

1999 Presidential Address

CHANGES IN ORGANIZATIONAL KNOWLEDGE PRODUCTION

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The explosion of knowledge production within business and other organizations poses a critical challenge to current modes of teaching and research within our business schools. We need to consider new strategic positions closer to the knowledge production being carried on within the organizations we study, without assuming that immediate relevance is our primary objective. The academic advantage, in my opinion, still lies in generalization and abstraction.

Last year, at the British Academy of Management, I was asked to participate in a workshop with Michael Gibbons, who talked about his coauthored book *The New Production of Knowledge* (Gibbons et al., 1994). His claim was that university life as we have known it is rapidly being eclipsed by knowledge produced collaboratively, in practice. Although the book focuses on changes in science and technology, I recommend it as an introduction to issues that have significant implications for business schools. It has encouraged me to think in new ways about alternative paths that business schools might follow in the near future and to strongly advocate that many schools strategically reposition their research efforts.

TRADITIONAL MODE 1 KNOWLEDGE PRODUCTION

Gibbons et al. (1994) outline the post World War II growth in "Mode 1" production of knowledge. Mode 1 can be summarized as the pursuit of "scientific truth" by "scientists." Although it has been highly positivistic over the last century, Mode 1 includes many epistemic traditions—even the postmodern. The work is discipline based, university centered, and dominated by highly trained individuals. It is primarily cognitive, carefully validated by peer review, and applied later, by others, if it is applied at all.

Since the Carnegie Report advocating disciplinary research came out in the 1950s, most U.S. business schools have been striving earnestly to

become Mode 1 producers of knowledge about organizational—especially business—activities. More recently, a worldwide trend in this direction is evident. Schools operating in this mode hire new faculty members on the basis of their university training and promote them on the basis of their research output. The emphasis is on knowledge production certified by publication in a very small number of elite journals.

An extensive infrastructure supports this system. Its roots are centuries old and include a central belief in the importance of "knowledge for knowledge's sake." Disciplinary associations identify specific areas of inquiry as their own and provide opportunities for like-minded groups of individuals to coordinate research agendas. Associated journals promote these fields of study and certify the quality of scholarly output. Even those in "interdisciplinary" subjects can be caught up quickly in the Mode 1 dynamic as they establish new university homes, associations, and journals.

INTERACTIVE, PROBLEM-ORIENTED MODE 2 PRODUCTION

A radically different style of knowledge production, which Gibbons and his colleagues call "Mode 2," has grown up alongside Mode 1 in the last 50 years. In contrast to the production of science by scientists, Mode 2 is characterized as the production of knowledge from application. Its practitioners often have disciplinary training from Mode 1 institutions, but their work tends to be *transdisciplinary*. Whereas Mode 1 is hierar-

chical, Mode 2 is heterarchical. It is group based, rather than focused on the work of individuals. Whereas Mode 1 producers of knowledge worry about certification, Mode 2 knowledge is validated in use. Response time is critical. Mode 2 knowledge tends to be transitory.

Gibbons et al.'s book suggests that Mode 1 and Mode 2 exist side by side. At the British Academy of Management, Michael Gibbons was more assertive. I believe his words were that "our golden goose is dead"—killed by overproduction of graduate students in the post World War II period who could not be absorbed by universities and went instead to corporations, governments, thinktanks, consulting firms, and their own private practices. Some of these "homes" subscribed to Mode 1 methods; many others were more fluid in their social structure and purpose.

But Mode 2 is not just a supply-side story. Sheltered university work also is being eclipsed because of changes in demand. The shift is most clear in science and technology, but it can be seen in response to many other immediate, market-driven needs. Globalizing competition has necessitated the development and reconfiguration of new knowledge assets. Public policies and funding to promote national competitiveness, around the world, have further fueled the flames.

The scientists who contribute to Mode 2 projects typically move away from Mode 1 disciplines and practices toward a different infrastructure. The speed and vitality of genome research and other Mode 2 work owe a great deal to global electronic connections. Knowledge developments, often shared by virtual groups, tend to generate further reconfigurations of knowledge. Consulting companies and transdisciplinary associations help diffuse these developments before, and sometimes instead of, formal publication.

Similar changes in knowledge work have been identified by many other observers. Although the distinctiveness of new forms of knowledge production is easiest to see in the sciences, a similar revolution appears to have occurred in the social sciences, and even the humanities. In our own field, a conference, "Re-Organizing Knowledge: Transforming Institutions," held at Amherst University in October 1999, had "knowledge in motion" as one of its

themes. Organizational scholars from a diverse set of countries and backgrounds discussed, among other things, whether the overall university as a "house of knowledge" has a future.

BUSINESS SCHOOL ALTERNATIVES

The shift in knowledge production outlined by these and other observers is especially relevant for professional schools, and business schools in particular. Professional schools are intentionally positioned at the intersection of theory and practice. Jim March, the Academy of Management's 1999 Scholar of the Year, suggests that this "uneasy tension" has tended to produce pendulum swings in attention.

After 40 years of disciplinary strategies of knowledge production, especially in U.S. business schools, around the world there is a swing back toward the practical concerns that led to establishing the first business schools in the early 1900s. March feels this dramatic redirection is misguided. He urges management scholars to stand back from immediate problems that practitioners have an advantage in understanding, in favor of continuing to draw on disciplinary insights (Huff, 2000).

David Tranfield and Ken Starkey (1998: 352–353), in the *British Journal of Management*, present a contrasting view. They suggest that management research has been overly influenced by an American belief in universal laws. Mode 2 is described as a source of appropriate research guidelines because management is inherently transdisciplinary.

This difference illustrates a larger debate, although it is, in part, a semantic one. I agree with many points made by March, Tranfield, and Starkey. Nonetheless, business schools are faced with real choices, made more salient by public scrutiny, funding restrictions, and expanding opportunities. These alternatives are worth discussing, although, obviously, no single mode of activity will fit all institutions or all members of a given institution.

Remain in Mode 1

I believe that many schools in research universities will make a few gestures toward Mode 2, especially to keep their educational offerings attractive, but will continue in the Mode 1 tradition. They will continue to hire candidates with the best university training they can attract.

They will continue to give young faculty modest teaching loads, shelter them from committee work, and focus early promotion decisions primarily on publication.

Sticking with Mode 1 is not just the result of inertia. It is influenced by the strength of the Mode 1 infrastructure. In a world where it is difficult to judge quality and contribution, established procedures and clear standards are reassuring. Professional schools, especially in business and engineering, are the most pressured by the changing world of knowledge production. The rest of the university is more likely to advocate Mode 1, and it will expect business schools to meet these standards.

Nonetheless, I am convinced that Mode 1 will be increasingly seen as "counting angels dancing on the head of a pin" by the public, particularly by the organizations most important to our future. Don Hambrick (1994) asked, when he was president of the Academy of Management, "What if the Academy really mattered?" That question is even more relevant today. Business schools that linger in Mode 1 will have to address new questions about relevance. Indeed, in many western nations the university as a whole is coming under scrutiny. Those who stay with Mode 1 will have to improve their ability to convey the importance of the work they do.

Focus on Our Base Business: Education

Another possibility, being realized more quickly than some of us like, is to attend to an educational mission. In many places, such as the state of Colorado, there is strong public pressure for this focus. It is easy for administrators or legislators to equate education with student contact hours. It is harder to calculate the educational and social benefits of abstract research. Thus, some schools are pressured to do less research and to pay more attention to instruction.

Education, however, is an increasingly competitive business. Corporations now spend more on business education than do business schools. Flexible nonuniversity providers are flourishing. Distance education allows entry into territorially defined markets schools once regarded as their own. Students from developing nations, who help finance many programs, are harder to entice as national and regional schools gain expertise. Tailored programs are attractive to

employers, but typically more expensive to provide.

At the same time, effective delivery is changing. Attractive packaging is more important. Web-based materials are expected. Not only global cases but demanding global travel and exchange programs are becoming the norm. It is expensive to play the rating game, and annual reassessments invite escalating investments. Meanwhile, many universities still expect their business schools to be cash cows. In short, we are in a mature industry with all its difficulties: rising product expectations and cost and efficiency pressures.

Working in this industry is worthwhile, but current standards do not emphasize knowledge production. This is a significant change over the last 50 years. Despite the mounting pressures for publication, and despite AACSB and other accreditors' demands that faculty be "intellectually active," faculty in schools that emphasize teaching have to spend much less time in knowledge production.

It is perhaps useful to recognize that this is a "bus" business—we are one link in a value chain that begins when one of our sister providers picks up small children to learn about sand tables and how to wait for juice time in preschool. These students are moved, in time, to elementary school and on to secondary school. We pick them up for transport to colleges and universities and deliver them, in time, to corporations.

More complex career patterns, which bring a rising proportion of mature students, do not really change the basic picture. Those manning each stop along the way tend to complain about the raw material they receive. In colleges and universities we often disparage the communication and analytic skills even of well-qualified entrants. These complaints are not that different from high school instructors' complaints about middle school students or grade school teachers' desire that preschools provide kindergartners who can wait their turn more quietly. Corporations have some of their own complaints, but the flow continues—at least to this point.

Our biggest risk is that an increasingly sophisticated customer base will devalue what we have to offer. I recently heard a rumor that 25 percent of Harvard Business School's MBA class did not return for their second year; most of them elected to move directly to e-commerce instead.

This may be an apocryphal story, but it points to a widely recognized decline in the attractiveness of longer educational programs. Students leaving early have perhaps discovered a particularly effective strategy. They are certified as bright as soon as they are accepted. If they stay a short time, they gain recognized training, make some contacts, and have access to a network for more. Leaving might even be a positive signal that they are especially eager for the opportunities business has to offer. It is another sign of a difficult business.

Adopt Mode 2 Methods

We can try to join big science in a Mode 2 world. There are many signs that business schools are aware of, and energized by, these developments. Spurred by several years of discussion, the British Academy of Management urged the Economic and Social Research Council—their primary government funding agency—to develop a new grant program for work with significant industry involvement. At our own Academy of Management meetings, the National Science Foundation announced a very similar program. Both funding sources support a trend to involve industry colleagues that is already evident in management research.

Organizations are also more active partners in teaching programs. Internships, for example, have become a major mode of instruction in undergraduate and MBA programs. Students seek internships because of the practical experience they offer and because they are often a direct route to employment.

These transitions in research and teaching obviously are positive. We have to accept the fact that knowledge production has moved beyond the boundaries of the university. We have to meet Mode 2 producers where they work and where they need new knowledge.

I worry, however, that business schools cannot become significant Mode 2 producers of knowledge about organizations (other than their own). Mode 2 knowledge is rooted in the tasks at hand. Students benefit from direct connections with these tasks. Often, they can make some contribution, even while in school, if they become sufficiently immersed in the organization. To do so invites further employment. The faculty, however, rarely can or should be so involved. Market-driven tasks are predicated on a

speedy response that works against the involvement of outsiders like ourselves. That is why key contractors and consultants often have representatives on site.

The scope of organizational problems also limits the faculty's role in Mode 2. As they become more highly networked, more and more players are, of necessity, implicated in problem solving. Globalization increases the complexity. It takes a great deal of effort to know and understand this cast of contributors, the work they do, what they know now, and what they need to know next. We need to be familiar with these complexities, but we have limited resources to develop them in specific contexts to produce immediately useful knowledge.

Furthermore, the major Mode 2 players operate at a scale that dwarfs not only the largest schools of business but also the consortia we are beginning to form. Major multinational companies operate in the billions. Business schools cannot operate at this scale, but our primary competitors—the major consulting firms—do. They are skilled at seeking Mode 2 work and know how to perpetuate it. We are bit players in comparison.

Of course, there are smaller organizations and subunits of larger companies. Business faculty are often welcome participants in knowledge production at these sites, and they can be significant contributors. It might make sense for business schools to establish competency in a few specific areas. In addition to making a real Mode 2 contribution, work done in this collaborative way ensures that we understand the changing nature of organizations. Niche positions are risky, however, because they can only represent a small part of the world we were established to help understand. In a Mode 2 world, the knowledge gained is especially transitory.

MODE 1.5 PRODUCTION OF KNOWLEDGE

Mode 2 rose out of unmet needs and opportunities. Mode 1 is too slow, too inward looking; it gives priority to pedigrees. Although Mode 2 offers improved methods of knowledge production in each of these areas—more timely, more practical, more democratic—I believe it has its own limitations, especially as it moves away from science and technology into management.

In organizing, strategizing, and human relations, Mode 2 methods appear to be too pragmatic, their practitioners too willing to "make do." They tend to make big bets on the basis of limited evidence. "Throw it on the wall and see if it sticks" might make sense in many innovative knowledge production activities. It is more questionable in management arenas.

Recent enthusiasm for reengineering is just one case in point. Few of the productivity gains first promised appear to have been realized. An amazing number of companies followed prescriptions based on compelling stories. The human, and organizational, costs appear to be large in comparison to achievement. These are not issues, however, that seem to be dominating Mode 2 conversations. Their market implications are unclear, even if they engage attention. Surely, management researchers have something to offer.

In the end, I think we need to think about "Mode 1.5" methods of knowledge production. This label is not meant to suggest that business schools are in some kind of transition between Mode 1 and Mode 2. Rather, Mode 1.5 is a difficult but desirable position "above" these modes of production. It is a position we potentially have the competitive advantage to fill, and it provides needed perspective.

My argument for a Mode 1.5 alternative is based on three assumptions:

1. Disciplinary knowledge and theoretic models can continue to constitute a useful knowledge base in novel situations where Mode 2 experimentation is not desirable or not possible.
2. Research institutions, if sheltered from the immediate need to generate significant income from their knowledge production activities, can produce "public goods" that companies and consultants cannot credibly produce.
3. Business schools also offer a desirable, neutral ground on which new, more synthetic knowledge can be generated from the interaction of individuals with diverse business, consulting, public, and university experience.

The need for Mode 1.5 arises from the limitations of both Mode 1 and Mode 2. Those limitations are most clear, as Jim March and John Reed argued in their session at the 1999 Academy of Management meeting (Huff, 2000), when important but novel situations arise. Mode 2 is often

inventive in new situations, such as e-commerce. However, it is not a tradition that lingers over consequences. Mode 1 procedures often focus on consequences, but not in "real time."

I have in mind something that my colleagues in England call a "virtuous circle." The issues of importance to Mode 1.5 typically will rise from practice and will be defined in conversation with those in practice, but other insights should be solicited and integrated. The relevant data will come primarily, but not entirely, from practice. Academic skills will be useful in developing definitions, comparing data across organizational settings, and suggesting generalizable frameworks for further sensemaking. Conversation is not expected to terminate in one round of investigation. The "circle" is actually more of a spiral that generates its own further agenda.

Business school faculty cannot claim a unique Ph.D. advantage in this conversation; many Mode 2 players have Ph.D.s. Yet, our values and experiences are unique. Perhaps most important, we are dedicated to "education"—not the "training" that rightly concerns our colleagues in business and consulting organizations. The aims of education are broad and life long. They are not tied to the immediate needs of one employer. These goals are increasingly unique in the hurry-up world that produces such interesting Mode 2 results. Although we will have to work hard to make our case, I believe education—not just experience—continues to be a necessary base for Mode 2 and an interesting foil for Mode 2.

Mode 1.5 should accommodate fault finders as well as facilitators. Critical observations, undertaken more often by scholars outside the United States than within, have a particularly important role to play as nation states and other organizing forces are dwarfed by large global companies. However, the critic's role cannot be undertaken credibly without familiarity with Mode 2 practices. Critics who adopt a Mode 1.5 position add an important element of diversity.

My basic point is that the limited resources of research-oriented business schools should be invested when the stakes appear to be large. We must worry about insufficient scale and scope, when compared with the institutions hosting Mode 2 innovations. Focused, cooperative relationships can address, although perhaps not redress, these limitations. Operating either a

Mode 1 or a Mode 2 environment squanders our resources. We are uniquely prepared to provide conversational space when market forces do not demand Mode 2 attention. Our tradition of public service gives us a credible voice at the table.

SUMMARY

Many people are thinking about the strategic position of business schools. Three of my own conclusions led to this Presidential address:

1. Public support for traditional, Mode 1 production of knowledge in professional business schools can be expected to continue to decline.
2. A rapidly maturing market for professional education, around the world, will be increasingly competitive.
3. Business schools cannot excel at Mode 2 production of knowledge about practical problems, except in narrowly defined niches.

These observations are made with reluctance. On the one hand, almost all of my work has taken place in the Mode 1 tradition. I do not think the end of that tradition is imminent, but I am not happy to remain in a Mode 1 professional school of decreasing interest and value to the organizations we serve. Conveying information produced by others or facilitating students producing their own knowledge does not require a Ph.D. Becoming a marginal player in Mode 2 efforts feels like poorly paid consulting.

On the other hand, I am excited about the alternative I have tentatively called Mode 1.5. It is based on the belief that Mode 1 training continues to be of value in a world dominated by Mode 2 practices, as long as researchers are familiar with these changes in knowledge production. As I envision it, Mode 1.5 balances not easily remedied weaknesses in both Mode 1 and Mode 2. While Mode 1 is driven by the theoretic agenda of elites, Mode 2 is driven by the market. Business schools cannot dominate, but they can help drive the development of a Mode 1.5 agenda that attempts to redress the limitations of both modes of knowledge production.

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