

5-2016

Collegial "nests" can Foster Critical Thinking, Innovative Ideas, and Scientific Progress.

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Abstract

How can management and strategy scholars organize to generate more productive, more innovative, and more impactful research? With appropriate cultures and leaders, small and egalitarian discussion groups that we call "collegial nests" can become powerful generators of innovative ideas and creators of extraordinary scholars. Collegial nests need cultures that free participants to think critically, to cherish new viewpoints, and to speak freely without fear of ridicule. They also need leaders who model such cultures and facilitate frequent discussions. Two case examples illustrate how productive collegial nests can create better science and better scientists. To generate scientific innovation and progress on a large scale, many autonomous groups tackling related issues are desirable. Modern communication technology is making it feasible for groups to operate over large distances and to coordinate with each other at very low cost. Collegial nests offer greater potential for enhancing scholarly productivity and innovation than do attempts to regulate scholarship via hierarchical structures. Multiplicity can lower the probability of wasting resources on low-yield paths, egalitarian control can reduce the influence of vested interests, and a combination of shared goals and partial autonomy can integrate enthusiasm with sensible risk taking.

Keywords

research collaboration, group discussion, innovation, scientific progress, shared ideology

Disciplines

Business and Corporate Communications | Management Sciences and Quantitative Methods | Performance Management | Strategic Management Policy

Comments

This article is from *Strategic Organization*, May 2016, 14(2); 167-177. DOI: [10.1177/1476127016643715](https://doi.org/10.1177/1476127016643715).
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CRITICAL THINKING, INNOVATIVE IDEAS, AND SCIENTIFIC PROGRESS**

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Published in
Strategic Organization

Reference:

Schwab, A. & Starbuck, W. H. (2016). Collegial “Nests” Foster Critical Thinking, Innovative Ideas, and Scientific Progress. *Strategic Organization*, 14(2), 167-177.

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Two economists who interacted freely, together and with others

When Robert Solow joined the Department of Economics at MIT as an assistant professor in 1950, his office was across the hall from Paul Samuelson's office. Samuelson was nine years older and already very well known; in 1947, he had been recognized as the living economist under age 40 "who has made the most distinguished contribution to the main body of economic thought and knowledge." Nevertheless, the two men became very close friends. Both kept their office doors open and they talked to each other every day about their research. Two years later, when their Department moved to a new building, they took side-by-side offices. Solow later observed, ". . . the location of that office and the fact that we liked each other so much had a major influence on the direction my career took. . . . Paul and I were close enough together so that either of us could holler and the other would hear. We would go back and forth all day long: 'I've got a problem.' So we'd talk about the problem" (Dizikes, 2011: 12).

Samuelson and Solow remained close friends and collaborators through sixty years of very successful research. Both men received "Nobel" Prizes in Economic Sciences. They also extended their open-door collegiality to others around them, and colleagues and doctoral students consulted them freely. Subsequent winners of Nobel Prizes in Economic Sciences include five students whose dissertations they had supervised and a man whose office had been next door to those of Samuelson and Solow.

There have been and are many collaborative research partnerships that inspire, support, and balance their members. Such partnerships emerge and dissolve in many places, and many of them have made or are making better science. Although partnerships can be very valuable for small numbers of researchers, they are unlikely to stimulate widespread changes in methodology, theorizing, or beliefs. The conditions that make partnerships effective do not scale-up easily. For example, Andreas and Bill can develop mutual trust over a period of several years involving the completion of several projects. Andreas can become confident that he can propose ideas without Bill's laughing at them or stealing them. Bill can develop assurance that he can report his reactions to a draft manuscript without offending Andreas.

Such personal trust, based in repeated interactions, is difficult to create across large groups with flexible memberships because it requires mutual norms that usually remain latent and

discussions that usually occur infrequently and in private. Yet people can build and maintain the needed trust in organic social arrangements, and such collegial nests can both generate radically innovative research and turn good researchers into outstanding researchers. Replicated in multiple sites and possibly linked by modern communication technologies, collegial nests have much greater potential to produce important research in management and strategy than do attempts to regulate scholarship from the top down.

To make these ideas more concrete, this paper examines two cases of larger-scale research collaboration that give every appearance of having yielded extreme success. Drawing on the activities of researchers at Carnegie Institute of Technology during the 1950s, the next section explains why this type of collaboration is so often beneficial. The ensuing section then suggests that research collaboration needs to adapt to the technologies available in the 21st century, and proposes that intellectual discussion groups in Vienna a century ago might afford a model for the future.

As we interpret them, both the Carnegie Institute and the Vienna cases exemplify medium-sized social groups that we call “nests”. At least three properties make it possible for nests to encompass more people than partnerships do: Firstly, the participants share trusting cultures that enable them to expose themselves and their ideas to criticism or encouragement and that motivate the participants to keep moving forward toward new ways of thinking. Secondly, nests depend on leaders who establish and maintain these trusting, progressive cultures and who make sure that participants interact with each other. These nests have strong norms of equality to facilitate trust and open communication, so leaders avoid displaying hierarchical statuses (Zand, 1974). Thirdly, nests engage all participants in frequent social interactions, probably on a reliable schedule. These interactions are much more than conversations: They clearly have social and personal components, but at the same time, they focus strongly on the participants’ shared challenges, goals, and intellectual progress. The nest at Carnegie Tech aimed to create new approaches to research and teaching about business; the nests in Vienna fostered investigation of new ideas about physical and social science and scientific philosophy.

Nests offer ways to organize shared intellectual activities that have produced good results and that researchers could implement on large scales. Creating such nests does not require much

explicit coordination or widespread agreements. The success or failure of one nest need not affect the activities of other nests.

It is helpful to have companions when you walk an untrodden path

Research activities make us aware of both the irreconcilable differences between individuals and collectivities and the importance of sharing and interacting. Sometimes individuals have unique insights that astound others; sometimes collaborators challenge each other or counteract missteps; sometimes teamwork is the only way to make progress. Social-science research raises such issues especially often because social realities depend so strongly on social construction within collectivities. For most social-science topics, researchers contribute by persuading other people that they have made correct “findings” so researchers need to anticipate the reactions of their probable audiences.

One of the most important and useful functions of collective behavior is to expand the cognitive abilities of individual people. As individual thinkers, people have limitations that force them to simplify problems and situations. Unaided people can comprehend the relations between two variables easily and three variables with difficulty, but they find four or more variables to be too difficult. People also avoid nuances or deemphasize them, with a result being a strong tendency toward binary categorizing – black/white, true/false, good/bad, and so on (Faust, 1984; Meehl, 1954; Starbuck, 2006). Although these simplifications appear to produce clarity, they can make problems less solvable and situations more confusing. People who exaggerate contrasts may be unable to see nuances. People who see only a few variables may be unable to understand situations that have many variables. M. C. Escher created two-dimensional images that seem to show three-dimensional landscapes, but these landscapes cannot actually exist in three dimensions (<http://www.mcescher.com/gallery/>). Similarly, people who can think in terms of only two or three variables may erroneously believe they understand relationships among four or more variables even though these relationships do not actually exist, or these people may misinterpret actual relationships among four or more variables. Discussing complex situations with other people can show alternative interpretations and call attention to the influences of contingencies.

An example illustrates some consequences of human simplification. In a paper titled “The Proverbs of Administration,” Herbert Simon (1946: 53) criticized management experts for offering “proverbs that . . . almost always occur in mutually contradictory pairs.” He went on to cite a number of examples – sets of prescriptions that individually appear simple and practical, but also seem mutually contradictory. For example, Simon said that the generalization “Administrative efficiency is increased by a specialization of the task among the group” contradicts the generalization “Administrative efficiency is increased by limiting the span of control at any point in the hierarchy to a small number.” Summarizing, Simon explained (1946: 53):

Most of the propositions that make up the body of administrative theory today share, unfortunately, this defect of proverbs. For almost every principle, one can find an equally plausible and acceptable contradictory principle. Although the two principles of the pair will lead to exactly opposite organizational recommendations, there is nothing in the theory to indicate which is the proper one to apply.

In a footnote to the foregoing quote, Simon pointed out that similar issues arise in fields other than management. “Lest it be thought that this deficiency is peculiar to the science – or ‘art’ – of administration, it should be pointed out that the same trouble is shared by most Freudian psychological theories, as well as by some sociological theories.” Indeed, similar issues arise in all forms of applied knowledge, including architecture, clinical psychology, engineering, law, medicine, and the writing of fiction and nonfiction.

Strangely, Simon then proceeded to explain that people’s cognitive limits prevent them from having complete rationality. This segue is strange because it is precisely the human limits to rationality that make people offer and adopt contradictory prescriptions. Prescriptions are contradictory because each prescription has limited validity; it is useful under some conditions but not others. Simon was complaining that the prescriptions did not include the restrictions that would define their domains of applicability; he implied unfairly that the consultants and scholars who proposed prescriptions claimed that their prescriptions would have universal applicability. To spell out all of the conditions that define a prescription’s area of applicability is often difficult or impossible, and a prescription that would attempt to include such elaborate detail would be too complex for human brains to understand.

Simon later ventured into cognitive psychology, where he and Newell introduced the idea that human reasoning often makes use of heuristics – simple rules that shorten searches for information, focus attention on highly relevant information, and simplify choices. Newell and Simon (1956) understood clearly that heuristics overcome some capacity limitations of human brains, yet they did not extrapolate this understanding from artificially restricted contexts such as chess and mathematical logic to the challenges of formulating prescriptions about management in complex, changing environments. That is, the proverbs of administration were heuristics of various sorts (Gigerenzer and Gaissmaier, 2011). Although some “Proverbs of Administration” shortened searches for information, other Proverbs identified simple problem-solving strategies. Many Proverbs bear strong similarities to the hypotheses and propositions published in later management research papers.

Simple propositions can serve as effective aids to thinking in large part because much thinking involves two or more people. Andreas says the shortest route is via Highway 58, and Bill replies by saying the fastest route is via Interstate 5. Thus, Andreas’ rule – estimate the shortest distance – has to compete with Bill’s rule – estimate the shortest time. Joan, sitting in the back seat, then asks where we can stop for lunch. Collective discourse can counteract human tendencies toward simplification. When individuals consider a single heuristic, collectivities are more likely to consider multiple alternative heuristics. When individuals see a few contingencies, collectivities usually see more contingencies. When individuals each espouse one or two goals, collectivities press for more diverse and contradictory goals. When individuals see dichotomous choices, collectivities see nuances and alternative solutions. Of course, people cannot or do not always augment the perceptions and logic of their collaborators, but several people are far more likely to see more issues or more potential solutions than one person does.

Simon himself became a leader, member, and beneficiary of collective interaction in a research “nest” that revolutionized education and research in business and the social sciences (Simon, 1991; Starbuck, 2014). He was one of four senior professors who led the creation and operation of a nest in Carnegie Tech’s Graduate School of Industrial Administration (GSIA). Leland Bach, Franco Modigliani, William Cooper, and Simon shared responsibility for assuring that all of the faculty and students gathered for coffee every weekday afternoon at 3:00.

Participation was not optional; the leaders toured faculty offices to make sure that all professors participated. The leaders also guided conversations toward the never-ending and pervasive theme: what new ideas would make business education and research more scientific? By modeling appropriate behavior, rather than by making pronouncements, these leaders created a revolutionary and inspirational culture that invited contributions from everyone.

The coffee interactions lasted at least an hour, occasionally two hours. Participants normally broke into three or four conversation groups that amounted to small research seminars occurring simultaneously every afternoon. These egalitarian discussions, however, had no formal speakers. Indeed, doctoral students participated as actively as professors did. The school's small size facilitated cohesion, and professors and students shared a sense of revolutionary pioneering that inspired them to think beyond existing conceptual frameworks. These discussions rarely dealt with completed work, people usually talked about projected work or work in progress. For example, one memorable afternoon, Merton Miller and Franco Modigliani (1958) sketched their ideas about the effects of financial markets on investors' evaluation of firms' financial reports; their audience was a group of about five people. At that time, MBA finance courses were teaching that stock prices depended on the percentage of debt that firms carried. Miller and Modigliani argued that, in perfect capital markets, it does not matter what capital structure a company uses to finance its operations. The informal group discussion probed for holes in their argument and contested the plausibility of perfect markets for capital. When published, this paper revolutionized financial theory, and some years later, its authors received Nobel Prizes in Economic Sciences for having placed a theoretical foundation under the field of corporate finance.

Sometimes, there were also formal seminars in a classroom. These featured presentations by potential employees or invited speakers, and they resembled research seminars at most universities. However, the outside speakers often became irrelevant when these seminars turned into debates in which Modigliani argued that the presented research showed the rationality of human behavior and Simon argued that the presented research demonstrated humans' cognitive limitations.

The social system at GSIA illustrates how frequent social interaction and the right kind of cultural support can create successful radical innovators out of professors and students who might have been conventionally successful in other environments. Emotional support from colleagues

helps innovators to persist in their efforts, and social interaction encourages people to venture into ideas that are more radical. Familiar colleagues can challenge proposals in supportive tones that make new ideas more complete and strengthen them for external exposure. The professors and doctoral students pioneered in artificial intelligence, computer programming languages, forecasting, laboratory experiments about group decision making, mathematical techniques of several kinds, organization theory, production planning, robust regression, and computer simulation of human thought, business decisions, and long-term competition between firms. The Carnegie Foundation and the Ford Foundation both produced studies of business education that pointed to GSIA as a prototype of a better school (Gordon and Howell, 1959; Pierson, 1959).

At GSIA, the participants grew from about five professors in 1952 to 15 in 1960, and the school awarded 15 doctorates to students who were there before 1960. These professors and doctoral students received many honors. Four of them received Nobel Prizes in Economic Sciences and several others received repeated nominations for these Nobel Prizes. These 30 professors and students also received the highest career awards possible in accounting, artificial intelligence, computer science, management, management science, psychology, and sociology. One doctoral student founded a successful market-research firm, and the other doctoral students all received job offers from prestigious business schools or economics departments.

Multiple expeditionary patrols are better than an army for opening up a large and diverse territory

Management thinkers carry a burden of past studies that focused on large industrial companies and their rational hierarchical structures. Such organizations may have suited the late nineteenth and early twentieth centuries, but rational hierarchies have been growing obsolete for many decades. As workers have gained education, they have become less and less tolerant of hierarchies and supervisors (Laudon and Starbuck, 2001). Electronic communication has made it practical to organize virtually (Baumard and Starbuck, 2001). Peter Senge caught the spirit of workers in the late 20th century in a best-selling book about The Learning Organization (Calhoun, Starbuck, and Abrahamson, 2011). Senge defined (1990: 10) The Learning Organizations as:

... organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together.

In 2001, shortly after the terrorist attacks on the World Trade Center, a group of organization theorists invited an expert on terrorism, Bowyer Bell, to tell them about terrorist organizations. Bell astounded his academic audience when he estimated that 100,000 to 200,000 Muslims were so unhappy, so dissatisfied, that they were poised at the brink of overt violent action. The 1000 or so visible terrorists, he said, were merely one manifestation of a new kind of organization that was integrated by shared beliefs and motives rather than by hierarchical management structures. Such integration meant that potential terrorists could erupt almost randomly as conditions shift. Bell predicted that the capture or death of Osama bin-Laden would have no long-term effect on the activities by this new kind of organization. Indeed, the complete elimination of al-Qaeda would likely have no long-term effect on this new kind of organization because al-Qaeda influenced only a tiny fraction of the many people who had potential to act. He speculated that Muslim discontent would remain a serious threat for decades to come.

Bell (2002) labeled this new kind of collaborative entity a “force-field organization” of shared beliefs and motives – ideologies. Such force-field organizations integrate potential actors, who have the possibility to actualize. Who acts and which actions they take can be quite random and accidental because they are specific instances from very large pools of latent possibilities. The emergent acts may take different forms and pursue different missions in different ways at different times. Since ideas can travel over very large distances at high speeds, a force-field organization places little or no importance on control structures or formal rules. Indeed, general rules and structures are mostly ineffective and not needed because members tend to collaborate in independent, emergent, self-guided groups. Autonomy, multiplicity, opportunism, and spontaneity are strategic strengths, but across individual members and groups, shared ideology mitigates tendencies toward chaotic entropy. Although force-field organizations may waste some resources through unfocused activity, they also gather resources through entrepreneurial enterprise. Force-field organizations have generated societal revolts and financed innovative new companies, and they have diverse potential applications in a globalizing world where much low-cost, high-speed communication occurs between people who have never met face-to-face.

Precursors of force-field organizations include virtual organizations, a concept that emerged in the mid 1990s as more and more people gained access to the Internet and employers began to assign tasks to employees who worked at their homes. Handy (1995) wrote about the importance of mutual trust between employers and employees in virtual organizations, and Cohen and Mankin (1999) argued that collaboration becomes especially important within virtual organizations. Markus, Manville, and Agres (2000) proposed that managers should treat off-site employees like unpaid volunteers who are working because they believe in the organization's goals; they reported that off-site employees often expect to have voice in their organizations' governance.

The notion of force-field organizations takes account of the next step in organizational evolution, organizational members who participate primarily because of their commitments to their organizations' goals. Wages and formal organizational memberships lose relevance. In research communities, force-field organizations can create feelings of social support that can reinforce commitments to existing theories and logics or that can support widespread willingness to explore new ideas and innovative logics. History indicates that both types of ideologies usually coexist, with fluctuating numbers of participants (Kuhn, 1962; Toulmin, 1972).

Research can, and probably should, be conducted by force-field organizations because more hierarchical and systematic research organizations depend heavily on their abilities to predict which projects might turn out to be productive or unproductive (Committee on the Science of Team Science, 2015). For collective research to add up to scientific progress, forecasts about individual projects must be not entirely wrong, and research about effective forecasting offers a relevant lesson (Graefe et al., 2014; Pant and Starbuck, 1990). The average of two or more credible forecasts is nearly always more accurate than any one of the component forecasts. Each credible forecast expresses some people's ideas and observations about the unfolding events that are creating the future, so it is usually useful to make allowance for these ideas and observations. This implies that it is not useful to organize all researchers into a single comprehensive structure because this allocation of activities places too much reliance on creating a single overall forecast about the most productive paths into the future. Indeed, for research that explores vaguely seen possibilities, it is not sensible to integrate multiple forecasts because research activities construct unforeseen trajectories into the future. To reveal the potentialities in each forecast, researchers need

to treat it as a clearly different option. Thus, an allocation that encourages different researchers to create the futures they imagine is likely to be most effective (Sarasvathy, 2001). A certain level of chaos and accidents spurs discovery, and confusion and ambiguity are useful as ways to counteract over-simplification (Weick, 2016).

Beyond their low reliance on forecasting, force-field organizations both diversify risks and motivate members. Members or groups can work on research projects they consider very important, adopt research methods that suit local contingencies, and take advantage of emerging opportunities. This flexibility raises the probabilities that each project will yield useful results, while lowering the probability that all projects will fail due to their similar weaknesses.

Intellectual discussion groups in Vienna may exemplify the functioning of a research-oriented force-field organization composed of many autonomous groups. Between the 1860s and the mid-1930s, Viennese intellectuals participated in various “study-circles” (also called “Kreise” or “Privatseminare”). The study-circles expressed a widespread interest in new ideas and possibilities for theoretical or practical development (Hayek, 1983). The overall guiding ideology was hope that new ideas can have value, a hope that elicited curiosity and enthusiasm, as well as confidence that group discussions are an effective way to explore ideas. Some study-circles focused on specific fields, but many scholars had wide-ranging interests, so some circles explored diverse topics, and some participants attended more than one circle. Although study-circles were autonomous, contagion produced subthemes that appeared in many groups; these included the dependence of reality on perceptions and the dependence of contemporary behaviors on developmental history.

A few study-circles were organized by professors and were probably intended for work colleagues and doctoral students. Most study-circles had no formal relations with a university, although many participants studied or taught in universities. People participated as an avocation, for the pleasure of intellectual discussion and learning. Some participants worked in businesses or government agencies, and the study-circles met in scholars’ homes, government agencies, or business offices. Some circles started in offices in the early evening and moved to cafes later that night. Groups of about a dozen people met every week or two from October to June, usually in the evening from 6 or 7 p.m. to 11 p.m. or 12 a.m. Well-known scholars organized the circles, but

these organizers did not use them as venues for teaching and they charged no fees and received no additional income from the circles. Indeed, organizers often provided coffee and cookies or sandwiches.

For example, in 1921, Friedrich von Hayek and Herbert Furth organized the Geistkreis (Mind Circle), which continued meeting once or twice a month until 1938. The Mind Circle had 25 participants over its 16 years. The regular participants included a mathematician, a natural scientist, a philosopher, a political scientist, a sociologist, two art historians, and five economists, and they presented papers to each other about all of the foregoing subjects as well as history, literature, and neuroscience. Contemporaneous with the Mind Circle, there were at least two other study-circles that devoted much attention to economics: one, organized by Ludwig von Mises, met in his office at the Chamber of Commerce, and the other, organized by Hans Meyer met at the University.

Study-circles also existed in other countries. At the University of Heidelberg during the latter decades of the 1800s, Karl Knies organized a study-circle that served as a forum for theory development and critique in the social sciences. Participants in Knies' circle included men who later became influential economists in Vienna, London and the United States. A group that called themselves the Berlin Society for Empirical Philosophy had close relations with a Viennese study-circle organized by Moritz Schlick from 1924 to 1936. Participants in the Schlick Circle later had profound influence on philosophy in Britain and the United States. In 1902, Alfred Einstein, Conrad Habicht, and Maurice Solovine formed a group that they called *Akademie Olympica*. In addition to its three core members, five others participated occasionally. They usually met in Einstein's apartment in Bern, where they discussed books about philosophy by writers such as Mach, Mill, Plato, and Poincaré, but also nonfiction books on other topics and works of fiction (e.g., Cervantes, Dickens).

Nevertheless, Vienna appears to have had a special culture that bred many study-circles on many topics. Collegial nests bonded by an intellectually focused force-field organization had powerful synergistic impacts. Indeed, it is impossible to overstate the influence of these Viennese study-circles on western thought during the twentieth century. The Viennese circles visibly changed economics, mathematics, physics, psychoanalysis, scientific philosophy, social psychology, and sociology. In particular, participants in various Viennese circles originated or

influenced the evolutionary, industrial, and resource-based views in contemporary strategic management (Powell, Rahman, and Starbuck, 2010).

Conclusion

At GSIA, a small group of senior professors set out to revolutionize business education by introducing more-scientific research methods and more-rational decision-making techniques. They wanted to try out specific ideas such as computer programs, laboratory experiments, mathematical models, and statistical analyses, and they tried to involve many more professors and doctoral students in this effort. One of their primary ways of enlisting others was to create daily coffee-hour discussions. The leaders insisted that everyone join these discussions at least briefly, and they steered the conversations toward topics directly related to the desired innovations. The leaders also modeled egalitarian norms that respected everyone's ideas and opinions. Different discussion groups formed spontaneously with different members each afternoon. Thus, the professors and doctoral students developed a shared culture that advocated innovation and supported the innovative efforts of individuals and partnerships.

In Vienna, although professors organized a few study circles for academic colleagues and doctoral students, intellectual leaders organized most of the study circles for the pleasure of their friends. The study circles had fairly stable core memberships over several years, although some members did drift in and out. An intellectual climate motivated the educated people from diverse occupations to participate because they enjoyed discussing new ideas, philosophical issues, or interesting books. The study-circles developed autonomously but they existed in an overarching ideology that embraced intellectual exploration and discovery, and contagion across group-created subthemes. The leaders did not teach; various participants took responsibility for introducing or summarizing topics; everyone joined into the discussions. Thus, the study circles eventually fostered creation of conceptual frameworks, theories, and philosophies that affected many academic fields.

Neither GSIA nor Vienna generated dramatic innovations because they just happened to assemble exceptionally creative geniuses. Both locations had many brilliant, imaginative people. However, there were many brilliant, imaginative people in other universities and cities. Neither

GSIA nor Vienna was generally regarded as having exceptional intellectual resources until the innovations began to occur, and indeed, one could make a strong case that other locations had people of greater individual ability. The study-circles changed their participants – their ways of thinking and their careers and probably their abilities. Stimulated by the general enthusiasm for intellectual discussions and inspired by the interactions with other people who were enthusiastic about exploring new ideas, excellent people learned and taught each other and became very exceptional. Similarly, at GSIA, the group interactions changed the thoughts, careers, and abilities of the people who participated in them. The afternoon coffee discussions challenged professors and doctoral students to search constantly for opportunities to make business research more scientific, and again excellent people learned and taught each other and became very exceptional. Both situations demonstrate the power of frequent social interactions, when guided by the right cultural values and leaders, to make people more creative, more insightful, more profound thinkers. In these egalitarian groups, participants received emotional support to risk new thoughts as well as gentle testing of these thoughts by other people with supportive intentions.

It is significant that both situations broke into small groups for discussions. The Viennese study-circles were usually about a dozen people, but Einstein's *Akademie Olympia* in Bern numbered only three to five. GSIA's coffee sessions broke into groups of about five. Small groups gave everyone opportunities to speak and put pressure on individual members to contribute usefully. For small groups to have wider influence, the groups and their members have to promote their ideas effectively beyond the groups' boundaries. Vienna stood out as an intellectual center because the Viennese formed many loosely interconnected study-circles that discussed many topics in many fields. Geographic proximity and participation in multiple groups facilitated diffusion of ideas across study-circles; scholars moved to other cities and countries; scholars published books and articles.

The twenty-first century offers scholars new opportunities to create situations that resemble GSIA or Vienna's circles and to link them on a much larger scale through force-field organizations. In principle, scholars today can form many, many nests, including ones that span large distances. The challenge is to develop open communication and to sustain it long enough to create mutual trust. Very likely, productive nests will have to be rather small and have stable core memberships

like Einstein's *Akademie Olympia*. Larger groups with fluid subgroups, like GSIA, may be difficult to sustain because fruitful collaboration raises complex issues for the development of interpersonal trust and the communication of tacit knowledge. However, users of social media are developing norms about whom to trust that place less reliance on face-to-face contact (Panahi, Watson and Partridge, 2016). Zhang (2013) found that after an introduction by a trusted mutual contact, pairs of researchers developed interpersonal trust despite having no face-to-face contact. As well, future communication technology may provide richer experiences and better ways to enhance personal closeness. Hence, academia has only started to adjust and exploit the rising opportunities.

Scholars of strategic organization (and other academic fields) should be creating collegial nests that function within supportive force-field organizations. Such an approach offers greater potentials for scholarly productivity and innovation than do attempts to regulate scholarship hierarchically on the specious assumption that many researchers should be trudging along in furrows chosen by scholarly prophets who possess much superior foresight about the discoveries that future research will yield.

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