

The Academy as Learning Community Contradiction in Terms or Realizable Future?

Peter M. Senge

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Whether we like it or not, colleges and universities place themselves in a position of leadership in society. They do so because they presume to provide an intellectual framework and moral foundation that will be valid into the future. "Local line pioneering" dean of engineering Gordon Brown used to say, "To be a teacher is to be a prophet—you are not preparing a student for the world of today but for a world twenty to fifty years into the future" (personal communication). No question is more germane to any institution of higher education than, "Are we preparing students for the future they will live in or the past we have lived through?"

Such a question was far easier to address in times past when the pace of change was slower and the future at least seemed more predictable. Academic fields evolved slowly, befitting the inherent conservatism of intellectual communities to slowly accumulate widely accepted notions into an ever broadening corpus of received knowledge. The expectations of society were relatively stable as to what a college graduate should know and be able to do. Economic growth provided steady increase in financial resources for education and research. There was little competition for higher education's niche as the sole source of college degrees.

Today, these features of the university's landscape seem decidedly foreign, distant memories of a time long past. The pace of advance in many academic fields has accelerated dramatically. The credibility of colleges and universities, along with all other major social institutions, has declined. There are few schools that are not under intense economic pressure. And a whole new set of competitors has emerged with today's electronic communications media. "What is to keep universities from going the way of banks?" asks Dee Hock, founding CEO of VISA International. "In 1970, if you wanted a loan you went to a bank. Today you use your credit card" (personal communication). What will keep the same disintermediation from occurring in higher education, once quality providers can make the best lecturers on any subject available through the Internet, complete with course materials, testing, and personalized feedback?

Yet despite these dramatic changes, the culture and practices of colleges and universities have by and large changed little. The focus is still on teaching rather than learning. The professor still controls the classroom. Individualism and competition still reign, from individual students pitted against one another to individual professors who likewise compete for status, power, and often money. "Technical rationality" still ranks as the prevailing epistemology, disconnecting theory from practice and sending young people into the world with heads full of ideas and "answers" but little experience in producing more effective action.

Perhaps most seriously of all, most of the members of the academy seem still to see little cause for concern and little reason for fundamental change. Most teachers cannot imagine a day when there will not be students cued up at their door waiting for their words of wisdom. Administrators struggle with financial stress by simply reducing headcount while often simultaneously boosting enrollments. Executives keep returning to alumni, or to state funders, for more money to keep the machine running.

Having lived in universities for the majority of my life, I believe that the problems run deep. In a nutshell, universities and colleges have become the preeminent *knowing institutions* in a world that increasingly favors *learning institutions*.

The Origins of the Learning Organization

The Learning Organization is a vision. It is not a model. It is not a summary of best practices. There are no Learning Organizations in the sense of particular institutions that have arrived and should be emulated. In another sense, every organization that survives is continually learning: sensing changes in its environment and adapting.

The real issues that led to serious interest in organizational learning were twofold:

1. As the world becomes more dynamic, are institutions, especially traditionally successful organizations, able to accelerate their rate of learning? As retired Shell executive Arie de Geus (1997) put it, "The ability to learn faster than your competitor may be the only sustainable source of competitive advantage."

2. What is required to tap the imagination, commitment, and creativity of all members of an institution?

The work that I and my colleagues have been involved in for almost twenty years has suggested that these two questions are really two sides of the same question. Organizations can accelerate their capacities to adapt and continually reinvent themselves only by tapping the capacities of their people. There are no magic formulas or technical fixes for organizational learning. It is a deeply human activity that reflects human communities functioning at their best rather than their worst, which seems to happen so often in today's organizations.

Over many years, a cornerstone of our work has become the idea that there are certain *core learning capabilities* that determine the ability of teams and organizations to learn. The *five disciplines* framework, first introduced in *The Fifth Discipline* (Senge, 1990), presents tools, methods, and underlying theory for developing such learning capabilities, which fall into three broad areas:

- *Aspiration*: To what extent are people oriented toward creating what they truly care about, to addressing the largest and most important issues that concern them? Or is people's work only about solving immediate problems, reacting to crises, or pursuing goals set by someone else?

- *Reflective conversation*: How people talk with one another, especially about complex and conflictual issues, sets the tone for collective learning. To what extent do our conversations make us more aware of our own assumptions and ways of seeing? To what extent do they produce shared understanding, deeper meaning, and effective coordination of action? Or do we "talk at" one another, engaged in never-ending win-lose struggles, leading ultimately to disengagement, where the real issues are discussed in the ladies room or the ubiquitous hallway conversations.

- *Understanding complexity*: As the world becomes more interconnected and dynamic, our conditioned ways of thinking become more dysfunctional. To what extent can people see how their own actions and habitual ways of operating create their problems? To what extent can they see how their own "local solutions" might be the source of difficulties for people in other parts of the organization? Do we see the underlying interdependencies and "systemic structures" that are generating problems, or only the problem's symptoms?

It is important to stress that these are capabilities not ideologies. They involve particular skills and bodies of internalized knowledge that can be built only over time. Many people advocate taking a "systems perspective" on issues but have no ability to do that. They talk passionately about "needing to understand the system" but cannot begin to explain what they mean and what specific implications their entreaty suggests. The same is true for leaders who advocate listening and "dialogue" but find themselves unable to hear truly another's point of view that differs from theirs, or to raise difficult issues directly without invoking defensiveness in others, or to advocate their views forcefully while at the same time encouraging others to inquire into their own views. Genuine aspiration is more than just having a goal; it is living one's life in service of what matters most deeply, something that most adults have long lost track of.

Finally, these core learning capabilities themselves constitute a whole. This is the meaning of the "three-legged stool" in Figure 12.1. Take away any one of these capabilities and the stool collapses. Without aspiration, there is no real reason for learning, especially if the learning is difficult, such as when we must "unlearn" habits of thought and action which we have acquired over a lifetime. Without aspiration, what learning occurs happens only when there is a crisis, when we have no choice but to change. Without reflectiveness and the capacity for real conversation, there is no mutuality, there is no fiber that connects people changing together. Without conversation, there may be lots of visions but there will be no shared vision. Without a collective capability for conversation, even brilliant strategic insights will end up creating polarization as people try to impose their ideas on another. Without the capability to understand complexity, there is no insight into the deeper causes of problems, quick fix solutions dominate, and even powerful visions become connected to dangerously oversimplified views of reality.

Figure 12.1. Three-Legged Stool Diagram. [hard copy available in the file and should be attached.]

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From Theory to Practice

Each of the core learning capabilities has deep roots, in many cases in academic research. My own training was in the field of systems dynamics, understanding complex, nonlinear human systems. The roots of this field go back more than a hundred and fifty years in the engineering analysis of feedback systems, and almost as far in biology and the social sciences. The scientific roots behind the disciplines required to develop reflectiveness and more productive conversation are equally rich, in fields as diverse as philosophy of language, cognitive psychology, the psychology of groups, and the biology of cognition. The roots underlying aspiration are less in science and more in the arts and humanities, especially in the understanding of the creative process as passed on in all the creative arts.

The challenge that has engaged a great many people over the past twenty years has been how to get this broad range of ideas, tools, and processes into practice, how to have them gradually weave into the day-to-day activities of people working together in diverse settings. If they do constitute a potentially powerful foundation to accelerate and deepen organizational learning, the only way to discover what is required to realize that potential is through application. This incessant focus on application, especially in corporations, has led to continual evolution of theory, practical tools, and know-how. (A good introduction to these tools and practical insights can be found in *The Fifth Discipline Fieldbook*, Senge and others, 1994.) But it has also led to problems.

After more than ten years in training and consulting applications with individual firms, a group of us decided that we had learned enough to know that the way we were going about it was not adequate. We discovered again and again that the ways of thinking, interacting, and ultimately being that were nurtured through these principles and tools ran counter, often in profound ways, to the norms and practices of how most organizations, including quite successful ones, operated. We discovered that the culture of learning was very different from the culture of Industrial Age enterprises. What it means to be a manager in most organizations is to be in control; yet complex systems are not controllable in the ways managers seek. What it takes to rise up the hierarchy in most organizations is to be articulate, good at advocating your views and impressing people with your intelligence. This results in executives who typically have poor collaborative inquiry skills, who can never say in front of their peers, "I don't know," or ask for the help of others in understanding problems they face—the same executives who find themselves facing complex problems where no one person can possibly have all the answers.

We concluded that the only way to continue this collective learning process was to work more collaboratively across many organizations. Only then would people see just how universal their deepest problems were. Only then would one company's small steps be encouraging to others. Only then would the inevitable setbacks and crises that all organizations encounter not derail them—for they would be able to look at the progress that others were making and get themselves back on track. In a funny way we rediscovered a very old idea. In facing the challenges of profound change, there is no substitute for collaboration—people coming together out of common purpose and willing to support one another so that all can advance. Without actually intending it, we began to create a learning community.

In 1990, the MIT Organizational Learning Center (OLC) formed a consortium that grew to about twenty companies (mostly large, Fortune 100 companies). In 1997, the OLC became a self-governing society of companies, researchers, and consultants: the Society for Organizational Learning (SoL). Today SoL is rapidly becoming a global network of learning communities in different countries and regions around the world. (For more on SoL, see www.sol-ne-org.org.)

There have been many successes and many setbacks over the past ten years in developing the SoL community. Business units at companies like Ford, Intel, Hewlett-Packard, FedEx, AT&T, Harley Davidson, Lucent, British Petroleum, and DTE (formerly Detroit Edison) have achieved significant improvements in business results, sometimes surpassing past levels of success dramatically. Of course, it is never possible to definitively prove that any one set of activities caused any particular outcome in a complex organizational setting. Gradually, however, enough credibility has been developed to extend the learning ideas and approaches to be part of larger-scale undertakings—such as the "transformation" of U.S. Shell Oil (involving a radical new design and governance process and, over a five-year period, a dramatic surge of new entrepreneurial businesses) and the creation of Visteon, a wholly owned subsidiary of Ford, linking 85,000 people worldwide in all of Ford's components businesses. But for every dramatic success there have been failed starts and projects that continued but never produced significant business results, as you would expect for any significant new innovation. ("Learning histories" describing several of these long-term change efforts, written as part of SoL's research activities, can be accessed through the SoL Web site.) While disappointing, as much is learned from the shortfalls as from the successes.

The more salient learnings for academic institutions include the following:

1. Learning is not an "add on," to be done when we have some free time or at training sessions. Some of the most significant innovations have been in infrastructures and day-to-day practices, allowing teams and intact work groups to integrate working and learning.

2. The core learning capabilities provide a foundation, not a formula. Companies have continually innovated and extended their learning efforts, incorporating many tools and approaches not included in the original tools when we started SoL. (See, for example, the new fieldbook, *The Dance of Change*, Senge and others, 1999.)

3. There is no substitute for genuine commitment and commitment starts "at home." No one should be told to change their beliefs, or to adopt new values, or to change deeply habitual ways of doing things; efforts to employ coercive power to bring about deep change invariably backfire. Those who lead must be prepared to change themselves first, rather than focusing on how others must change.

4. The critical leaders of such changes occupy many positions and are not limited to those at the top. Surprisingly, there are several examples of companies who have sustained and extended significant change efforts over five to ten years with virtually no executive leadership. In other cases, where executive leadership has been important, change has been through leading by example and through supporting other leaders, not through speeches, official change programs, and grand strategies. Wherever significant change has been sustained it has always involved talented, committed "local line leaders" and resourceful "internal networkers." We believe that the role of executives in deep change is widely misunderstood, that these two additional types of leaders are greatly neglected, and that this is one reason so many change efforts fail.

Implications for Universities

Today there is growing interest in creating similar learning communities linking groups of universities. It is much too early to know if these collaborative arrangements will become successful, let alone whether or not they will show the way for broader change within the academy. But it is at least possible to frame some questions that might usefully guide the effort.

1. *Are we not all in the same boat?* The modern college is as much a part of the Industrial Age as is the modern corporation. "Our prevailing system of management has destroyed our people," said famous quality management pioneer W. Edwards Deming (personal communication). He was not talking about the system of management in corporations but about the system of management in all Industrial Age institutions. Indeed, he added, "The forces of destruction begin with the toddlers—a prize for the best Halloween costume, grades in school, gold stars—and on up through the university." This is a system of management we all have grown up with, based on bosses and subordinates rather than on teams. It is a system that emphasizes technical problem solving rather than deep inquiry into the systemic source of problems in our own behavior and in the design of our institutions. It is a system "based on fear" as Deming said, not based on aspiration, curiosity, dignity, and love.

If our educational system is as much an expression of the Industrial Age system of management as are corporations, and if there is evidence of significant progress in many corporations toward creating more learning-oriented cultures, then there should be hope for universities as well.

2. *Who are the local line leaders in universities and what is their role in the changes ahead?* The role of local line leaders in integrating new principles and tools into daily work practices has proven essential in the SoL member companies. While there have been many

examples of corporations that have sustained progress for many years with little active executive leadership, there have been no examples of such progress without talented, imaginative, committed local line leaders. These are people with clear managerial accountabilities, such as product development team leaders, local sales managers, and manufacturing plant managers. Such frontline leaders are essential because without their efforts it is not possible to test whether or not potential innovations in fact add value. This requires people who are close to where value is being generated.

Teachers clearly operate at the heart of the value creation process in colleges and universities. So it stands to reason that they too would be the key to the innovation process.

Innovation in instruction must start with recognition of the simple fact that teachers teaching does not produce learning. Learning is ultimately produced only by learners. Learning is a process that leads to enhanced capacity of the learner. It does not occur simply because one is taught. What is conveyed between teacher and student must be internalized. But internalization is different than simply the ability to recall information. It involves new thinking and new acting. Moreover, learning occurs over time, and especially as learners engage in meaningful activities in their day-to-day life.

Much of the essence of all real learning is lost in conventional education due to the fragmentation of teaching from learning. In the Industrial Age assembly line model of education, teachers "do it" to students. Such an image probably would be rejected by most teachers, because it does not fit their espoused theory or self-image. But I would contend that it does fit the "theory in use," as evident in the practices of most college educators: lecturers conveying information that they decide (unilaterally) is pertinent, students expected to absorb that information and then proving that they have on tests judged solely by the inspectors on the assembly line—that is, the teachers.

To shift the Industrial Age model from teaching to learning, the role and responsibilities of the teacher need to shift. The teacher needs to become a designer of learning processes in which she or he participates along with the student. The teacher needs to operate more from a stance of *not knowing* rather than from *knowing*. The teacher needs to be willing to be a learner—perhaps a learner with greater experience in the area being explored than the student, but a learner nonetheless. And there needs to be mutual responsibility among learners and teachers for producing learning in both.

Such ideas are challenging for teachers whose identity is wrapped up with professing and being an expert. But being an expert is a short-lived advantage in today's world, and having "the answers" can actually be a disadvantage when what is really needed is the ability to inquire continually and make sense of what is emerging.

Such ideas about learner-centered learning are not new. Recently they have resurfaced, perhaps reflecting a broadening awareness of the need for such change. In a widely read article, Barr and Tagg (1995, p. 13) argue that "a paradigm shift is taking hold in American education . . . from teaching to learning." This is an encouraging development. But our experiences with learning in the corporate world have been sobering. Intellectual agreement is not enough. Everyone talking about learning is not enough. It is far easier to embrace the idealism of a learning paradigm than it is to transform traditional concentrations of power and authority in experts and managers, or than it is to sustain deep shifts in the values, capabilities, and unquestioned habits that made us all successful in the teaching paradigm.

3. *Can department chairs serve as catalysts and stewards of change?* Department chairs are the second crucial type of local line leader in higher education. Yet they are not bosses

in the same sense as are traditional line managers in corporations. Typically they are teachers and professors themselves who are "on loan" as managers. In fact, the very term *manager* often feels misplaced to many faculty chairs. They serve for several years, then typically return full-time to their teaching and research activities. Although a few continue to move up in the administrative hierarchy, most have little aspirations in this direction. They are often recruited to the job and serve out of a sense of responsibility to the institution and to their peers and students.

Yet these differences are less significant to leading change than they might at first appear. In fact, in corporations that are becoming more networked and less hierarchical, local and middle-level managers are starting to look more like academic department chairs than traditional corporate bosses. Their authority depends on their credibility and persuasiveness rather than on their formal power. Their mandate is amorphous and continually in flux; in fact, one of their primary roles is to facilitate ongoing reflection and conversation to identify clear goals and establish agreed-upon strategies to move toward those goals. These strategic conversations link them vertically to those above them in the hierarchy, as well as to those below them. But they also link them horizontally, to partners in an ever-changing landscape of teams and alliances that form, unform, and reform to tackle particular tasks. Interestingly, this ongoing shift to managers as facilitators, coaches, and catalysts of change has brought renewed interest in recent years to philosophies of servant leadership and stewardship, in order to characterize attitudes and skills required to be effective. This is evident in the management literature in the writings of Robert Greenleaf (1977, 1998) on servant leadership, Peter Block (1993) on stewardship, and Joseph Jaworsky, in his book *Synchronicity* (1996).

One of the first things that department chairs need to do as servants of the larger change process is ask their member faculty what they see as significant challenges and opportunities for innovation. This does not mean that all faculty are just waiting to pursue radical innovations—unfortunately this is often not the case in many colleges and universities. It does mean that it is vital for any leader committed to significant changes to find out who their natural partners are. Very often you will find individuals who are deeply committed to innovation but who feel isolated and unsupported. Asking people with passion for creating something new how you can help is one of the most effective leadership strategies. Imaginative local leaders find countless ways to encourage ferment. They encourage networking among innovators in different departments. They organize field trips to different organizations that have succeeded in achieving breakthroughs. They introduce new tools, methods, and processes that help people develop better skills in collaborative learning (a particular short suit of many educators who have excelled throughout their lives as competitive, individual learners). They work to relieve specific constraints that hamper innovators, such as getting them more time, support, and relief from organizational pressures.

But beyond all these techniques, they take a stand for what is possible. Ironically, department chairs, and their counterparts in nonprofit organizations, are often seen as the ultimate bureaucrats. The willingness of people in such positions to commit themselves to fundamental change can send a powerful signal. But if there is one thing that has been shown again and again in our experiences of successful innovation, how they do it is the key. It is always tempting to tell others how *they* need to change. It is another, and far rarer, strategy to confront the changes needed in our own behaviors. Ironically, the greatest power of hierarchy in supporting fundamental change is not the power to direct but the symbolic power to *model*, to *be the change you are seeking to create*. Consider the following comments from members of a large product development team in an automobile manufacturer:

"I've known [the program manager] for 25 years. He was a typical senior program director when he came abroad—very autocratic and power-based, and always had been. But I've seen [the program manager] do a 180-degree turn in the last two years" [Roth and Kleiner, 1996, p. 25]. "We had been talking about open, honest communication around this company for as long as I've been here and I've been here for 29 years now. This was the first time I thought it might really work" [p. 15].

All shifts in culture start locally, because culture is the outgrowth of our day-to-day ways of doing things. People seeking to change cultures often get lost in abstract ideals and intellectual debates and forget that we re-create our culture in each meeting. As a long-time member of a university community, I have concluded that although there are many differences between colleges and corporations, internal politics and game playing is not one of them. As far as I can tell, the typical university is, if anything, a more highly politicized institution than the typical corporation. But I also find a hunger today among my university colleagues for genuine intellectual community. Many were drawn to their careers by the image of the academy as a setting for reflection and intellectual discourse. What they experience is often the antithesis of this ideal. Department chairs intent on creating an environment for innovation can start by asking themselves and their colleagues what they would have to change in their own ways of operating to move tangibly toward this ideal.

4. *What can university executives learn from other executives engaged in profound change in private industry?* First, that the "leader must drive change" mind-set is bankrupt. "Anyone who thinks the CEO can drive this kind of change is wrong," says Harley Davidson CEO Rich Teerlink (personal communication). "When I first came in as CEO," said Shell Oil CEO Phil Carroll, "everyone thought, 'Phil will tell us what to do.' But I didn't have a clue, and if I had, it would have been a disaster" (personal communication).

Somehow I think that many university presidents will find Teerlink's and Carroll's words comforting, because they are often acutely aware that the power structure of most universities and colleges makes the "leaders driving change" image virtually impossible anyway. Traditionally, universities have a much more distributed power structure than do businesses. Faculty with tenure are hard to "drive."

Unfortunately, far too many university executives conclude that this implies a kind of passive leadership, an almost caretaker mentality. On the contrary, the challenges of executive leadership in a learning environment are, if anything, more demanding than in the traditional image of executives as captains of the ship. These challenges require executives who are designers, not just speechmakers, and who work in genuine partnership with other leaders, especially the committed teachers and department chairs from whom many of the bold ideas needed for real change will come.

5. *Can the university redesign itself for the twenty-first century?* There exist major design issues that must engage university leaders at all levels. For example, many attempts at innovation tend to occur within the context of the classroom. But the classroom itself may be the fundamental limit in recreating higher education. The classroom reinforces a teacher-centered view of education. It easily becomes the stage for confusing teaching and learning. Moreover, it is a symbol of the overall isolation of the university from the larger world.

In order to rethink classroom-based education, we need to examine its underlying epistemology. Technical rationality, which dominates professional education and reflects the

ethos of most university education, holds that students must first learn theory, then the methods based on that theory. It is "instrumental problem solving made rigorous by the application of scientific theory and technique," in the words of Donald Schön (1983, p. 21).

There are several problems with this view. First, from this perspective, knowledge flows "downhill," from universities, where it is discovered and codified, to practitioners, who put it to use. This positions the university and the university professor as *the* source of knowledge, creating a sort of institutional arrogance that views practitioners as inherently less important in the grand scheme of things. This arrogance then carries over into the educational process, where students are handed received wisdom, with little attention to how it integrates with their own knowledge from everyday life, or to how this wisdom is applied beyond classroom exercises. Finally, it tends to isolate professors within their respective scholarly communities and seal off these communities from the larger world—after all, there is little reason to do otherwise, because these scholarly communities see themselves as the source of new knowledge.

Where will we turn in looking for alternative models of the educational enterprise? One place to start is with the study that led to Schön's (1983) critique of technical rationality. This study involved trying to understand ongoing learning among diverse professionals. The professionals who continued to grow throughout their career, Schön concluded, engaged in "reflective practice." They developed the capacity to reflect continually on their actions in such a way that their acting became progressively more accomplished. They had learned how to learn. Schön's critique of most higher education was that by pursuing the myth of technical rationality, it not only failed to lay a foundation for reflective practice, it also actively discouraged it. It reinforced a view that learning was all "in the head," that what it means to be smart is to have a lot of "right answers." This view in turn eventually leads to workplaces where people are continually trying to impress one another with how smart they are so that their ideas will prevail, rather than learning together.

I believe that this overintellectualized view of knowledge that divorces it from effective action and real-life contexts lies at the heart of the contemporary crisis of all Industrial Age educational institutions. We have fragmented the thinking aspects of learning from the doing aspects of learning and by so doing have undermined the educational enterprise more than we can realize.

To consider one radical alternative, SoL is organized as a partnership among researchers, consultants, and practitioners, involving both universities (MIT was the founding research institutional member) and corporations. SoL's organizational design follows from the simple notion that knowledge generation involves three critical dimensions: theory, tools and methods, and practical know-how. Each aspect of knowledge is crucial. If any one dimension is neglected, the creation of new knowledge is severely compromised—resulting in abstract, nonactionable theory in academia and unquestioned and untested rules and norms in business—"ways we do things around here." In a healthy knowledge-generating process, the three aspects of knowledge creation are linked in unending spirals of interaction—most of which are severed in traditional education. Today, SoL's research, consultant, and corporate members are starting to work together to advance knowledge in diverse areas critical to the future of contemporary institutions, such as environmental sustainability, leadership, and large-scale change.

Viewed from the academic perspective, an especially important aspect of SoL's theory of knowledge creation is that practical know-how is not seen as some sort of lower-order knowledge. Rather, practical know-how is a necessary counterpart to theory and method, which both validates and generates new theory and method.

But academics are consistently discouraged from studying practical problems and how people in for-profit and nonprofit institutions wrestle with them. At my school, there was a young faculty member who was extremely knowledgeable about total quality management (TQM) when these ideas were first being taken seriously by American corporations in the early 1980s. But he was discouraged from pursuing this interest because it would jeopardize his chances for tenure. So, while he wrote papers on queuing theory, serious study of the tools, methods, and dilemmas for translating the quality management revolution from its Japanese incubator to western cultures was neglected. I think it is fair to say that this revolution was neglected by almost all of the "major" business schools. Few had serious research programs aimed at implementation of TQM methods, in part because most viewed the underlying statistical theory as well understood, and consequently not researchable. In making this judgment, they missed the point that the real issues were not technical but social—such as redistributing power and enabling frontline workers to assume more responsibility for improving work processes (Deming, 1982). Consequently, the quality management movement in America was mainly advanced by consulting firms, many of which sold standard programs rather than encouraging deep inquiry and serious testing of alternatives. It should come as no surprise that ten years later many viewed the TQM movement as a fad, and most ex post studies showed that most TQM programs had little significant impact—despite the fact that they had a major impact in a small number of firms and in many world-leading Japanese firms such as Toyota.

Finally, over the past twenty years, in our work in management and organizations, I have consistently found that some of the boldest, most important new theoretical constructs have come from practitioners—thoughtful people who wrestle with pressing issues in imaginative ways.

For example, my own interest in learning organizations did not stem from academic research; it was sparked by a study done by Royal-Dutch Shell in the early 1980s that focused on three interrelated questions: (1) What is the average life expectancy of large Fortune 500 corporations? (2) Why do so many die prematurely? That is, why is the average life expectancy, which turned out to be thirty to forty years, so much shorter than the potential life expectancy (many live more than two hundred years)? and (3) What seems to characterize those that live for hundreds of years? Eventually, the Shell executives concluded that the high corporate mortality rate was due to most organizations' inability to learn. In turn, eventually some linked this low learning ability to these companies' management seeing them as "machines for producing money rather than human communities" (de Geus, 1997). No academic had ever posed these questions, nor made the link between inability to learn and mechanistic thinking, as far as I know. Practitioners may lack the opportunity or the specific skills to codify and test their new ideas. But they are often less conservative in their thinking than their academic counterparts.

Building genuine partnerships in generating new knowledge between academics and practitioners will be very difficult for universities as long as academics do not value thinking and acting equally. Discounting practical know-how is a natural by-product of technical rationality and its worldview that prizes intellectual understanding over embodied capability. So too is discouraging action-oriented and other serious research aimed at studying the practical problems of achieving significant change.

Reconnecting thinking and acting and developing reflective practitioners represents a profound design challenge for postindustrial colleges and universities. It will require a willingness to rethink and reinvent the basic institution of higher education. To what extent should students spend their time at the university versus in the "real world"? How much of the

educational process should be project based? How much should students work in teams, learning with and from one another, versus individually? How can we come to value practical knowledge on an equal footing with theoretical knowledge, and what types of research and educational processes are needed to enable the two to enrich one another? What types of relationships will have to develop between the university and the larger community of profit and nonprofit institutions to make this happen? What does all of this mean for the nature of a teacher's work in the future?

These are just illustrations of the types of questions that must be addressed in redesigning university education. But it is also important to realize that there are examples, both historical and contemporary, of the consequences of taking such questions seriously. One powerful illustration of integrating theory, method, and practice was the agricultural extension programs that developed in the later half of the nineteenth century. These programs, and the land grant universities that hosted them, had a substantial impact on the evolution of the practice of farming and the theory and methods taught to agriculture students. It is quite possible that America would never have developed into the bread basket of the world without this radical bridging of the academic and practical worlds. But we don't have to look just to history for examples of productive partnerships between the academic and practical worlds. In fact, much technological innovation today is being driven by just such partnerships between research universities and entrepreneurial businesses. Likewise, plenty of examples of fundamental educational innovation can be found—such as universities that have become strongly project-oriented and "universities without walls."

Yet such examples remain on the periphery—radical alternatives that have yet to penetrate the mainstream university establishment. Most education remains disconnected from practice. To the degree that some successful research connections have been forged between the academic and practical worlds in engineering and the physical sciences, these remain the exception that proves the rule of isolation between these two worlds, and little of this has carried over to the social and managerial sciences. If this is to change, leaders of all sorts will have to begin to engage with the types of basic design issues just posed.

6. *Where will the leadership for change come from?* It is easy to look at the depth and breath of these issues and conclude that only university presidents and boards have the power to bring about the types of changes needed. But if our experience over the past ten years within the SoL community is any guide, this would be exactly the wrong conclusion to come to. If one overarching lesson stands out from that experience, it is that leadership for profound change is too important, too multifaceted, and too demanding of day-to-day attention to be left to executives alone. Such leadership must come from many places, including some where no one is looking.

There *are* deep issues of purpose, identity, and strategy, and ultimately the concept of the institution and how it is organized, that must engage university executives and boards. But they must also engage the people who will actually build the new educational processes and programs. The limitations of executive leadership stem from the multiple constituencies that contemporary executives must satisfy and from their disconnection from the day-to-day operations of those institutions, where real change ultimately must take root. Creating fundamentally new institutions means embedding new ideas in new practices, and this requires leadership from those close to the front lines of the enterprise.

This is why I believe that the innovation processes needed within universities will center on clusters of faculty and, potentially, department chairs. The answers to basic design questions

such as those posed earlier will differ from one discipline to another. Many cannot be answered in the abstract for the university as a whole. Rather, they must inform specific innovations in curriculum, degree requirements, hiring, and how faculty organize their time and work. The partnerships to be forged with those outside the university need to be anchored to specific educational and research undertakings. Key relationships will be built with individual faculty, students, and administrators. In all of these processes, university executives can help, but only if the real work is led by those closer to the action.

For example, department chairs committed to fundamental innovation are in unique positions to address the conflicting incentives facing individual faculty. The example presented earlier about the young faculty member who wanted to study TQM is typical of the type of issue with which department chairs should wrestle. There are many similar conflicts between relevance and traditional academic expectations. Many revolve around the tenure process and the way it can cramp explorations of new intellectual territory. Because it hinges on peer review, the tenure process can be equally discouraging of deviations from the substantive or methodological mainstream. Consequently, young faculty are often wary of venturing where there are not well-established peer communities. Yet the resulting conservatism robs the university and larger intellectual communities of some of their greatest potential innovators. Faculty chairs should be continually scanning the external world for important emerging issues, to which the university could make unique contributions. They could then counsel tenured and nontenured faculty alike in ways to approach these important but problematic areas.

Finally, if our experience in corporations is any guide, the radical changes that lie ahead will also require a type of leadership that is often virtually invisible given our traditional focus on hierarchies and formal positions of authority. Our research suggests that *internal networkers* or *community builders* play a critical role in shaping how organizations evolve. In businesses, these people can be human resources staff or internal consultants, engineers or salespeople. What is critical is their ability to cross boundaries, to connect innovative line leaders to one another, and to diffuse new ideas and practices within large organizations.

The reason that internal networkers are so important lies in the dynamics of how radical innovations spread. While formal hierarchies and official management actions (such as establishing requirements and formal standards) might aid in diffusing incremental innovations, basic innovations tend to spread through informal channels. This is analogous to the finding that in societies radical new technological innovations tend to be introduced into the marketplace by new firms rather than by existing firms, and that this tends to occur in waves of entrepreneurial activity such as we are experiencing today (Mensch, 1979). Formal authority and power based in management hierarchies is a poor vehicle to cause imagination, commitment, passion, patience, and perseverance—the hallmarks of radical innovation that threaten the status quo. Rather, diffusion of radical practices tends to occur in ways that are unplanned and uncontrolled, through informal learning communities, or "communities of practice"—people who know one another, trust one another, and tell each other about exciting things they are involved with (Brown and Duguid, 1991; Wenger, 1998).

Who are the internal networkers in the university setting?

First, universities are quite different from businesses in the degree to which people can cross boundaries. It is typical for businesspeople in different functional areas, especially in large corporations, to be geographically dispersed, whereas those working in a university are more likely to be in closer proximity. Moreover, most faculty have personal and professional relationships with many counterparts in other universities, as part of extended intellectual

communities—which is much rarer in business. However, these advantages notwithstanding, faculty are less likely to cross intellectual and department boundaries internally than to network with colleagues externally. Here the fragmentation of academic departments and disciplines is, if anything, more severe than in business. Most faculty tend to live relatively isolated lives, focused on their own teaching and immediate research activities, even though they have potential to connect with and learn from counterparts. Even those engaged in significant innovations tend to be a lot like entrepreneurs in the business community—passionate about their own innovations and blind to similar innovative efforts led by others.

Herein lies another area of potential leadership leverage for department chairs and innovative faculty members. Do they engage counterparts in other departments around the sort of design questions posed earlier? Do they create forums in which to share with others innovations developing within their own departments, and seek connections to like-minded faculty elsewhere? Within their own departments, do they make an effort to spend time with faculty eager to take risks and try new experiments? Do they help them meet their counterparts, even within their own departments as well as elsewhere? In our experiences, these are all critical leadership tasks because leadership is about building critical mass for change.

But my suspicion is that leverage will also lie in looking beyond the formal hierarchy and people such as faculty and department chairs in positions of authority. Paradoxically, what often makes internal networkers most effective is that they have little or no formal power or authority. This is what enables them to cross boundaries and quickly form new coalitions and partnerships, and makes them credible agents for spreading new ideas. It also makes them most open to new ideas, simply because they have less attachment to the status quo. Strategy expert Gary Hamel (1996, p. 76), exhorts business executives to engage the twenty-year-olds in thinking about the future: "When was the last time a generation-X employee in your company exchanged ideas with the executive committee? The bottleneck," says Hamel, "is at the top of the bottle."

Could this not be a critical leadership role that students might play in reinventing Industrial Age universities? Are not students those who are living more in the future than anyone else? Are not they the natural ambassadors of change? Are not they the ones who move about the system as a whole the most, and with the most ease? Do they not spread new ideas through telling other students about what is exciting and worthwhile? Are they not the critical allies of innovative teachers in reinventing the educational process?

"Students are the hidden resources for teaching," according to Barry Richmond, former Dartmouth College professor and founder of High Performance Systems. "Teachers everywhere are struggling to get the additional resources they feel they need to be effective in the classroom. What most don't recognize is that those resources are sitting right there in front of them" (personal communication). "A teacher is no longer a dispenser of knowledge addressed to students as passive receptors," says Jay Forrester (1992, p. 10). "Instead, where small teams of students explore and work together and help one another, a teacher becomes a colleague and participating learner. Teachers set directions and introduce opportunities. Teachers act as guides and resource persons, not as authoritarian figures dictating each step of the educational process." For the past ten years, Forrester has run an educational colloquium for MIT undergraduates in which the students develop new teaching materials, a practice Forrester started more than thirty years ago. The students learn the *system dynamics* methodology by applying it to help others learn. Similarly, I was involved this past year in a new graduate-level course at MIT aimed at helping students learn what it means personally to become more reflective about their own actions and assumptions (Orlikowski and Senge, 1999). In such an instructional setting, the

teacher is not teaching in the traditional sense, because it is impossible to tell another what to reflect on. Teacher and student become colearners.

If making the students full partners in the educational process is an aim of fundamental innovations in instruction, might they not be the natural partners in reinventing the institutions of higher education as well? If learning is primary to teaching, students are not customers of the product that teachers sell. They are cocreators of the learning process. How can they be jointly responsible for the learning process and have no part in reinventing the institutions that might seek to enable that process? I suspect that they are already playing a big part in that reinvention. It is just that our hierarchical lens prevents most of us in universities from seeing that part.

Collaborating to Reinvent the Industrial Age University

My primary intent in sharing some of these ideas is to stimulate thinking. I apologize for laying out ideas that will inevitably be seen as impractical by some, because it is not clear how they are to be implemented, and old hat to others, because they are not new. Both reactions are correct, but they are also misplaced. In fact, they are the inevitable reactions of knowing organizations rather than learning organizations. The search for definitive answers is the bane of innovation. There are no answers for creating the new. New practical knowledge develops only from engaging in the hard work of translating concept into capability. Similarly, claiming that once an idea has been articulated it is no longer of interest is the retreat of the expert from the hard work of change. Experts have been developing theory and method for systems thinking for decades, yet most of our institutions, and most of our curriculum, remain as reductionistic as ever. Is this gap between theory and practice not where our attention should be focused? Finally, I believe that many academics will be inclined to reject these ideas because they are too closely tied to industry. I think this is an unfortunate defensive mechanism that keeps university people from learning from the world around them. In a world where creating and diffusing new knowledge is becoming the key to viability for all institutions, both business and university have a great deal to learn from one another.

In fact, this may be a key for both truly to innovate. The university has survived as an institutional form for a very long time, which suggests that it has strong capacities for adaptation. Indeed, a small number of universities are charter members of the "long-lived institutions" club. (I hesitate to add that this in no way justifies a belief that society will find it impossible to get along without the very large population of colleges and universities that now exists.) What features have allowed universities to adapt? Some argue that it is their decentralized governance system, which makes them more inherently able to innovate continually. An alternative view is that they simply have not had a competitor in their particular ecological niche, a condition that may no longer prevail, as I suggested in the introduction to this essay. On the other hand, businesses today do face the type of competition that universities are starting to encounter, and they are having to learn a great deal about how to think and operate institutionally in new ways in order to remain viable—something with which universities struggle.

Perhaps the most powerful lesson from the first ten years of developing SoL has been realizing the importance of SoL itself. I have come to believe that there is no substitute for building communities that cut across multiple institutions. There are no answers to questions like those posed in this chapter. Many of the most important questions are undoubtedly missing. There seems to be no substitute for enabling thoughtful and committed leaders of all types to work together to chart the territory. A small group of leading institutions, willing to innovate and share, becoming committed to their own and to one another's progress, and willing to be studied

and serve as laboratories, could become leaders in learning how to learn as educational institutions.

Several years after starting SoL, a person attending his first meeting of people from the different companies told me, "I understand what this is. This is Alcoholics Anonymous for managers. We are all addicted to command and control, to looking for the right answers, to displaying our knowing rather than revealing our not knowing. And we all think someone else has the power to change things. The only way to shed the addiction is to come together." I laughed but could not get his comment out of my mind. We probably are all addicted, more than we can see, to the "prevailing system of management," as Deming called it. And perhaps we can only see the addiction collectively.

To create a better way, we will need one another. A few daring university leaders are starting to move in this direction (Awbrey, Scott, and Senge, 1996). While the challenges are immense, are the risks any greater than pretending that the future will look like the past?

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