organization man": founding the Missouri philosophy department, founding the WΦA, advising on the founding of the AΦA, later presiding over the AΦA, and editing the *International Review of Ethics*. For obvious reasons, Thilly did not appear on Cattell's list. (Surprisingly, however, James Creighton, Thilly's counterpart in the AΦA, ranked 45th.)

Finally, we come to Meyer. In the eigenvector list, he followed behind those dozens who were simply members of both the AΨA and the AΦA because, paradoxically, his "centrality" was rather peripheral; his unique position between the two smallest organizations had little import for the members of the two larger groups. Interestingly, however, although largely forgotten now, Meyer was well known to his contemporaries. Even though he had been in the country for just four years, he ranked 33rd in Cattell's survey.

It is possible that some will misunderstand our intent here. To be clear, we are not proposing that mere association membership – even multiple association memberships – is an adequate proxy for "significance" in the discipline on par with having written books and articles that are still read a century later. Instead, we are exploring alternative ways of entering the network of relations that existed among members of these disciplines in this era. We are discovering new reasons to investigate those whose contributions, though perhaps not primarily of the intellectual variety, were still meaningful and significant to the development of psychology as a discipline at the turn of the 20th century. We trust that our readers will find some of these individuals

intriguing and take up the cause of filling out their lives and careers in future historical work.

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