

Community of scholars: An exploratory study of management laureates

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Abstract:

Social network analysis is an important research tradition in structural sociology and has contributed much to our understanding of inter and intra organizational relations. Of particular significance is the contribution of social network analysis to the definition of community. Communities, whether traditional or scientific, can be effectively thought of as a series of positions and roles. This paper proposes four hypotheses about a select group of management scholars (laureates) and the network ties that connect them. Laureates were asked to identify individuals who had influenced their intellectual development and work in the management discipline. An invisible college in the traditional sense did not exist but rather a complex series of intellectual neighborhoods were identified. These neighborhoods, as contrasted to true communities or colleges were small, uncoordinated, and fragmented.

Article:

Introduction

The difficulty of assimilating professionals into organizations is well documented in the social science literature (e.g., *Raelin*, 1991). The professional's loyalty to science, patients, clients, or colleagues is greater than her/his commitment to the corporation, hospital, or university. Communication patterns among professionals, particularly scientists, provide the best evidence of this cosmopolitan orientation (*Gouldner*, 1957). The strength of the professional bond is so strong that virtual organizations called "invisible colleges," "intellectual or overlapping neighborhoods," and "scientific circles" are frequently more critical to professional development than the physical laboratories and classrooms where academicians actually work (*Boissevain*, 1979). The purpose of this paper is to explore virtual organizations among a sample of management scholars using social network analysis.

Theoretical background

Social network analysis originated almost seven decades ago and has been the focus of significant research in the behavioral sciences since the mid-1960s (*Moreno*, 1934; *Wolfe*, 1978). Network analysis represents one, although not the only, theoretical use of structuralism in social science. Contrasted to the broader cultural theories, *Parsons* (1961) noted that social structure refers to the "interaction of human individuals who constitute concrete collectivities with determinate memberships" whereas culture refers to "patterns of meaning, of values, of norms, of organized knowledge and beliefs, of expressive forms" (p. 34).

More specifically, social network analysis assumes that social life is rooted in positions and relations and must be explained by analyzing patterns and networks (*Blau*, 1982). In organizational sociology much of the structural interest has been directed toward intraorganizational networks (*Blau*, 1962; *Tichey*, 1973; *Weiss* and *Jacobsen*, 1955; *White*, 1961). This body of research has examined both informal networks (especially communication patterns), and formal networks including interdepartmental information transfer, collective bargaining, and authority relations.

Networks and community

This study extends previous social network research on the concept of community and applies it to a sample of management scholars. As *Gersick et al.* (2000: 1026) accurately state “to join a profession is to plunge into a community of people.” *Wellman* (1979) has shown that community studies using network analysis have made unique contributions by focusing on structured social relationships. This research has consistently illustrated the importance and persistence of community ties. According to this theory and its subsequent extensions, it is more efficacious to conceive of communities as personal networks of ties rather than neighborhoods or local areas containing sets of potential relations (*Wellman and Leighton*, 1979). Recognition of communities as networks is important because it encourages the search for support systems and other social relationships beyond local neighborhoods (*Cross et al.*, 2001).

Communities, of course, may be defined in a number of ways, so that much of social network research has been based on *Blau's* (1977) contention that sociodemographic dimensions such as age, education, location (the case for local neighborhoods) are instrumental in shaping social interactions. This is referred to as the *homophily principle* and states that people who are similar to one another along sociodemographic dimensions are more likely to interact than dissimilar individuals. These sociodemographic dimensions are considered to be qualities that locate social positions in relationship to one another (*McPherson and Ranger-Moore*, 1991; *McPherson et al.*, 1992).

Invisible colleges and scientific communities

Scientific communities are organized into network patterns where individuals are the nodes and the links are acquaintances and common work (*Lieberman and Wolfe*, 1997). *Blau* (1973) suggested that the academic department most appropriately defined the boundaries of academic communities while *Friedkin* (1978) argued that the community is a broader interdisciplinary entity. To date, the most sophisticated area of social network analysis applied to scientific communities relates to invisible colleges.

Price and Beaver (1966) trace the term “invisible college” to a group of scholars in the mid-17th century whose loose, informal affiliation later evolved into the very tight knit and formal Royal Society of London. Before becoming formally organized as the Royal Society, this group communicated by open letters to gain an audience, built their reputations, and kept others apprised of their work.

Invisible colleges have been of interest to a number of researchers for a variety of reasons. *Freeman* (1984) indicated that studying scientific networks would be an effective way of defining the boundaries of academic specialties. For example, an established specialty would be characterized by dense links among its practitioners and in such networks individuals would know or at least be cognizant of one another (p. 203). Links would become less dense and colleagues less well known to one another at the boundaries. Unrelated specialties would be characterized by individuals working independently of one another and without knowledge of others' work. Newton and Leibniz's independent development of the calculus is such a case and is partially explained by Newton's reluctance to publish his findings (*Sunsoft*, 2001).

Hammon and Carley (1993) state that invisible colleges are comprised of a group of scholars and scientists who have a shared paradigm and subscribe to a common journal that connects the members. This scientific circle defines important problems, promotes common methods of analysis, establishes criteria of accomplishment, and advances core substantive areas where ideas develop (p. 73). In highly competitive specialties, the invisible college is often a coterie of people who meet at conferences, commute from one person's location to another, circulate working papers, and sometimes collaborate on research. The groups observed by *Hammon and Carley* (1993) tended to be small (less than 10 members), loosely coupled, and were brought together by a single research issue. In contrast to invisible colleges or extended research groups, smaller research units are more accurately labeled intellectual or overlapping neighborhoods.

Invisible colleges as agile channels

The interest in invisible colleges has intensified because of numerous calls for more “agile channels” of scientific communication (*Lieberman and Wolf, 1997*). Agile channels are desirable because they facilitate the organization of relationships into less formal network patterns where the nodes are individuals and the links are common work. Agile communication channels can transfer an idea informally and quickly without regard to organizational boundaries (*Barney, 1985*). In agile channels, there is an inner circle of knowledge reproduction that is primarily oral (in the case of conferences) or written (in the case of electronic mail). The outer circle conveys information through refereed journals and message transmission typically takes from 6 to 12 months in fields such as physics to more than 3 years in mathematics. Further, for readers to “connect” with researchers they have to search or monitor open channels of communication. The outer circle is more precise and quotable, but the inner circle often possesses details and covers narrow bands of knowledge that the outer circle cannot discern.

Method

This research was designed to examine the network of social and professional interactions that took place among a group of distinguished contributors to management theory and research. A questionnaire was sent to each participant who provided responses to a structured set of questions.

Sample

The sample used in this study consisted of 47 individuals designated as *management laureates* by virtue of their inclusion in a five volume series titled *Management Laureates: A Collection of Autobiographical Essays* (*Bedeian, 1992, 1993a, 1993b, 1996, 1998*). Although no specific justification was given for inclusion in the sample, the definition of laureate was based on three criteria. First, all of the laureates were considered to be “influential” in the sense that their lives have, and in most cases continue to have, significant impact on management and society (*Bedeian, 1993b, p. viii*). Second, although the lives of the selected laureates do not shed light on the entire management discipline they do provide a “window” into what goes on in the lives of some of management’s leading thinkers (*Bedeian, 1996, p. ix*). Third, laureates were selected not only because of their prominence but “also for their behind-the-scenes insights into the management discipline’s historical development” (*Bedeian, 1998, p. vii*).

A questionnaire was sent to 47 laureates included in the series. Of the 47 questionnaires sent, responses were received from 32 laureates or their representatives. Two were too ill to respond, but their representatives indicated their intention to do so if their health later allowed. One laureate had recently died and one response was not complete. A total of 28 responses are included in this analysis.

To detect potential response bias, the groups were compared on the basis of the field in which individual laureates earned their highest academic degree. In the total sample, 47 percent of all laureates earned their doctorates in management, 36 percent earned doctorates in psychology, and 7 percent were economists. Thirty-nine percent of the respondents held doctorates in management and another 39 percent were trained as psychologists. On the basis of this measure it was concluded that the sample of 28 respondents did not differ significantly from the 19 laureates that did not respond ($\chi^2 = 5.622, p = 0.655$).

Measures

Respondents were asked to provide a list of individuals who had influenced their intellectual development and their subsequent contribution to the field of management. In addition, respondents provided the institution where they were employed and the institution that employed the influential individual at the time of the primary influence. Each respondent was asked to specify the nature of the relationship (mentor, peer, student, mentor who became a peer, or student who became a peer). Unlike some previous research (e.g., *Katz and Powell, 1960*), we did not force respondents to select a certain number or limit the choices to a particular list of potential relationships.

Hypotheses

Based on contemporary research on scientific networks and invisible colleges, four hypotheses are proposed and examined using several sociometric measures and a search of the first 17 years of the contributors to the *Academy of Management Journal*. The hypotheses examined are:

H1: Elite members of an academic specialty (management laureates) will form large extended research groups. (Freeman, 1984).

H2: Elite members of an academic specialty (management laureates) interact according to the homophily principle. Formation of groups can be described in terms of selected sociodemographic dimensions of the members (Blau, 1977).

H3: Elite members of an academic specialty (management laureates) will publish extensively in a journal, or small set of journals, that are shared by the members of the intellectual neighborhood (Hammon and Carley, 1993).

H4: Elite members of an academic specialty (management laureates) represent an invisible college as represented by their tenure in a single, exclusive professional society (Hammon and Carley, 1993).

Procedure

To examine the first two hypotheses, three sociometric measures of group interaction were calculated (Kerlinger and Lee, 2000). The first hypothesis was examined by calculating the expansiveness of the laureate group using Eq. 1. The measure of group expansiveness (E) we used is:

$$E = \sum c_{ij} / n \quad (1)$$

Where $\sum c_{ij}$ = the sum of all choices made by all group members and (n) represents the number in the group.

The second hypothesis, that members will be similar according to some sociodemographic dimension (homophily principle), was approximated by measuring their group integration and cohesion (Eqs 2 and 3 respectively) and developing a sociogram (Figure 1) of their relationships. The measure of group integration (I) indicates how many individuals were not chosen by their peers and is measured by:

$$I = 1 / \text{Number of isolates} \quad (2)$$

The measure of group cohesion (Co) is:

$$Co = \text{Number of mutual pairs} / C_2n \quad (3)$$

where the denominator is the possible number of pairings in the group.

To test the hypothesis that management laureates will seek out a common journal and use it extensively, *The Academy of Journal (AMJ)* was examined from its inception until the *Academy of Management Review* was launched in 1976. Lotka's Law (1926) of author concentration was calculated to see if the concentration of authors was greater in *AMJ* than in other academic journals. The generalized law states that:

$$a_n = a_1 / n^c \quad (4)$$

where a_n is the number of authors publishing n articles and c is a constant. The regression formula to test the law is:

$$\log(a_n/a_1) = a + \beta \log(n) + \varepsilon \quad (5)$$

Cox and Chung (1991) provide a full explanation of the formula's derivation. The constant is represented in the derived formula by the coefficient β . Finally, if hypotheses one and three are confirmed and hypothesis two is rejected, the last hypothesis (H4) that an elite, invisible college exists would be supported.

Results

The 28 respondents identified 224 individuals who had been influential on their intellectual development (see Table 1). The median number of influential people was 7 (mean 8) with a range of 4 – 20.

Hypothesis one related to whether or not the laureates represented an extended research group. In order to evaluate this hypothesis several analyses were conducted. First, in Table 1 note that 8 of the 28 laureates did not list anyone outside the institution where they were employed at the time who had a primary influence on their intellectual development. The majority of these laureates had worked in 2 to 4 universities but the mentors, peers, and students they identified as most influential on their intellectual development were colleagues in the institutions where they were located. Ten of the laureates indicated that between 11 percent and 44 percent of the people who influenced them intellectually were outside the institution where they were faculty members (see column 5 of Table 1). Finally, 10 laureates indicated that more than 50 percent of the mentors and peers that influenced them intellectually were outside their institution at the time of the primary influence.

Table 1. Selected information on management laureates

Laureates	Percent of publications 1958-1975 in <i>AMJ</i>	Number of people who influenced intellectual development	People outside of university of employment who influenced intellectual development	Ratio of outside to inside intellectual influences
Argyris, C.	0%	4	2	50%
Bartol, K.	25%	20	11	55%
Bass, B.	0%	16	12	75%
Bedeian, A.	25%	10	8	80%
Beyer, J.	0%	4	1	25%
Chandler, A.	0%	4	1	25%
Fiedler, F.	0%	6	0	0%
Golembiewski, R.	14%	12	8	67%
Herzberg, F.	0%	5	3	60%
Hofstede, G.	0%	5	1	20%
Ivancevich, J.	31%	11	3	27%
Lawler, E.	0%	5	0	0%
Locke, E.	0%	4	2	50%
Luthans, F.	10%	10	3	30%
Miner, J.	3%	11	6	55%
Mintzberg, H.	0%	5	0	0%
Newman, W.	0%	5	1	20%
Perrow, C.	0%	7	0	0%
Pettigrew, A.	0%	6	1	17%
Pfeffer, J.	6%	8	0	0%
Pugh, D.	0%	9	1	11%
Roberts, K.	20%	10	3	30%
Schein, E.	0%	8	0	0%
Skinner, W.	0%	9	0	0%
Slocum, J.	15%	9	4	44%
Steiner, G.	0%	7	4	57%
Vroom, V.	0%	5	0	0%
Weick, K.	3%	9	3	33%

Only ten laureates indicated that individuals outside the institutions they were working had a significant intellectual influence on them. In addition, the group expansiveness for the responding laureates was $E = 0.357$. A value of less than one indicates that most of the individuals who influenced the thinking of laureates about management were not other laureates. Therefore, these elite members of our academic discipline do not form a large extended research group so that hypothesis one is rejected.

Sixty-four percent of the laureates identified the source of their primary influence as a colleague within their own organization. The most important sociodemographic dimension for matching laureates and their mentors, peers, and students was physical space (intrauniversity relationships). The calculated values of group integration ($I = 0.0555$) and the lack of group cohesion among laureates ($Co = 0.005$) can be thought of as probabilities. Both values are far below 0.1 further confirming the importance of proximity on intellectual influence and leads to the rejection of null hypothesis two. In view of the outstanding universities in which the laureates have served most of their careers, perhaps the homophily principle relative to space was operative because, according to *Friedkin* (1978) “the average faculty member in a large heterogeneous university will less frequently have to go outside her/his university to find research colleagues . . .” (p. 1459).

Relative to hypothesis three, it was expected that the *Academy of Management Journal*, which was the only affiliated outlet for management research until 1976, would be the primary target for publication by management scholars. As a means of addressing this question, the curriculum vita, a part of each autobiographical essay, was examined to see if there was a single journal or small set of journals where the laureates published the majority of their scholarly work. Previous research suggested that members of invisible colleges and intellectual neighborhoods frequently migrate toward similar media for their scholarly publications (*Carley and Wendt*, 1991).

In order to examine hypothesis three, the first 17 years of contributors to *AMJ* were analyzed to determine what percent of *AMJ*'s content laureates contributed. The period 1958–1975 was selected for two reasons. This period included active publishing years of each laureate and *AMJ* was recognized almost universally as the “place to publish” in management. In 1976 the *Academy of Management Review* began operations and the concentration of management research in *AMJ* was shared with another Academy publication. Interestingly, 64 percent (18) of the respondents did not publish any articles in *AMJ* from 1958 to 1975. At the other extreme, 4 laureates (14 percent) published 20 percent or more of their scholarly contributions in the *AMJ* during this period (column 2 of Table 1).

Sixteen of the total 47 laureates published one or more papers in *AMJ* from 1958 to 1975. These sixteen laureates authored or co-authored 66 articles or 10 percent of the 655 articles published in *AMJ* during this period. Based on Lotka's Law, the concentration of authors in *AMJ* is $R = 2.99$ ($\alpha < 0.001$) for the first 17 years. This value is comparable to low author concentrations for journals in fields such as computer science, finance, and economics (*Cox and Chung*, 1991). Of the 20 economic journals reviewed in *Cox and Chung* (1991) only one, the *Quarterly Journal of Economics*, had a lower concentration of authors. In as far as the laureates were first movers in the management discipline, it seems likely they would have been more prolific and by extension more concentrated in the early years of *AMJ*. Therefore, we cannot reject null hypothesis three and assert that management laureates published more extensively in a common outlet than other management researchers.

The analysis did reinforce an observation by *Price and Beaver* (1966) who stated that the most striking feature of their study was the number of separate groups that existed in what one might think to be an invisible college. For example, Figure 1 reveals an interesting series of subgroups that revolve around several individuals. Chris Argyris was selected as a mentor by three laureates and as a mentor/peer by another. All these individuals had a Yale University connection except one who was teaching at the United States Military Academy when he enjoyed the mentor relationship with Argyris.

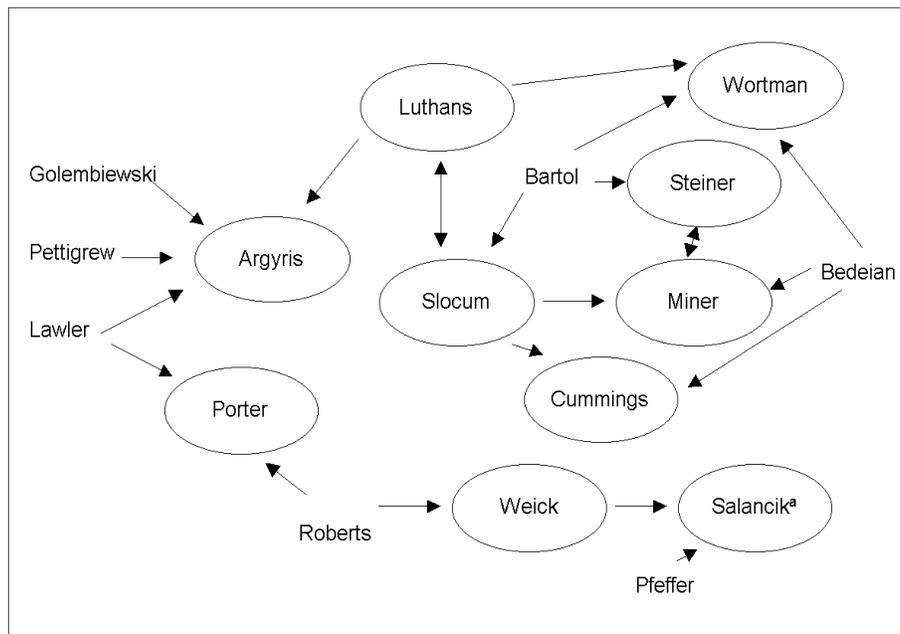


Figure 1. Interaction patterns among management laureates
^aSalancik was not included in the list of laureates but was selected by two laureates as influential on their professional development

John Miner was selected as a mentor/peer by two laureates and as a peer by another. Max Wortman was also identified twice as a mentor/peer and once as a peer, although the group was composed of different laureates. Two laureates identified John Slocum as an influential peer. Closer examination of the laureates suggests that even though no invisible college exists *per se*; rather “in-groups” or small intellectual neighborhoods were the norm. Therefore, hypothesis four was partially supported.

Discussion

The management laureates appearing in the five volume series, *Management Laureates: A Collection of Autobiographical Essays* (Bedeian, 1992, 1993a, 1993b, 1996, 1998) did not represent an extended research group or invisible college. Instead, they formed a series of intellectual neighborhoods the boundaries of which were defined primarily by the proximity of colleagues. Thus, management laureates interacted primarily with mentors, students, and peers sharing a common institutional tie. The lack of an extended invisible college is not surprising considering the incipient nature of management during this time period.

The development of distinct intellectual neighborhoods rather than an extended invisible college may be explained because of (1) the diversity of education and background of these management pioneers, (2) the lack of agile communication channels (prior to widespread availability of the Internet and desk-top editing) and, perhaps most importantly, (3) the absence of a shared paradigm. Less than half of the laureates held advanced degrees in management, a third were educated as psychologists and several were economists. Even those with doctorates in management often had very different disciplinary orientations (e.g., organizational behavior, operations research, and business policy). As a result, the laureates were addressing early management issues from different perspectives with relatively small cohorts of similarly trained individuals.

An added factor inhibiting the development of an extended invisible college was that shared research and working closely with colleagues at other institutions was often difficult. There were few conferences or professional meetings to exchange ideas and develop shared interests. In addition, particularly in the early years, laureates may have tended to publish in their own disciplinary journals. (e.g., *Journal of Applied Psychology*, *Administrative Science Quarterly*, *Public Administration Review*, and *Sociometry*) rather than a common journal that connected all members.

Finally, because the field was in the early stages of development, there was not wide agreement on the definition of the important problems, methods of analysis, criteria of accomplishment, or advancement of core areas of the field. Common management paradigms had not yet been developed and it seems that such paradigms are essential for the formation of an invisible college.

On the other hand, the development of intellectual neighborhoods may merely be indicative of the evolution of a field and part of a network organizational life cycle. Where invisible colleges have thrived, the field was more mature and there was considerable consensus (within the college) about the nature of problems, methods of analysis, and core areas. This is particularly true in certain sub-fields of science and mathematics. As a result, one might expect that a broader investigation of the field of management today would identify a more developed invisible college or perhaps several departments within a larger business school. Professional divisions and interest groups in the Academy of Management, for example, suggest the existence of more and larger extended research groups.

Many changes have taken place in the last twenty-five years that have fostered the development of invisible colleges in management. First, the field has matured and is better defined resulting in a more common paradigm. There is considerable consensus on the nature of the discipline and its subspecialties. Again, the growth of the Academy of Management and the organization of its divisions and interest groups reflect this consensus. In addition, within these Academy divisions there is general agreement on the nature of the issues and appropriate research methodologies. At the same time the Academy's journals have gained wider recognition as the most significant forum for exchanging ideas and advancing the field.

Another factor encouraging the development of invisible colleges has been the development of agile communication channels. Word processing became prevalent in the early 1980s facilitating the sharing of research ideas and data. Subsequently, the growth of the Internet fostered the development of extended professional networks through e-mail, chat rooms, and the electronic exchange of manuscripts. Further, management subspecialties developed their own conferences, meetings, and journals (e.g., *Strategic Management Journal*, *Public Performance & Management Review*, and *Management Science*) as platforms for sharing ideas.

It is also likely that the development of invisible colleges is being fostered through the nature of contemporary management education. Today, many more management researchers and scholars have advanced education in management. This phenomenon further promotes common paradigms and the development of common interest networks. In addition, the growth of management education itself has fostered networks. Students and their mentors tend to stay electronically connected, continuing to share ideas and jointly publishing their research.

Increased faculty mobility will no doubt contribute to the development of invisible colleges. Mobile faculty members tend to maintain important contacts and develop new ones. Further, teaching assignments abroad, sabbatical leaves, and visiting professorships contribute to building invisible colleges.

Finally, and perhaps most important, the mere existence of diffuse intellectual neighborhoods may bode well for a more integrated network or college of management scholars. *Grandovetter* (1973), for example, noted that the division of labor, manual and mental, is the most important generator of weak ties. Weak ties in social networks form between diverse specialists whereas strong ties form within a specialty. Some have argued that role segmentation leads to alienation among specialties or members of different intellectual neighborhoods. On a more positive note, however, the weak ties that connect the various neighborhoods make it impossible for groups to focus entirely within the inner circle and may actually encourage the formation of larger extended groups.

Conclusions

The virtual organizations formed by management laureates early in the field's development serve as a baseline of invisible college development. Therefore, existing groups are more accurately described as intellectual

neighborhoods. However, given the numerous changes in the environment of management education, it seems likely that intellectual neighborhoods may evolve into invisible colleges.

Future areas of research into invisible colleges in management could take several forms. Replicating this study among other groups may yield a more cohesive group for a variety of factors. The Academy divisions themselves are extended research groups whose structures could be examined. Professional divisions and interest groups could, in fact, be established or evolving invisible colleges. Some propositions that might be examined in such research are: (1) divisions based on an industry (e.g., health care, public and not for profit) will have denser links than those based on functional backgrounds (e.g., business policy and strategy, organizational behavior), (2) divisions with neither functional nor industry commonality, such as research methods, will be the least cohesive, and (3) newer divisions will be less integrated than older ones. The last proposition suggests that examining the organizational life cycles of invisible colleges may provide insight into which areas of management research have been historically important and serve as a predictive model of future developments.

In so far as individuals, their mentors, peers and students define management science, studying those relationships provides insights into the science itself. This study's small sample size is a limitation that is difficult to overcome because the population of laureates who contributed to the early development of management is diminishing. Nevertheless, it captures some information about management's early contributors, the fields they originated in, and the presence or of absence of relationships among them.

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