

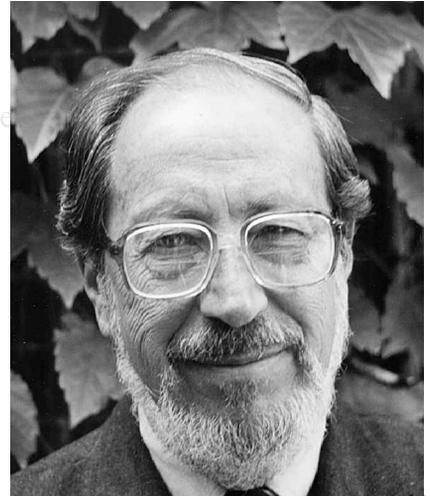
Welcome to issue 2 of *Reflections*. We have learned a great deal in launching a new journal and, hopefully, you will see in each successive issue evidence of our own learning.

We all know that start-ups reveal errors of various sorts no matter how hard one tries to avoid them and we discovered that we made a gigantic one. What happened is that we ended up running the original unedited and, in many ways, unintelligible transcript of Don Michael's interview with Otto Scharmer in issue 1 of *Reflections*. Don had graciously spent time fixing it up and we had an edited version that should have appeared in print, but alas it was the unedited one that appeared. We will, of course, learn from this how to put in additional check points to avoid anything like this from happening again. Don says "Please don't read the one in the journal, it often does not make sense." We join him in asking you to read the edited version which is full of the insights we promised you. It is available on our web site at [www.sol-ne.org/michael](http://www.sol-ne.org/michael).

I want to use my editor's introduction in each issue to think out loud a little bit and try some ideas out on you, the readers. For example, we want to focus some issues of *Reflections* on specific topics, such as "Requirements for a Sustainable Environment," "Different Forms of Systems Thinking," "The Role of Culture in Learning and Change," "The Practice and Art of Change Agency," and so on. If you have ideas for topics, suggestions for papers, even the energy to volunteer to be a guest editor, let us know. We have the freedom to be nontraditional, so don't be afraid to make suggestions that are "out of the box."

I also want to share with you my own excitement in launching this journal. The meetings of our editorial group are great fun, especially as we feel the freedom to be creative. Creativity and innovation are clearly fun, but the conditions for innovation to take hold are complex and should not be ignored. On the personal level, I have noticed that my ability to be creative is very much dependent on having other areas of life under control. If work, family, or personal arenas are in turmoil, it is harder to be creative. Check this out in your own experience.

The implication is that we need to understand the realities that operate in our own psyches and in our environments, and we need to get them under control. One of the aspects of the environment that we understand least, and therefore have least control over, is the cultural assumptions that operate in our various membership and reference groups. Those tacit and taken-for-granted assumptions can be both an aid and a hindrance to innovation and, therefore, need to be understood and managed. I will press our editorial committee and board to stay focused on culture so that we do not unwittingly try to do things that are counter-cultural and, therefore, not feasible. If what we want to do is desirable enough, and if it is counter-cultural with respect to some important constituencies, then let us face squarely the need to change culture and to look at that kind of change realistically.



A handwritten signature in cursive script that reads "E. W. Schein".

Ed Schein

# Contributors

**Russell L. Ackoff** is chairman of the Board of Interact, the Institute for Interactive Management.

**John Seely Brown** is chief scientist, Xerox Corporation and Director of its Palo Alto Research Center (PARC).

**Pille Bunnell** is a Canadian biologist with two decades' experience as a practitioner in systems ecology, adaptive management, and environmental literacy.

**Dori Digenti** is president of Learning Mastery, an education and consulting firm focused on collaborative learning, global teams, and change management.

**Paul Duguid** is a consultant at the Xerox Palo Alto Research Center and at the University of California, Berkeley.

**Rafael Echeverria** is a scholar, consultant, writer, and a principal of Newfield Consulting in Spain and Venezuela.

**John Ehrenfeld** is director of the Technology, Business and Environment Program at MIT.

**J. Wil Foppen** is Dean and Director of the Rotterdam School of Management at Erasmus University, Rotterdam, The Netherlands.

**Arie de Geus** is a former executive at Royal Dutch Shell and currently a Visiting Fellow at London Business School.

**Silvia Gherardi** is currently an associate professor in Sociology of Organization at the Dipartimento di Sociologia e Ricerca Sociale of the University of Trento, Italy.

**Charles Handy** is a world renowned business philosopher, formerly an oil executive and a business economist with Shell International, and a professor of management at the London Business School.

**Elizabeth Handy** is a portrait photographer based in London. Her recent book, *The New Alchemists*, co-authored with her husband, is a study of creative people and entrepreneurs in London.

**Frances Hesselbein** is the chairman of the Board of Governors of the Peter F. Drucker Foundation for Nonprofit Management and serves on many other corporate boards.

**Betsy Jacobson** is president of Learning Design Systems, a consulting firm based in San Diego, California.

**John Kao** is founder and CEO of The Idea Factory located in San Francisco, California.

**Victor Leo** is System Dynamics and Organizational Learning Manager at Ford Motor Company.

**Marcial F. Losada** is the co-founder and executive director of Meta Learning, a consulting company that specializes in team productivity and organizational learning located in Ann Arbor, Michigan.

**Manuel Manga** is an international consultant who focuses on leadership, language, and learning.

**Humberto Maturana** is a Chilean biologist with a lifelong passion for the nature of life, evolution, language, cognition, and reality.

**Donald N. Michael** is a professor emeritus of planning and public policy at the University of Michigan.

**Wanda J. Orlikowski** is associate professor of Information Technologies and Organization Studies at the MIT Sloan School of Management.

**C. Otto Scharmer** is a lecturer at the MIT Sloan School of Management and University of Innsbruck, Austria, and a research partner at the Center for Generative Leadership.

**Herbert A. Simon** is Richard King Mellon University professor of computer science and psychology at Carnegie Mellon University. He is the recipient of the Alfred Nobel Memorial Prize in Economic Sciences and the National Medal of Science.

**John D. Smith** is a consultant who has written about hamburger stands, data quality, the Web, and people's daily walks to work.

**Emily Sper** is a free-lance graphic designer, photographer, and communications consultant in Boston, Massachusetts.

**Chris Unger** is a principal investigator at Harvard University.

**Etienne Wenger** is a globally recognized thought leader in the field of learning theory and its application to business.

**Joel Yanowitz** is a consultant to executive teams on leadership and change, Managing Director of Innovation Associates, an Arthur D. Little company, and a Vice President of Arthur D. Little, Inc.

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## Reflections on Reflections

In today's rapidly changing technological environment, our institutional structures are woefully lagging. Although the term *transformation* is used frequently in all forms of public discourse, very few managers fully grasp the profound implications of these changes on their institutions. More importantly, social interactions appear to be stressful and combative rather than cooperative and synergistic. For me, this journal provides a common meeting place for thoughtful researchers, practitioners, and consultants to make a difference. Very few publications strive to provide a common ground from which effective action can be derived or from which a synergy of purpose can be discerned. Most try to represent a special interest and thereby hope to alter the course of events in their favor. It's not traditional or acceptable to announce that much is unknown regarding our social institutions and, because of serious implications to society, we seek the contributions of others not aligned or specialized in our own field of study. It runs counter to conventional wisdom and societal strictures. Because organizational learning is an emerging field, this journal can play an enormously important role in providing a forum for research, application, and professional development.

I am unaware of any journal that strives to combine researchers, practitioners, and consultants together for the purpose of making our institutions more effective in the twenty-first century. With rare exception, neither *Sloan Management Review* nor *Harvard Business Review* attempts to develop theory or test its propositions in operational settings. Both publications provide very interesting stories, but they are declaratory in nature, offering ten steps to success, five basic competitive actions, or recipes on career development. I do enjoy reading these publications, because they condense a big volume of information into few pages . . . but they are not about bringing a diverse community of people together to learn and jointly discover what's possible and beneficial. With these two journals, I'm a passive passenger; in *Reflections*, I'm both a passenger and a member of the crew.

Although SoL's research community could provide ample material to fill a journal, the practitioner and consultant voices need to be heard. The three "voices" of the journal demonstrate that synthesis and community provide important knowledge about institutional change and human behavior. I and many of my business colleagues are very dedicated to the creation and dissemination of organizational learning theory, methods, and tools to the broader business community and general public.

From a businessperson's point of view, the editorial structure is especially interesting. The people represented on the editorial board represent "the best and the brightest." The work of the editor is the key to this project. You need to hold contributors to two standards: (1) Does the article contribute to the purpose and principles of SoL? and (2) Is the article written in both style and content to provide insight for the three customers of the publication: researchers, practitioners, and consultants? The object of *Reflections* is to help the community further develop its understanding and wisdom concerning what's necessary for our institutions to fully contribute to a healthy, productive, and sustainable society.

Sincerely,

Victor Leo  
Ford Motor Company

# In This Issue

*Edgar H. Schein and Karen Ayas*

**D**ear Reader—It is with great pleasure that we bring you our second issue. We will follow the pattern of presenting some classics, some features, and a variety of personal items in different formats.

## Classics

In this issue, we continue to mix old work that is still relevant with new work. Don Michael has been one of the most seminal thinkers of the last four decades, so we will continue to expose readers to his most profound and prophetic work. In particular, we should note his sense that more information does not necessarily produce more knowledge or wisdom. In fact, it might work in reverse. The more information we get, the less we know. In our other classic, we have one of the great thinkers, Herbert Simon, elucidate what it would take for an organization to learn, and to think about this in very fundamental terms of how new knowledge is created, stored and passed on in organizations. As usual, we present commentaries by people who are less academic by profession to stimulate dialogue. Frances Hesselbein and Arie de Geus comment on the relevance of Michael's then "new competence" to the society's view of competence in the world we live and work in today. John Kao and Wil Foppen show the relevance of Simon's analysis to contemporary concerns, especially to management education.

## Features

As features, we present a mix of conceptual and practical, previously published and new work. One of our purposes in the journal is to explore the creation, dissemination, and utilization of knowledge. John Seely Brown and Paul Duguid explore different conceptions of knowledge, especially the distinction between "know-what" and "know-how." The whole question of whether know-how can be transmitted except face-to-face in communities of practice emerges as a central issue. Wanda Orlikowski and Etienne Wenger not only comment on, but elaborate, and to some degree, disagree with some of the conclusions of the Brown and Duguid article. Wenger's book which deals with these issues is reviewed later in the journal.

We then switch to something very practical from Dori Digenti who has experienced and studied knowledge transmission in collaborative consortia and analyzes the conditions for such learning to occur. Russell Ackoff raises some important questions about this form of learning, and Digenti replies. We hope that this kind of "confrontive" dialogue can occur in this journal and that we can work toward clarity rather than brushing issues under the rug. Silvia Gherardi continues to explore the relationship between management, organizations, and learning in her entertaining commentary and highlights the obstacles to translating collaborative learning into practice.

Finally, we return to a body of thinking that was launched by Maturana at the SoL annual meeting last year. Seldom has one person's speech occasioned so much interest, and seldom have we seen so many "commentaries" that were themselves important analyses in their own right. Humberto Maturana and Pille Bunnell in their second essay in the series explore "love" as the only emotion that expands intelligence and Manuel Manga shares his curiosity about how one might "operationalize" love. The comments offered by Rafael Echeverría and Marcial Losada (in response to the essay published in our first issue) raise some issues, deepen our understanding, and invite you the reader to join the conversation.

## People

Next, we invite you to meet Charles Handy, a former MIT Sloan Fellow, manager, professor, educational administrator, and radio personality who has since become one of the world's most profound and entertaining pundits. Otto Scharmer interviewed him four years ago and we wish to share some of Handy's observations as he reflects on why organizations exist, why they learn, and how they learn. This interview is especially important in that it presents an overview of several of Handy's influential books and explores his crucial concept of "Federalism" as an organizational form.

We close this section with two shorter pieces: Chris Unger's reflections on what we value in life; and Betsy Jacobson's invitation to reconceive balance and experience it as the ability to reflect, feel appreciation and set boundaries.

## News & Views

Finally, we bring you three book reviews. These reviews are all exceptional contributions to the field in their own right. John Ehrenfeld's passionate and concerned voice raises more important issues than what the book *Natural Capitalism fails to address*. His review is a wake-up call: Are we aware of what it would really take to create a sustainable future?

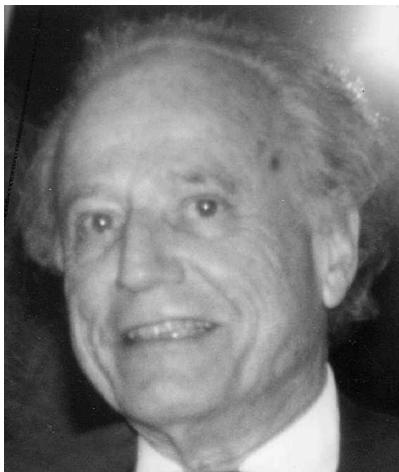
Once again, please write or e-mail us your suggestions and recommendations. Let us know what you think. We thank Vic Leo for his reflections and hope you will also assume the role of a participant rather than a passive observer. Send all mail electronically to [pubs@sol-ne.org](mailto:pubs@sol-ne.org) or to Editor, Reflections: The SoL Journal, 222 Third Street, Suite 2323, Cambridge, MA 02142

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# Competence and Compassion in an Age of Uncertainty

*Donald N. Michael*



Donald N. Michael

In an era of widespread social turbulence, the efforts of individuals and institutions to assert and exercise control over societal circumstances are increasingly seen to be counter-productive. A different perception of the nature of existence, and a recognition that inability to control is not necessarily a sign of weakness or incompetence, could help nourish the emergence of more humane and worthy modes of personal behavior and public regulation.

The belief persisted that increased power to alter the environment brought increased control over it. This belief, still far from dead, is a manifest delusion. First, as every engineer knows, the difficulty of devising any physical control system lies not only—usually not chiefly—in generating enough power but also in generating enough information. Since the material world is a system, any change in the given is bound to have numberless, often unpredictable, repercussions throughout the system; so even if the effect of the intervention is to bring under control the variable which is directly affected, the total system is likely to be less predictable than before, while all learned skills based on the former “given” are depreciated. Further, these interventions, and the further interventions to which their unpredicted results are bound to lead, are likely to be self-multiplying. The rate of change increases at an accelerating speed, without a corresponding acceleration in the rate at which further responses can be made; and this brings even nearer the threshold beyond which control is lost.

—Sir Geoffrey Vickers<sup>1</sup>

It is a grand irony of our culture that one of its most basic premises—that more information leads to more knowledge, which in turn leads to more power to control—has turned on itself. Instead, we confront the undeniable fact that more information has led to an ever-increasing sense that things are out of control. Information about environmental deterioration, economic disarray, toxic wastes, national security, the dissolution of the family, or the stumbling of the schools all point in the same direction: we are unable to control our society, informally to guide it or formally to regulate it, into performing the way we—any group of “we’s”—would want it to perform. What is more, the more information available, the less people are inclined to assign legitimacy to the institutions or organizations described by the information. On the one hand, the information reveals ineptitudes in practice and fumbings of purpose if not immoral or illegal actions. On the other hand, information provides the grounds for conflicting interpretations of what is going on and what should be done, thereby deepening the conclusion that nobody really knows what to do or how to control the situation. The consequent endemic distrust and delegitimation in turn undermine efforts to gain control for attaining desirable ends or even for maintaining reliable norm settings, thereby amplifying the indicators of incompetence. Finally, information in the form of future studies strongly implies that things are highly unlikely to be more controllable in the years ahead.

For those whose roles define competence as the ability to control outcomes, and that includes most managers and administrators in conventional organizations, this state of affairs is increasingly disturbing, upsetting both public performance and private well-being. Two responses are typical: for some, dogged efforts to force or more intensively seek control; for others, a beginning reperception of the relation of humans to each other and to their world that moderates the aspiration to control. To those in the latter group (in which I include myself) it is increasingly evident that the conventional passion for control results in behavior and norms that are antithetical to human development in a turbulent world.

Of course, there have always been a few wise administrators and executives who are comfortable in the knowledge that things are mostly out of hand and who, through their wisdom, manage to keep things tolerably balanced if not optimized. My impression is that such wise balancers and optimizers are comparatively rare in the United States and that, regardless of personal philosophies, those responsible for a leader's public image present him as if he were in fact in control. That Chief Executive Officers and other senior administrators often, by choice or necessity, make decisions based on hunch or intuition is obscured behind clouds of data projections and public relations verbiage aimed at convincing everybody that the organization recognizes causes and controls them to good effect.

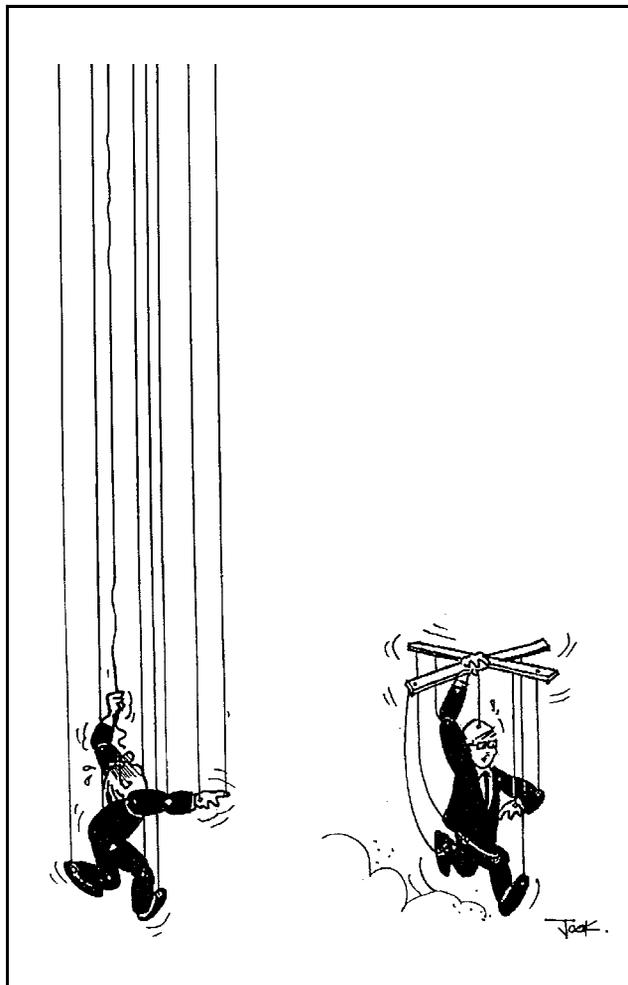
In the following paragraphs I will describe some typical behavior associated with efforts to control and some of the counterproductive consequences of those efforts all too evident today and certain to be even more counterproductive tomorrow. To understand why so much effort and status are devoted to attempts to control, I will propose a connection between Newtonian/Cartesian epistemology and the dominant definition of competence in the West, chiefly practiced and promulgated by white males. In this way we can better appreciate the potential utility of a much older and more pervasive way of balancing and optimizing; that chiefly ascribed to and practiced by women and many non-Western cultures.

I will use as examples some pervasive devices used in management, in the politics of management, and in politics *per se* to maintain the illusion in self and in others that the "target" situation is controllable or is under control.

Probably the most widely practiced device is that of partitioning: delineating "a social problem" and splitting it into parts, allocating them to different disciplines, offices, and functions. Each effort then is bounded and insulated from the conceptual and operational ambiguities, impasses, and evidences of ignorance that would bedevil those working on their "part" if inputs, outputs, and throughputs were not so insulated. Instead, their "appreciative sets"<sup>2</sup> usually protect them from even recognizing that such unexamined connections exist.

A sense of felt control over a problem is often attempted by laying a synthesizing effort over the separate components. In fact this usually becomes a summarizing rather than synthesizing task since little or no validated theory overarches or coordinates the insulated perspectives applied to the problem by those working on its parts.

Does the systems approach offer a way to attain control that overcomes the inadequacies of the partitioning process? When the "problem" or "situation" is a stable one or one that transforms according to known relationships



From *The Next Choice: Controls or Connections* by Tony Richardson and Jack Macneish, Don't Press, 1995.

*More information has led to an ever-increasing sense that things are out of control.*



Frances Hesselbein

### Commentary

by Frances Hesselbein

Donald Michael's view out the window in 1981 sounds like a report from this morning's newspaper. We are still (and perhaps forever) living in a world of accelerating change and social turbulence. Michael presents the Newtonian-Cartesian point of view as the basis for the then widely held understanding of competence. He suggests that a "new competence" might lead to a more compassionate society.

Society's view of competence today is much more influenced by the ideas Michael poses as "new." The interconnections and complexities of the world today (illustrated in a snapshot by the World Wide Web) are understood by most. At the same time, acceptance of uncertainty and the need to embrace conflicting perspectives has also grown. Finally, a reliance on learning has been spreading throughout society. Lifelong learning is no longer a phrase used to describe the practices of an emeritus professor. Lifelong learning is now the goal and necessity of executives and professionals in all fields.

Michael's view of a "new competence" has in many ways come to pass since 1981. There also remains a desire for results in changing the lives of people and society. These changes are not produced by the command and control of the once "competent" leader but rather by the example, inspiration, and direction of a "how-to-be" leader. This leader, working in collaboration with individuals and organizations, uses mission as the guiding star to provide groups of individuals with a common purpose. This leader works within an organization that understands the discipline of innovation and knows that careful communication with customers can provide insight that leads to new dimensions of performance. This leader unleashes the energy and capabilities of these people to make real changes in the lives of people, their families, and communities.

then indeed the systems approach often does provide more control—within whatever is designated as "the system." But we do not understand the processes of social change in turbulent and complex situations that exist in our world. We discern and agree on very few stable, reliable, or transformational relationships, and, for the most part, we lack concepts for describing turbulent change. The systems approach therefore does not add controllability in precisely those areas where one would most like it to. Note, for example, the dismal record of econometric models. Moreover, if systems analysis and synthesis have any influence, by that very fact they are likely to contribute still another variable to the essentially unpredictable societal emergence.<sup>3</sup>

Belief in the ability to control is also abetted by another important version of dividing up the problem: turf protection. Not only do strong boundaries around subunits of organizations protect their members from the uncertainties that would otherwise arise, they also reduce the risk that outsiders might detect insufficiencies in the subunits' grasp on reality. In this way both insiders and outsiders can better preserve their sense of things being under control since each knows little about how well or poorly the other actually is able to match intent to outcome.

Assigning sole responsibility to the individual for what happens in his or her life also helps perpetuate the belief that control is attainable. According to this norm, an unfulfilling life is due to the individual's failure to control life situations rather than to any flaw in the concept of controllability itself. In recent years this emphasis on the individual's total responsibility has been endorsed from a new quarter. Several of the self-actualization philosophies, such as EST, categorically assert that one is responsible for everything one is or is not. While this dogma discourages blaming others for circumstances one might in fact alter—not control—it also encourages the antisocial attitude that another's difficulties are solely their own responsibility to control. This attitude also removes the anxiety that might be aroused trying (and perhaps failing) to help another control their environment. (The other extreme is, of course, to explain the absence of individual fulfillment as a failure of the social system to control adverse impacts on the person.)

These conventional norms and behaviors that serve to reinforce belief in the controllability of the social world are increasingly counter-productive in times of social turbulence. Those whose competence is defined to include the capability to control find themselves caught between hubris and despair with anxiety a constant companion and "burn-out" a frequent destiny.<sup>4</sup> Others frustrated by undesired or unexpected outcomes, seek greater control outside the law (e.g., the Watergate break-in, aircraft hijackings, etc.) or by recourse to single issue voting, injunctions, referenda, and endless adversarial confrontations in and out of the courts.

In a world where everything is connected to everything else, narrowing the issue according to the special preconceptions of persons, groups, or offices in the expectation that in that way control can be attained distorts what otherwise is a constructive societal regulative process into one where, increasingly, everything blocks everything else. Even when the sought-for outcome is reached the reverberating consequences eventually undermine the control attained.<sup>5</sup> What is more, when partial definitions of a problem are exposed rather than hidden, they generate disagreements. This enlarges the scope of the problem, and, given the present low trust of big organizations, counter-claims by proponents of each partial definition that theirs is the true description of the social problem or the true approach to solving it can only deepen distrust. Uncertainty about where to locate the problem boundaries cannot be acknowledged, so each party's position must be put forward with great conviction. This is because acknowledging uncertainty means acknowledging that one is unsure what causes different effects, and hence is unable to control the situation, or "solve" the problem. But this posturing is becoming increasingly shortsighted. By refusing to admit uncertainty about the nature of a situation and what can be done about it, institutions and leaders are only inviting scorn and

repudiation as proliferating information exposes evidence of ineffectiveness, confusion or worse.

What is the origin of the belief that social circumstances are controllable, and, when did we start defining competence as the ability to attain that control? Historically kings, merchant princes, and the like have sometimes effected social control—or the semblance of control—through coercion or charisma. But, here, I will attend to an interlocked psychological and epistemological source of that belief because it exacerbates the special problems of living in our turbulent world, namely: the world view elaborated and reinforced by the physics of Newton, the philosophy of Descartes, and an even older legal tradition that emphasized private rights.

The Newtonian/Cartesian view sees the world as comprised of separate things, particles, and of the relationships between them. Cause is separate from effect (as are the “things” that cause the “things” that bear the effect). Subject is separate from object, fact from value. Relationships among things are linear; they begin and they end. This “particulate” condition was conferred on natural processes because Newtonian science showed that things behaved lawfully; their performance was repeatable and predictable, and that if one had the knowledge of causes and effects, one could control effects by controlling the causes that produced them. Knowledge for attaining such control was scientific in character, discovered in the laboratory where cause and effect could be separated and where controlled experiments could be undertaken to illuminate the relationship. (Or, more revealingly, the only phenomena studied in the laboratory were those in which cause *could* be separated from effect.) In this way, scientific/technical information led to knowledge, which in turn led to the power to control outcomes.

Most conspicuously this world view demonstrated its utility in situations where hard technology was the controlling agency: either technology controlled causes so as to produce a specific effect or its production was the effect desired, in response to a specific cause.

Since scientific knowledge was expected to dissolve all accretions of religion, ritual, and ignorance from whatever source, resulting in universal enlightenment, the Newtonian/Cartesian world view also served as the epistemic model for human society even though underlying causes and effects and lawful relationships had not been “scientifically” demonstrated. That is, individual and social processes were, and still are, believed to be the products of the causal interactions among “variables” within and between persons, groups, institutions, organizations, etc., each of which is separate from the others. Thus, the competent leader, administrator, or manager was one who could deal, or at least endeavor to deal, with the human condition in the same spirit and with the same intention to control as the technologist or engineer. (This approach had the added advantage of being completely compatible with behavior based on the cruder, more widely dispersed world view that might makes right.) This spirit and intention is nicely exemplified in the aspiration to solve social problems through “technological fixes.” That is, the situation would be fixed both in the sense that it would now “work,” and in the sense that it could be expected to *remain* in the desired end state. Both outcome and process would, as a result, be under control.

As the beliefs of the Age of Enlightenment were promulgated and disseminated, ascribing to science and technology unlimited ameliorative power to free humankind from its constraints, males were most exposed to these beliefs through their activities in industry, business, and government, under circumstances that demonstrated their utility and, hence, their validity. Since much of what preoccupied males was directly or indirectly the result of technological applications, and since these “worked,” males came to embody these beliefs, practicing them when they could and affirming them always. In such a heady atmosphere of successful efforts to control (in part “successful” because those who were victims rather than

*Assigning sole responsibility to the individual for what happens in his or her life helps to perpetuate the belief that control is attainable.*

beneficiaries of technological control were routinely ignored or discounted), there was every reason to suppose that the same world view and definition of competence would hold true under any and all societal circumstances: a competent person could, through information, gain the knowledge needed to discover the causes and effects of the human condition and to control them.

Under such norms errors became failures and these are evidence of incompetence: they demonstrate a failure to apply correct knowledge and through it to exercise control. In a male-dominated world, operating by this definition of competence, one's self-image is closely tied to and tested by successfully exercising control. Besides seeking to demonstrate ability to control it is also very important to deny to one's self and surely to others evidence that one is not in control. The behavior and norms described earlier embody this denial whatever else they might express.

In summary, white, Western, males have incorporated into their definition of competence the myth that the world is fully controllable through information about cause and effect. One ironic result of this world view has been an enormous transformation of the world into one that both is and appears to be increasingly *less* controllable. In today's world information undermines reliability and predictability by stimulating emergent human phenomena whether these be the secondary effects of a technological fix, of an idea, or of a welfare program. It is a world in which information increasingly demonstrates that things aren't going as intended. The result is two-fold. On the one hand, there is retrenchment by those who would control, an effort to deny their impotency by more intense efforts to control. On the other, there is beginning to emerge in some men another world view and a different definition of competence—one long practiced by women and in certain non-Western cultures, among people who have never claimed to possess certainty of control, in part because they have seldom had the opportunity to do so.

Like all myths humans contrive to make sense of the mystery of being, the one that defined reality as a world of particles causally related, was a system of deceptions, useful, indeed powerful for some purposes, but unavoidably arbitrary and dependent for its viability on not noticing, not *appreciating*, what else was happening that didn't fit.

What is defined as cause or effect is a highly arbitrary excerpting from a seamless web, from a fuzzy image. What to differentiate as in *need* of control and what to characterize as *being* controlled are socially given: they depend on the appreciative set of those doing the differentiating and those "controlling" from their various points of leverage. In earlier days, those seeking to control could ignore with considerable impunity that which they were deliberately or inadvertently indifferent to or ignorant about pertaining to the uncontrolled consequences of their acts. When recognized at all, these were the "externalities." Also, because knowledge and instrumentation were less sophisticated, feedback from "technological fixes" was so slow (or so incomplete) as to give the illusion that things were indeed fixed, and under control with boundaries holding. (This illusion was especially strong in males whose faith in the myth of control often included a need to believe it in order to protect their self-identity.)

But the human condition is, to an unknown degree, inherently unpredictable because it emerges unrepeatable, out of itself. It is morphogenetic: memory and consciousness and their consequences are irreversible, contrary to the dynamics that define the behavior of Newtonian particles. This emergent quality is immediately obvious in the arts, in science, in politics, and in interpersonal relations (even though in the latter, especially, we often try to pretend it isn't so). Neither an individual nor a society can be reset to zero, wiping out both what has happened and the effort to wipe it out; this is especially evident in societies rich in information. The human condition is to some unknown degree non-homeostatic; it does not revert to equilibrium—which circumstance fatally flaws extant economic theory and much theory in the behavioral sciences—along with their "technological fixes."

What then comprises the “new competence” appropriate to a world where uncertainty and complexity make it counter-productive to reward the old competence?

First, we need to accept that we can seldom deliberately *change* things from state A to B since we really don’t know what it is that we are changing. States A and B are only arbitrary parts of an unknown totality; we do not know what we are *not* attending to. Since A and B are inherently fuzzy concepts, so too must be the concept of what is to be changed. Hence whatever we do is by way of *affecting* a situation instead of changing it. This term conveys an appropriately more tentative sense of capability to intervene decisively than is assumed when we imply or expect the competence to change a situation in a controlled manner. Viewing existence in this way, we may also avoid the despair and the fury that sometimes results from the frustration of trying to control change in a world in which it is increasingly evident that everything is connected with everything else and uncertainty grows as does information.

Second, we need to live with and acknowledge uncertainty. It is commonplace to observe that people can only deal with so much uncertainty before they seek security in God, technology, or charisma. This is probably true at some level; but what if uncertainty were accepted and shared as our common condition and acknowledged by leaders rather than being denied by them in order to sustain the belief that certainty is attainable through their vision and judgment? Surely we can tolerate much more uncertainty when we have others to share it with. Misery loves company; and, when shared, it can also increase capability.

But why should a person or organization run the risks of sharing their uncertainty? One reason is that acknowledging and sharing uncertainty is necessary for learning. Neither we ourselves nor our associates, nor the publics that need to be involved if they are to learn to make responsible demands, can learn what is going on and might go on if we act as if we really had the facts, were really certain about all the issues, knew exactly what the outcome should/could be, and were really certain that we were attaining the most preferred outcomes. Moreover, when addressing complex social issues, acting as if we knew what we were doing simply decreases our credibility. A critical requirement for effective authority, public or personal, is some kind of shared belief, a fundamental (if qualified) trust in the capability, reliability and responsibility of institutions. But studies show that this is not the prevailing state of mind today and that distrust of institutions and authority figures is increasing. The very act of acknowledging uncertainty could help greatly to reverse this worsening trend.<sup>6</sup>

Third, we need to see the world as “both/and” rather than “either/or.” The slack has gone out of our ethical system because of its unavoidable internal contradictions and because its injunctions become their own opposites—this is the *peripeteia* the ancient Greeks warned of—when one or another separate value (like freedom or equality) is excessively forwarded for the purpose of making it the sole controlling value of society or of a person’s life. In an either/or epistemology of separate things, including separate values, this leads to single-issue voting, exploitive and self-righteous adversarial tactics, and frantic efforts to find salvation through emphasis on self, all of which are progressively counter-productive. Furthermore, increased information removes the comfort of ignorance about the consequences of separate actions and about the connectedness of conditions.

At the same time, lacking an appropriate world view, we are left ignorant of the structure of connectedness. People who perceive the world as both/and (i.e., connected) rather than either/or (i.e., separate) have the potential to express more tolerance and compassion toward themselves and others. If we can see ourselves as connected, yet ignorant of most of the connections, then we have little choice but to be compassionate: updating an observation of an earlier day, “There, *through* the grace of God, go I.”

Acting with compassion means acting with the recognition that: (1) nobody, including oneself, really knows what they are doing, certainly not in terms of the *consequences* of their acts, which is what most “doing” is directed

*We do not understand the processes of social change in our turbulent and complex world, so the systems approach does not add controllability in those areas.*

toward: (2) everyone is, to some profound degree, living in illusions, believing in the “factness” of what comprises their world rather than recognizing that we live in an arbitrarily constructed social reality; and (3) everyone is in one way or another struggling to cope with the existential questions of life, death, and meaning. Under these circumstances everybody needs all the clarity they can muster regarding their ignorance and finiteness, and all the support they can obtain in order to face the upsetting implications of what their clarity illuminates for them. A compassionate person is one who, by accepting this situation, can provide that kind of support toward self as well as toward others.

Living compassionately would also free people from the pressures to *act* as if they really knew what they were doing and how to do it. That is, I would know that I don’t know and I would know that others who knew *they* were ignorant, would also know that I don’t know. In particular, living more compassionately would reduce the need to hide errors of the sort that arise from actions intended to control (i.e., actions based on presumed knowing). Instead, actions intended to affect something would be based on shared and acknowledged ignorance that must accompany any body of knowledge. And it would reduce the need to act over-cautiously and conservatively out of fear or being caught out in a mistake, of being unable to control. Accepting this ignorance and its associated vulnerability would reduce the need for those defensive, self-protecting, interpersonal and political posturings that make it so hard to act responsibly and compassionately.

Essentially, what this means is that the way to regulate well in times of great uncertainty is by learning rather than controlling. Not learning the answers to known questions that serve the intent to control but learning what questions about balancing and optimizing *now* merit asking and then learning how those questions might be answered provisionally—until the present moment emerges into a new context of questions.

There is increasing evidence that people feel more competent and are in fact more contributive, creative, and productive when they participate in decisions affecting their own life way. Doing so requires learning about their life way. The research jargon has it that their sense of “felt control” increases and that therein lies the reward of such participation. I suspect though that it is the engagement itself, “the maintenance of relationships in time,”<sup>77</sup> that is

actually the reward. At any rate, in an uncertain uncontrollable world, joint participation in creating, unfolding, and affecting that world is the precondition for engendering trust, for learning, and for accepting and practicing responsibility.

This mode of participation, called co-creation or co-production, is a way of affecting one’s world and of learning about it—and about one’s self—that is practiced by many mothers (and by some fathers) and by all good teachers. But its successful practice requires openness to the unexpected: vulnerability. Neither process nor outcome are controllable in the old sense: the norms of co-creation preclude individual attempts to gain control of the joint creative effort.

Individuals or organizations learn little if defenses are up, if vulnerability is avoided, if, instead, the context is controlled, or if one seeks to control in order to exclude information that exposes the limits of control. Living vulnerably requires that the sense of being in control be replaced by a sense of being cared about. Nurturing, and being cared about, in Western culture, have traditionally been the roles performed by women. However, nurturing is not an ability possessed only by women, as some non-Western cultures evidence, and as growing numbers of Western men demonstrate too. Men in Western society are beginning to acknowledge their need to nurture and be nurtured. I am somewhat hopeful that we can continue to move this way because the need for nurturing is also coming to be acknowledged—though I do not know how widely—among senior executives and administrators, among those very lead-

ers and decision makers who no longer find it possible to control or who no longer find self-respect in pretending they are in control.

Adopting the norms and behaviors just described will not transform the turbulent world we face into one of permanent stability. But increasing awareness of the emergent quality of human life, engendered by the density of information, combined with a move toward, and a focus on these norms and behaviors could engender something else. Some other set of circumstances could arise from adopting a different definition of competence. This “something else” might be a world in which at least some of the turbulence associated with the epistemology, norms, and behaviors of control gives way to other circumstances more to our liking. This would not necessarily be a more controllable world but at least it should be a more livable one, in which these norms and behaviors engender and express a “concern to be reliable to each other.”<sup>8</sup> The conventional endeavor to control might then become a special technique useful in certain contexts now unspecifiable.<sup>9</sup>

## Author's Note

This article was to be a contribution to a proposed *festshrift* volume for my friend and colleague, Geoffrey Vickers. His ideas—eg. appreciation, balancing and optimizing, regulation, relationship maintenance—are profoundly important for understanding the processes and purposes for learning. They influence me to this day. So it is truly a privilege to share our intertwined preoccupations with this readership.

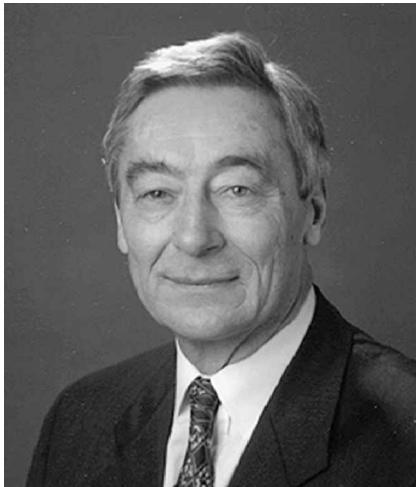
— DNM

## Notes

1. Sir Geoffrey Vickers, “Ecology, Planning and the American Dream,” in *The Urban Condition*, Leonard Duhl, ed. (New York: Basic Books, 1963), p. 101.
2. Vickers, *The Art of Judgment* (New York: Basic Books, 1965), chapter II.
3. Donald Michael, “Planning’s Challenge to the Systems Approach,” in *Futures Research: New Directions*, H. Linstone and W. Clive Simmonds, eds. (Reading, Mass: Addison-Wesley, 1977). For the most part, turbulent processes have not been modeled even though the outcomes are often predictable. In the physical sciences, turbulent systems tend to self-destruct, to approach equilibrium, or, in certain instances, to stabilize as more complex systems, as Ilya Prigogine has shown. But for humans today, it is the turbulent processes *per se* that are crucial, because we live in and by them. Whether turbulent conscious processes operate or can be conceptualized in the same way as material or materially constrained phenomena, remains to be seen. Prigogine apparently believes they can. Meanwhile, Michael Polanyi’s argument that the properties of the whole transcend those of the parts and can be recognized only after they emerge merits much pondering. (See Polanyi’s *The Tacit Dimension*, New York: Doubleday, 1966.)
4. William Bryan, “Preventing Burnout in the Public Interest Community,” *The NRAG Papers*, 3, #3, Fall, 1980 (publication of the Northern Rockies Action Group, 8 Placer Street, Helena, Montana 59601).
5. Vickers, “Ecology, Planning, and the American Dream,” in Duhl (1963), p. 101.
6. Michael, *On Learning to Plan—and Planning to Learn* (San Francisco: Jossey-Bass, 1973), pp. 108–143 [Alexandria: Miles River Press, 1997].
7. Vickers, *The Art of Judgment* (1965), p. 33.
8. Vickers, *Freedom in a Rocking Boat* (Middlesex, U.K.: Penguin Books, 1970).
9. The establishment of government regulatory agencies at the request of businesses in order to keep the free-enterprise system functioning is one historical example of the emergence of limited control as a useful technique in a specific context.

## Commentary by Arie de Geus

I am not as pessimistic as Don already was in 1981, when he wrote in *Competence and Compassion in an Age of Uncertainty* that schools, family, society, and other institutions were out of control in the sense that they were malfunctioning, because nobody really knew what to do about them or how to control them.



Arie de Geus

On the contrary, I am even more pessimistic now than Don was then, because no one can ever control an institution or any other association of living systems in exactly the same way that one can control a machine or any other inanimate object. Institutions of human beings cannot be controlled because they are, themselves, living beings. And, unlike inanimate objects, living beings have a will. This means that they cannot be managed and controlled by actions based on causality. The will interferes with the cause-and-effect relationship, which is the basis for much thinking about control.

Don reached his conclusion about absence of control on the premise that the Information Age is leading to more and more knowledge about institutions and their leaders, which in turn is leading to a loss of legitimacy and trust. In short, in 1981 he concluded that things were out of control and unlikely to be any more in control in the future (which, for the purposes of this commentary, is now). That is bad news for managers and everyone else who define competence as the ability to control outcomes.

About the same time that Don was writing—and I being one of the managers he was writing about—Francisco Varela taught me a never-forgotten lesson in management and planning when he quoted to me the opening line of Machado's poem:

*Life is a path that you beat while you walk it,  
And it is only on looking back that you will see the path.  
Ahead of you there is uncharted terrain...*

The Machado "walk" is bad news for all those people who try to predict the future so that they can decide where to steer their institutions. Although, in retrospect, the "walk" seems to tie in neatly with what one is, in fact, doing every working day—so neatly already described by Minzberg—a strategy was emerging: a path you beat while you walked it!

Machado's and Minzberg's message brings bad news and good news. Underlying it is a basically optimistic view that life is self-organizing. And—no surprise from the author of a book called *Learning to Plan and Planning to Learn*—Don Michael arrives at the same conclusion. This is what we need so that we can acknowledge uncertainty and live with it, because the way to regulate in times of uncertainty is by learning rather than controlling. Don brilliantly demolishes myths and the underlying yearning that even today continues to characterize so much of management literature and training courses and consultants' advice about leadership.

Since Don wrote his article in 1981, learning has emerged as an alternative way to manage the relationship between living beings and their environment. Or, to put it differently: Every system that moves and is concerned with managing its development and the evolution of its species discovered learning eons ago!

Management, a relative latecomer to an understanding of living systems, is only now beginning to discover that the real competence of steering whole systems through uncertain and unpredictable environments requires changes in the paradigm of control, and that these changes are gradual and take time! For example, Don's second condition for the new competence is the need to acknowledge and live with uncertainty. One way to do this was developed by Herman Kahn at the Hudson Institute and later during the 1970s by the Shell Group Planning Coordination. This way is referred to as *scenario planning*. One construct of "scenario planning" is to present management with several possible, internally consistent futures, rather than a single future. At Shell, more than 10 years passed before top management stopped asking for the most likely scenario or—typical among adherents of the old competence—asking for the probability of each scenario.

Don's final observation is that in an uncertain, uncontrollable world, joint participation in creating and affecting that world (where one makes one's future, rather than simply undergoing it) is a precondition for engendering trust and for learning. Today, joint participation is still far from common practice in a business world just beginning to emerge from the consequences of re-engineering. As a basic condition for managing a business more effectively and more profitably, it has a long way to go before it will be established in a majority of organizations.

# Bounded Rationality and Organizational Learning

Herbert A. Simon

*This paper was originally published in a special issue of Organization Science. Editors Cohen and Sproull (1991) wrote: “The genesis of this special issue was a conference held in May 1989 at Carnegie Mellon University where some of the papers included were first presented.... Both the conference and this volume have provided opportunities to celebrate Jim March, who has altered the understanding of organizations everywhere in the world with the equally powerful forces of his scholarship and his friendship.” Herbert Simon’s paper is one of the invited essays to this volume “which seeks to account for both the triumphs and failures of people confronting a world complex beyond rational mastery.”*

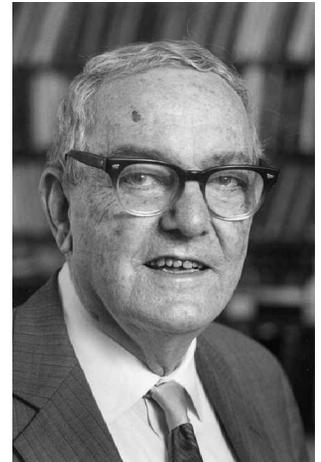
As I understand it, the manifest function of this gathering is to discuss the topic of organizational learning, whereas the latent function is to honor James March. Or is it the other way around? In either case, it is a valuable and pleasurable undertaking. Shakespeare subdivided human life into five major stages. We can refine the latter portion of his scale by taking note, at any given time in our lives, of whom we are just then honoring. Not long after we received our Ph.D.s., it was time to honor our teachers, as they began to reach the appropriate level of dignity for such accolades. A couple of decades later, we found ourselves honoring our contemporaries and colleagues. Still later, those of us who are lucky enough to survive have the opportunity of honoring our students.

Of course, Jim March was never my student. (In my memory of him, back to our earliest acquaintance, he never exhibited that quality of docility that befits students.) Nevertheless, I did offer him his first job, and he did accept. Offering was easy. I met him in New Haven, and had dinner with him, and reached an immediate decision. I probably had to clear the decision with the Dean, Lee Bach, but in those happy days we didn’t worry about faculty committees, so it didn’t take long. I recount all this as evidence of my sound judgement and ability to learn very rapidly. But it wasn’t very hard, at that dinner, to learn that I was dealing with a young political scientist of unusual promise. And how right I was!

## The Organizational Level

One can question whether this anecdote serves as an example of organizational learning—my assigned topic. It was learning by an individual that had consequences for an organizational decision—it provided new factual decision premises that led to an offer. But we must be careful not to adopt too strict a definition of organizational learning, or we will define our topic out of existence, thereby denying the legitimacy of this conference. All learning takes place inside individual human heads; an organization learns in only two ways: (1) by the learning of its members, or (2) by ingesting new members who have knowledge the organization didn’t previously have.

But what is stored in any one head in an organization may not be unrelated to what is stored in other heads; and the relation between those two (and other) stores may have a great bearing on how the organization operates. What an individual learns in an organization is very much dependent on what is already known to (or believed by) other members of the organization and what kinds of information are present in the organiza-



Herbert A. Simon

Reprinted by permission, Herbert A. Simon, Bounded Rationality and Organizational Learning, *Organization Science*, volume 2, number 1, February 1991. Copyright 1991, The Institute of Management Sciences (currently INFORMS), 901 Elkridge Landing Road, Suite 400, Linthicum, MD 21090.

tional environment. As we shall see, an important component of organizational learning is internal learning—that is, transmission of information from one organizational member or group of members to another. Individual learning in organizations is very much a social, not a solitary, phenomenon.

However, we must be careful about reifying the organization and talking about it as “knowing” something or “learning” something. It is usually important to specify *where* in the organization particular knowledge is stored, or *who* has learned it. Depending on its actual locus, knowledge may or may not be available at the decision points where it would be relevant. Since what has been learned is stored in individual heads (or in files or data banks), its transience or permanence depends on what people leave behind them when they depart from an organization or move from one position to another. Has what they have learned been transmitted to others or stored in ways that will permit it to be recovered when relevant?

The justification of a conference on organizational learning, exemplified in the papers already presented, is that human learning in the context of an organization is very much influenced by the organization, has consequences for the organization and produces phenomena at the organizational level that go beyond anything we could infer simply by observing learning processes in isolated individuals. It is those consequences and those phenomena that we are trying to understand here. And my task is to show how some of those consequences and phenomena arise from the fact that human rationality is very approximate in the face of the complexities of everyday organizational life. Along the way, I will have some comments on ways in which we can do research and thereby gain new knowledge about these phenomena—learn about organizational learning.

Let me persevere for a moment on that term “organizational level.” Readers of the book, *Organizations* (1958), that Jim March and I wrote more than 30 years ago have sometimes complained that it was not a book on organizations at all but on the social psychology of people living in an organizational environment. The complaint was usually registered by sociologists, and was not without merit.

We need an organization theory because some phenomena are more conveniently described in terms of organizations and parts of organizations than in terms of the individual human beings who inhabit those parts. There is nothing more surprising in the existence of those phenomena than in the existence of phenomena that make it convenient for chemists to speak about molecules rather than quarks. Employing a more aggregate level of discourse is not a declaration of philosophical anti-reductionism, but simply a recognition that most natural systems do have hierarchical structure, and that it is sometimes possible to say a great deal about aggregate components without specifying the details of the phenomena going on within these components.

Hence, in what follows, I will have little or nothing to say about the mechanism that enable an individual human being to learn, but will focus on the ways in which information is acquired by organizations, is stored in them, and is transmitted from one part of an organization to another. I will be concerned with what are usually called emergent phenomena at the organizational level, and hope that sociologists will find this essay more “organizational” than was our book.

## The Structure of Roles

For purposes of discussing organization learning, organizations are best viewed as systems of interrelated roles, and that is the way I have been viewing them here. How can we conceptualize roles so as to make this concept useful for organization theory?

The point has perhaps not been emphasized in the sociological literature as often as it should be that a role is not a system of prescribed behaviors but a system of prescribed decision premises. Roles tell organization members how to reason about the problems and decisions that face them: where to look for appropriate and legitimate informational premises and goal (evaluative) premises, and what techniques to use in processing these premises. The fact that behavior is structured in roles says nothing, one way or the other, about how flexible or inflexible it is.

Each of the roles in an organization presumes the appropriate enactment of the other roles that surround it and interact with it. Thus, the organization is a role *system*.

## Organizational Learning and Innovation

Since the organizations I know best are universities, and since I have not engaged in recent years in any systematic organizational research, I will have to draw upon my university experiences for most of my examples of organizational learning phenomena. Let us take the case of a university that wants to innovate along some dimension of educational practice—perhaps by building its instruction around the Great Books, or by focusing on something it calls liberal-professional education. I'll use the latter example, which is closer to home.

The graduate schools from which a university draws its new teachers are organized in disciplines, some of which are saturated with the values of liberal education (and transmit them to their students), others of which are devoted to professional education. There are no disciplines, to the best of my knowledge, that fly the banner of “liberal-professional” education. Clearly, a university that wishes to implement this kind of instruction is faced with a major learning problem for its new (and probably its old) faculty members. It has no chance of accomplishing its goal without substantial education, and reeducation, of its inductees. Moreover, the reeducation is not a one-time task but a continuing one, unless the educational climate of the enviroing society changes so that it begins to produce graduates already indoctrinated with the desired goals.

### *Effects of Turnover*

Turnover in organizations is sometimes considered a process that facilitates organizational innovation—getting out of the current rut. But in the case before us, where the organization is trying to distance itself from general social norms, turnover becomes a barrier to innovation, because it increases training (socialization) costs. To preserve its distinct culture, an organization of this kind may try to train its own personnel from the ground up, instead of relying on outside institutions to provide that training. Such inbreeding will have other organizational consequences. (I state these conclusions very confidently, but they should really be stated as researchable hypotheses.)

Contrast this with the organization that finds in its environment training organizations that share a common culture with it. The Forest Service, in Herbert Kaufman's (1960) classical account of it, is such an organization, counting on Schools of Forestry to provide it with new employees who are already indoctrinated with its values and even its standard operating procedures. The same thing occurs, less precisely but on a larger scale in such professions as engineering, where there are close links between the engineering colleges and the industries, with a feedback of influence from industry to the engineering curricula.

### *An Experiment on Stability*

If turnover is sufficiently low, organizational values and practices can be stabilized by the fact that each new inductee finds himself or herself confronted with a social system that is already well established and prepared to mold newcomers to its procedures. This phenomenon can be produced in the laboratory (and I believe actually *has* been produced). But I cannot put my hands on the appropriate reference).

In a certain experimental paradigm in social psychology (often called the Bavelas communication network) different patterns of communication are induced in five-person groups. In one pattern (the wheel) one member of the group serves as leader or coordinator and all the other members communicate with him or her, and not directly with each other. In another pattern (the circle) the members are arranged in a symmetric circular network, each member communicating only with the two who are immediately adjacent. The groups are performing a task that requires them to share information that is given to the members individually (Bavelas 1950).



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Now consider two groups whose members are A1, A2, A3, A4, A5, and B1, B2, B3, B4, B5, respectively, where the A's are in the wheel pattern and the B's in the circle pattern. After they are thoroughly trained in the task, we open all the communication channels so that each member can communicate directly with all the others in that group. If they are under sufficient pressure to perform rapidly, the first group will likely continue to use the wheel pattern of communication and the second group the circle pattern.

After a number of additional trials, interchange A1 and B1. One would predict that the groups would continue to use their respective patterns. After a few more trials, interchange A2 with B2, then A3 with B3, and so on until the original wheel group is populated by B1 through B5, and the original circle group by A1 through A5. We would predict that the A's would now be communicating in a circle pattern and the B's in a wheel pattern. As I said, I believe the experiment has been run, but I do not know where the results were published. If it works as predicted, it demonstrates an emergent property of an organization—a persistence of pattern that survives a complete replacement of the individuals who enact the pattern.

Let us return to the topic of organizations that deviate from their surrounding cultures. The example of the deviant university can be extended to virtually all organizational innovation. Among the costs of being first—whether in products, in methods of marketing, in organizational procedures, or what not—are the costs of instilling in members of the organization the knowledge, beliefs, and values that are necessary for implementing the new goals. And these costs can be exceedingly large (as they are in the case I used as my example). The tasks of management are quite different in organizations that can recruit employees who are prefashioned, so to speak, than they are in organizations that wish to create and maintain, along some dimensions, idiosyncratic subcultures.

A major topic, therefore, in organizational learning is an understanding of the mechanisms that can be used to enable an organization to deviate from the culture in which it is embedded. As my university example suggests, this topic can be examined in the field, and particularly in a historical vein, by following the course of events in

organizations that are identified as distancing themselves along one or more dimensions from the surrounding culture. If we are concerned about the imprecision of case studies as research data, we can console ourselves by noting that a man named Darwin was able to write a very persuasive (perhaps even correct) book on the origin of species on the basis of a study of the Galapagos Islands and a few other cases. To the best of my recollection, there are no statistics in Darwin's book.

### *Organizational Memory*

The process of retaining unique traits within an organization is a part of the more general phenomena of organizational memory. Since much of the memory of organizations is stored in human heads, and only a little of it in procedures put down on paper (or held in computer memories), turnover of personnel is a great enemy of long-term organizational memory. This natural erosion of memory with time has, of course, both its advantages and disadvantages. In the previous section I emphasized one of its disadvantages. Its advantage is that it automatically removes outdated irrelevancies (but without discriminating between the relevant and the irrelevant). Leaving aside the erosion problem, how are we to characterize an organization's memories?

Research in cognitive psychology in recent years has made great progress in understanding human expertise (Simon 1981, Chapter 4). What has been learned can be summed up in a few generalizations. First, expertise is based on extensive knowledge—no knowledge, no expertise. A world-class expert in any field (several domains have been studied in some detail) holds in memory some 50,000 chunks (familiar units) of relevant information. (The 50,000 should not be taken too literally, but it is correct within an order of magnitude.)

This body of knowledge is stored in the form of an indexed encyclopedia, which is technically referred to as a *production system*. Associated with each chunk is a set of cues

*Turnover of personnel is a great enemy of long-term organizational memory.*

which, whenever evoked by a stimulus, will provide access to that chunk in semantic memory. The memory content may be of many kinds: the name associated with the cue, information about the cued phenomenon, things to do about it, and so on. The physician who sees the symptom (the cue) is reminded of the name of a disease often associated with it, information about the likely course of the disease, possible medical action to cure it, additional tests that would increase the reliability of the diagnosis, and so on.

Armed with knowledge stored in his or her production system, the expert is prepared (but only in the domain of expertise) to respond to many situations “intuitively”—that is, by recognizing the situation and evoking an appropriate response—and also to draw on the stored productions for more protracted and systematic analysis of difficult problems.

We know also that no one—literally no one—becomes a world class expert in any professional domain with less than ten years of full-time dedication to learning, to acquiring the 50,000 indexed chunks organized in the production system. The evidence for this time requirement is overwhelming, and child prodigies provide no exceptions (Bloom 1985; Hayes 1989, Chapter 11).

Against the background of this picture of expertise, the memories of an organization can be represented as a vast collection of production systems. This representation becomes much more than a metaphor as we see more and more examples of human expertise captured in automated expert systems. One motive for such automation, but certainly not the only one, is that it makes organizational memory less vulnerable to personnel turnover.

## Ingesting Innovations from Without

My previous example had to do with organizations trying to retain their identities in a world of alien ideas, fighting the threat of increasing entropy that comes with the ingestion of personnel. The other side of the coin is the problem of assimilating innovations that originate outside the organization, or that have to be transmitted from a point of origin in the organization to points of implementation. Here, let me take the research and design process as my example, but again in the context of universities. The translation to corporate situations will follow.

### *Research as a Learning Mechanism*

So-called research universities usually proclaim that they have a dual mission: to create new knowledge and to transmit that knowledge to their students. Research accomplishes the former, and instruction the latter. Of course the real pattern is much more complicated than that. In the first place, the new knowledge produced by research is usually not initially transmitted to students at the same university, but to researchers throughout the world, mainly by publication. In the second place, most of the knowledge transmitted to students in a university is not produced at that university. Is there really any reason why the research (which is one process of learning) and the instruction (another learning process) should go on in the same institution?

When we examine the research process more closely, we see that it differs rather fundamentally from the usual description. In any given research laboratory, only a tiny fraction of the new knowledge acquired by the research staff is knowledge created by that laboratory; most of it is knowledge created by research elsewhere. We can think of a research scientist as a person who directs one eye at Nature and the other at the literature of his or her field. And in most laboratories, probably all laboratories, much more information comes in through the eye that is scanning the journals than the eye that is looking through the laboratory microscope.

It is probably true, and certainly widely suspected, that in any field of research a large fraction of the less distinguished laboratories could vanish without seriously reducing the rate at which new knowledge is created. Does that mean that these dispensable laboratories (dispensable in terms of the creation of knowledge) do not pay their way? The conclusion does not follow if the main function of a laboratory is not the creation of knowledge but the acquisition of knowledge. In military parlance, we would label such laboratories intelligence units rather than research units. They are units of the or-

ganization that are specialized for the function of learning from the outside world (and perhaps, incidentally, sometimes creating new knowledge themselves).

As a matter of fact, in our more honest moments in universities, we sometimes recognize the intelligence function of “research.” When we are asked why we require faculty members who are primarily teachers to publish in order to gain promotion or tenure, we answer that if they do not do research, they will not remain intellectually alive. Their teaching will not keep up with the progress of their disciplines. It is not their research products that we value, but their engagement in research which guarantees their attention to the literature—to the new knowledge being produced elsewhere.

It can be highly dysfunctional for a laboratory to live with the belief that its main product is the new knowledge produced by its in-house research. Such a belief produces the NIH (Not Invented Here) phenomenon, with a consequent reinvention of many wheels.

### *R & D and Manufacturing*

The problems of organizational learning have just begun when an intelligence unit extracts some possibly relevant new knowledge from the environment (or invents it itself). The problem of developing new products from (local or imported) research ideas and of carrying them to the stage of successful manufacture and marketing is a classical organizational problem of this kind. A successful product must satisfy a whole range of constraints, the knowledge of which may originate in many parts of the organization. Among these are constraints on product characteristics determined by end use and markets, constraints determined by manufacturing considerations, and constraints determined by natural laws over and above those involved in the nuclear concept.

**End Use and Market Constraints.** An idea for a better mousetrap originating in a research laboratory has to satisfy the needs and demands of real-world markets. Research and development is usually conceived to begin with a key scientific idea which is elaborated through a development process. The development process annexes a succession of constraints to the initial research idea, continually modifying the idea until it satisfies them (or until it appears that they cannot be satisfied). Acquiring knowledge of the appropriate constraints is an important learning process, since that knowledge is generally widely distributed throughout the organization and elsewhere, and is seldom all available to the research and development staff at the beginning of the process (Simon 1976, Chapter 17).

In some industries, control gear would be an example, a considerable fraction of ideas for new products originates with a knowledge of customers’ needs and problems—the nature and uses of the equipment to be controlled. In these cases, the sales engineers need to be incorporated in the intelligence process that initiates new product development. Here there is a reverse flow of instruction from the usual conception of the R & D process.

In whichever direction the ideas flow through the organization, it is clear that nothing will happen unless they do flow. Normally, the learning associated with a new product must be highly diffused through the organization—many people have to learn many things, and such lateral diffusion and transfer is far from automatic or easy. It must overcome motivation obstacles (I have already mentioned the NIH syndrome), and it must cross cognitive boundaries.

**Manufacturing Constraints.** A common complaint about contemporary American practice in new product design is that the design process is carried quite far before manufacturing expertise is brought to bear on it. But ease and cheapness of manufacture can be a key to the prospects of a product in competitive markets, and failure to consider manufacturability at an early stage usually causes extensive redesign with a corresponding increase in the time interval from initial idea to a manufactured product. These time delays are thought to be a major factor in the poor showing of many American industries in competing with the Japanese.

We know some, if not all, of the conditions for making communications between designers and manufactur-



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ing engineers effective. Each group must respect the expertise of the other, and must acknowledge the relevance of that expertise to their own problems. Moreover, each must have a sufficient knowledge and understanding of the others' problems to be able to communicate effectively about them. Experience shows that these conditions are unlikely to be satisfied unless members of each group (or a sufficient number of members of each group) have had actual experience with the activities and responsibilities of the other group. In typical Japanese manufacturing practice, this shared understanding and ability to communicate is brought about by extensive lateral transfer of engineers in the course of their careers.

These examples will illustrate some of the kinds of learning involved, some of the problems of bringing it about, and some of the mechanisms for solving those problems when an organization brings in innovations from outside or tries to transport them from one organizational unit to another.

## Acquiring New Problem Representations

In my earlier discussion of a culturally deviant organization, I contrasted the way in which roles (decision premises) are acquired in such an organization from the way in which they are acquired in an organization that builds upon the culture of the society that provides it with new members.

In my discussion of research and development, I examined the ways in which new decision premises may be injected into organizations and diffused through them. In neither discussion did I distinguish sharply between learning that brings new knowledge to bear within an existing culture and knowledge that changes the culture itself in fundamental ways. I would like to turn now to that distinction (which clearly is a relative, and not an absolute one).

In the literature of problem solving, the topic I am now taking up is called "problem representation." In the past 30 years, a great deal has been learned about how people solve problems by searching selectively through a problem space defined by a particular problem representation. Much less has been learned about how people acquire a representation for dealing with a new problem—one they haven't previously encountered.

Two cases must be distinguished: (1) The learner is presented with an appropriate problem representation, and has to learn how to use it effectively. That is essentially what is involved when organizations, already formed, ingest new members from an alien culture, (2) the organization is faced with a totally new situation, and must create a problem representation to deal with it, then enable its members to acquire skill in using that representation. In the extreme case, a new organization is created to deal with a new task. A new problem representation, that is to say, a role system, is created.

### *Creating an Organization*

Some years ago I was fortunate enough to have a grandstand seat at the creation of the Economic Cooperation Administration, the U.S. governmental organization that administered the Marshall Plan of aid to Western European countries. In that process, which extended through most of the year 1948, competing problem representations emerged from the very first days, each implying a quite different organization structure, set of organizational roles, from the others. These problem representations were not made out of whole cloth, but arose from analogies between the presumed task of the ECA and other tasks that were familiar to the inventors of the representations from their previous training and experience.

For example, some participants in the planning drew an analogy between the ECA and wartime organizations that had supplied essential goods to the allies. Others thought of it as an exercise in investment banking. Others were reminded of the theory of international trade balances. From each of these views, a set of organizational roles could be inferred, and each such structure of roles was quite different from the others. Which representations took root in which parts of the burgeoning organization depended heavily on the cultures from which these parts recruited their new members.

I have told elsewhere the story of how this competition was resolved (Simon 1976, Chapter 26). One technique used was to disseminate a document that presented one of

*Among the contents of organizational memories perhaps the most important are the representation of the organization itself and its goals.*

the representations (the one based on the balance of trade analogy) persuasively, and which mapped out its organizational implications. Another technique was to starve out the units dedicated to other representations by denying them new personnel.

### *Why Representation Matters*

In my remarks thus far I have said only a little about bounded rationality—about the limits upon the ability of human beings to adapt optimally, or even satisfactorily, to complex environments. Attention to the limits of human rationality helps us to understand why representation is important, and how policy statements imply representations. About a decade ago, the U.S. Steel Corporation

began to contract its steel operations and to divert a major part of its capital to the acquisition of assets in the oil industry. The motivation of these moves was a particular representation of the corporation's purposes.

If, a few years ago, you had asked executives of U.S. Steel what the corporation's goals were, they might have answered: "To manufacture and market steel efficiently and profitably."

If you had persisted further, they might even have agreed that profit was the "bottom line." But it would have been hard or impossible for them to describe the company without strong emphasis on its focus on steel. Their views might have been paraphrased: "We are out to make profits, but the way for us to make profits is to be an efficient steel manufacturer. That is a domain in which we have knowledge and expertise, and in which we can make good decisions."

For the conglomerate that U. S. X. has become, an entirely different representation is required. The corporation has product divisions that can still be described in ways that resemble the earlier corporation—the world "steel" applying to some divisions, and "oil" to others. But in the new representation, these divisions are only components operating within a larger framework in which the fundamental policy is to invest available funds in the directions that will yield the greatest returns. Within that framework, new expertise is required: essentially the expertise of an investment banker.

It should not be surprising that under these conditions we often see massive turnover of personnel at all levels. It is often cheaper and quicker to import the new expertise and dismiss the old than to engage in massive reeducation.

### **Conclusion**

In this paper, my intent has been to show how concepts that have arisen in contemporary cognitive psychology for describing human learning and problem solving processes, and human expertise, can be applied to the analysis of organizational learning. I have made no attempt to be complete or comprehensive in my account. Instead, I have been satisfied to present some examples of how specific organizational situations can be understood in terms of these concepts.

Along the way, I have made a few comments on research strategy. I have remarked on how experiments may be useful for studying mechanisms. But above all else, I have emphasized the role of careful case studies in research on organizational learning. By "careful," I mean studies that explore the contents of important organizational memories, the ways in which those contents are accessed (or ignored) in the decision making process, and the ways in which they are acquired by organizations and transmitted from one part of an organization to another. Among the contents of organizational memories perhaps the most important are the representation of the organization itself and its goals, for it is this representation (or representations, if it is not uniform

throughout the organization) that provides the basis for defining the roles of organization members.

If organization theory finds it useful to draw upon some of the ideas that have emerged in cognitive psychology, it will be advantageous to borrow also the terminology used in discussing these ideas. Without working toward a higher level of consistency in terminology than prevails in organization theory today, it will be difficult or impossible to cumulate and assemble into a coherent structure the knowledge we are gaining from individual case studies and experiments. We will be continually reinventing wheels. That is a luxury we cannot afford. The happy band of researchers on organization theory is sufficiently small to be kept fully occupied discovering and verifying the theory just once.

## Acknowledgments

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## Commentary by J. Wil Foppen

Herbert A. Simon's explorative analysis of organizational learning is a rich source for reflection and learning. The awareness of the limits of man's ability to deal with organizational complexity stimulates greater understanding.

From hindsight, this 1991 article continues to set a research agenda for organizational learning and knowledge management beyond the millennium. The title implies the key concepts: human approximations and organizational emergence.

It is tempting to paraphrase Simon's observations, but the result would be a less clear wording of their strengths. I recommend a close reading of his arguments.

The article is a great knowledge management agenda that deals with both the richness of Sveiby's *New Organizational Wealth* as well as with a recent *HBR* analysis on intra-corporate knowledge sharing within consultancies. There is more. Simon's 1991 notes on U.S. Steel are a prelude to the core competencies debate, which helps to compete for the future. Meanwhile, his insightfulness in social psychology relates to several of the "Palo Alto" contributions to learning.

I would like to highlight two elements, given their immediate relevance for universities today.

- To ensure that universities will not lose their value and intellectual capital, the high turnover of non-tenured faculty has to be transformed into productive co-operation between core and virtual faculty.
- Acknowledgement that the intelligence function of research will contribute to the integration of core and virtual faculty. My experience shows that virtual faculty serves the intelligence function better than tenured faculty serves research.

As the dean of a business school, I was inspired to try to project Herbert Simon's approach on management education and its bounded rationality. Hopefully, this kind of transformation contributes to a continuing discussion on limitations and opportunities for (deep and broad) learning in organizational contexts.<sup>1</sup>

### *Management and Education*

Man's deep probings into nature and different forms of society have created many problems, which in themselves, partly because of the way in which they have been dealt with, have led to a far greater need for management.



J. Wil Foppen

This development underlines what has by now become the social importance of management and, of course, its reproduction via management education. Management is pivotally important in modern society. For this reason, no matter what, reflecting about management, certainly at university level, is of great relevance to management practice. Apart from the question of whether management's claim that it is indispensable is valid or not, what counts is the fact that practically everyone *believes* it is.

Participants in career-oriented educational programs may safely assume that their performance level is likely to improve. Management education, indirectly emulating what happens elsewhere in training courses for established professions, follows those courses' example by supplying knowledge and skills in functional areas.

That no management training program can replace experience goes without saying. What participants in a management training program can do is acquire the competence to make maximum use of their experiences, where a knowledge of perspective and the development of reflective and critical faculties can be helpful. Open and objective discussions can also contribute greatly. This approach aligns with features of "liberal education."

A second link between education and managers' achievements lies in an improved ability to deal with change. After all, if in order to implement change one were solely dependent on managing culture, things would move too slowly.<sup>2</sup> Education is more effective. An educated manager will be less inclined to be easily shocked by what is new, and stimulated to view change as a constant.

The paradox is that, on the one hand, management education aims to make management more effective, but on the other, it can, perhaps by definition, give no exact description of how to achieve this. "The paradox is that it is only by concern for broader goals, only by taking our eye off the ball, that education will prove to be useful. What seems to be required is some sleight of hand, some deception whereby we appear to give the client what they want, while we work to our own conception of what they need."<sup>3</sup>

In other words, what is required is a trick, a form of deception by which it appears as if the client is getting what he/she wants, while what happens is exactly what management education has deemed necessary.

La Fontaine words the essence of this process strikingly in one of his fables:

"The children (presumably) were too lazy to earn a living by working in the fields, as their father wanted them to. So he told them instead that there was a treasure buried in the ground. Eager to get rich in a hurry, they overturned the soil in an unsuccessful search for the treasure, and in doing so made it so fertile that they indeed got rich."<sup>4</sup>

### *Hall of Mirrors*

Academic thinking on management takes place in a hall of mirrors. Management theories are a socially "managed" claim on a body of knowledge whose component parts contribute to the reinforcement of the very same dominant planning principle that the academics want to help unmask.

In fact, the management of an organization and the organization of management thinking are mirror images of each other. They reflect and reinforce the surrounding system of dominant values and prevailing symbols. This mutual relationship is neither readily recognized nor acknowledged. Nor is much attention paid to what this might mean with respect either to theorizing about management or to educating for it.<sup>5</sup>

Much current thought on planning, management, and knowledge thus represents a reality it has created itself. In this "Newtonian" vision, causal thinking and the state of rest and stability determine what is considered normal and should remain so. Movement is nothing more than the transition from one stable state to the next. Change, movement, and transformation are merely stepping stones and side issues. They are not essential parts of "true" reality.

Once again, we must become familiar with the fundamental mobility of reality: "It is movement that we must accustom ourselves to look upon as simplest and clearest, immobility being only the extreme limit of the slowing down of movement, a limit reached only, perhaps, in thought and never in nature."<sup>6</sup>

If one assumes the primacy of movement and process above static entities and permanence, this will have radical consequences for grasping and understanding the process of managing, and for the andragogical agenda of management education.

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## Commentary by John Kao

I read "Bounded Rationality and Organizational Learning" while sitting at my crescent-shaped desk at the Idea Factory, located in SOMA (south of Market area) in San Francisco's multimedia gulch, ground zero of the new economy.

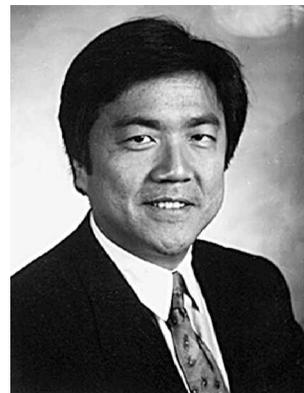
There doesn't seem to be much bounded rationality in this part of the world. E-Bay, Amazon, and Yahoo have market caps in the stratosphere. The town is filled with 20- and 30-something entrepreneurs with a "dot-com" idea and great dreams that they hope will lead to the next big thing.

And yet, Herbert Simon's article, written in the pre-e-commerce era, seems remarkably prescient of the issues faced every day in this brave new world. Here, organizations seem temporary, rather than enduring. Increasingly, they seem like temporary housings for the DNA of great ideas. How can they then achieve the learning and the flexibility not only to survive but to triumph? If the only asset you have is the ability to reinvent your competitive advantage over and over again, as pundits in the new economy would have it, the ability to foster the collaboration that is at the heart of organizational learning—the ability to create, represent, and share knowledge—become crucial. And in this regard, the web fundamentally changes the notion of knowledge, allowing us to truly apply "knowledge at the decision-point where it is relevant."

These days, talent has a choice as never before. Being in the place where you can do your best work becomes the strange attractor in a business world increasingly shaped by the war for talent. That place must enable collegiality, interaction, learning, and meaning. But how does an organization persist in making meaning for its members when transience is increasingly the norm, with all its financial as well as hidden costs? How should organizations, in Simons' words, "instill in members of the organization the knowledge, beliefs and values that are necessary for implementing new goals." This is especially important when medium (and production value) are as important as message. I was quoted recently as saying that no one stormed the barricades during the French Revolution because they received a memo. These days, we need story-telling, production value, drama, design, and appeal in order to make meaning within our organization. This is especially true with a new generation that cut their teeth on movies, MTV, and the graphic style of *Wired*. Equally important is Simon's assertion that we acquire new decision premises by seeing things differently. Strategic foresight isn't just an intellectual exercise: It requires story-telling and drama in order that perceptions may change in the interests of innovation.

And in an era in which it may be more expedient to "import new expertise and dismiss the old," how do organizations create institutional memory? How do we represent knowledge in such a way that it can be shared and remembered? Much of the answer to this set of questions may come from the discipline of design, a field that has always known how to embody ideas so that they can be shared, reshaped, and recrafted in an ongoing cycle of prototyping and iteration.

"Bounded Rationality and Organizational Learning" surprises us with its relevance to the concerns of the new economy: the impact of technology on collaboration, the need for the integration of design and strategic thinking into the practice of innovation, and defining the "how-to" of knowledge creation, representation, and sharing.



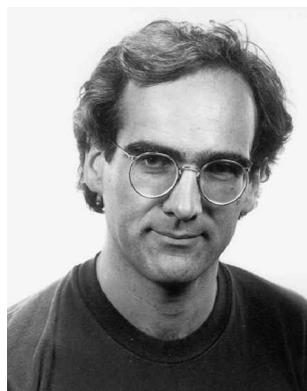
John Kao

# Organizing Knowledge

*John Seely Brown and Paul Duguid*



John Seely Brown



Paul Duguid

The firm, taken for granted in the conventional economy, appears to have a doubtful future in the information economy. The new technologies that are helping to define this new economy are simultaneously battering the venerable institutions of the old economy—the press, broadcast media, universities, even governments and nations are all under threat. Enthusiasts suggest that no formal organization need or should come between the empowered individual and Marshall McLuhan’s amorphous “global village.” So it’s not surprising to hear that cyberspace has served notice on the firm that its future, at best, may only be virtual.

Many such predictions favor a “transaction cost” view of the firm. Transaction costs are portrayed as the glue that holds an organization together, and many of these are thought to derive from inefficiencies in communication. Thus, it is easy to conclude that the new communications technologies might drive transaction costs so low that hierarchical firms will dissolve into markets of self-organizing individuals.

Recently, however, through the work of Ikujiro Nonaka and others, a “knowledge-based” view of the firm has risen to counter the transaction-cost approach. Knowledge-based arguments suggest that organizational knowledge provides a synergistic advantage not replicable in the marketplace. Thus its knowledge, not its transaction costs, holds an organization together. The knowledge-based view provides vital insight into why firms exist (and will continue to exist) and thus why organizing knowledge is a critical part of what firms do.

While knowledge is often thought to be the property of individuals, a great deal of knowledge is both produced and held collectively. Such knowledge is readily generated when people work together in the tightly knit groups known as “communities of practice.”<sup>1</sup> As such work and such communities are a common feature of organizations, organizational knowledge is inevitably heavily social in character. Because of its social origin, this sort of knowledge is not frictionless. Beyond communities, locally developed knowledge is difficult to organize. The hard work of organizing knowledge is a critical aspect of what firms and other organizations do.

There are those who see the organization as primarily the unintended consequence of individuals acting in isolation and who believe that an organization’s central challenge is to discover knowledge. Once found, such arguments tend to assume, knowledge should travel easily. However, organizations are often replete with knowledge (and also deeply embedded in larger fields or “ecologies” of knowledge). The critical challenge, from this perspective, is to make this knowledge cohere.

It is easy to assume that knowledge-based arguments apply only to what are recognized as “knowledge” firms. These are firms (in software or biotechnology, for example) whose market value far outstrips their conventional assets and rests instead on intellectual capital. The transaction-cost view, it might seem, still applies to every other form of organization. This, however, is not the case. All firms are in essence knowledge organizations. Their ability to outperform the marketplace rests on the continuous generation and synthesis of collective, organizational knowledge.<sup>2</sup> For all organizations, the cultivation of this knowledge—often an implicit, unreflecting cultivation—is the essence of developing a core competency to maintain the organization and resist its dissolution.

The organizational knowledge that constitutes “core competency” is more than “know-what,” explicit knowledge which may be shared by several. A core competency requires the more elusive “know-how”—the particular ability to put know-what into practice.<sup>3</sup> While these two work together, they circulate separately. Know-what circulates with

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relative ease. Consequently, of course, it is often hard to protect. (Hence the current crisis in intellectual property laws.) Know-how, by contrast, embedded in work practice (usually *collective* work practice) is *sui generis* and thus relatively easy to protect.<sup>4</sup> Conversely, however, it can be hard to spread, coordinate, benchmark, or change.

The recent vogue for knowledge management must encompass not simply protecting intellectual property in canonical knowledge organizations, but fostering this more complex form of organizational capital. In practice, this sort of fostering is very much what good managers do, but as knowledge production becomes more critical, they will need to do it more reflectively.

## Ends of Organization

### *Self-Organizing Systems*

Disintermediation, demassification, and disaggregation have become the watchwords of cyberspace. New technologies are apparently breaking collectives down into individual units. (Indeed, it sometimes seems that the only large aggregates needed for the “third wave” will be very long words.) Any form of coherence and coordination beyond the individual, it is predicted, will be the effect of self-organizing systems.<sup>5</sup>

Undoubtedly, in the hands of prominent economists like Kenneth Arrow or Friedrich Hayek, analysis of self-organizing “catallaxies” has helped reveal the very real limits of formal organization.<sup>6</sup> In particular, they have helped show the folly of planning economies or ignoring markets. They do not, however, necessarily reject planning or nonmarket behavior on a more local scale. Nor do they prove, as some would have us believe, that deliberate organization is somehow vicious, unnatural, and anti-market. As Hayek himself noted, within spontaneous catallaxies, goal-oriented organizational planning is important.

Curiously, many who argue for self organization often sound less like economists than entomologists: bees, ants, and termites (as well as bats and other small mammals) provide much of the self-organizing case. In a related vein, others draw examples from “artificial life,” whose systems are themselves usually modeled on insect- and animal-like behavior.<sup>7</sup> While these provide forceful models, it’s important to notice their limits. Humans and insects show many intriguing similarities, but these should not mask some important differences.

In particular, most champions of complex adaptive systems, particularly those of artificial life, overlook the importance to human behavior of deliberate social organization. It is well known that humans distinguish themselves from most other life forms by the increasingly sophisticated technologies they design. It is less often noted that they also distinguish themselves by designing sophisticated social institutions. To pursue the analogies from entomology or artificial life much further, we would need to know what might happen if bugs decided to form a committee or pass a law or artificial agents organized a strike or joined a firm.

Ants moving across a beach, for example, do exhibit elaborate, collective patterns that emerge as each individual adjusts to the environment. In this way, they reflect important aspects of human behavior—of, for example, the uncoordinated synchronicity of sunbathers on the same beach seeking the sun or trying to keep the blown sand out of their sandwiches. But, unlike the sunbathers, ants don’t construct coastal highways to reach the beach; or beachfront supermarkets to provide food; or farms to supply the supermarket; or coastal commissions to limit highway building, supermarkets, and farming; or supreme courts to rule on the infringement on constitutionally protected private property rights of coastal commissions; or, indeed, constitutions or property rights at all.

Thus, while ants easily fall victim to diminishing provisions of their local ecology, humans do not. By organizing collectively, people have learned to produce more food out of the same areas of land, to extend known energy resources and search for new ones, to establish new regions for human endeavor, and to design the very technologies

*A core competency requires the more elusive “know-how”—the particular ability to put “know-what” into practice.*

that are now paradoxically invoked as the end of organization. In all such cases, organization has helped to foster and focus humanity's most valuable resource: its infinitely renewable knowledge base.

But perhaps most significantly of all, humanity has relied on organization not merely to harness advantage, but to ward off disasters produced by the downside of self-organizing behavior. For example, establishing and continually adjusting socially acknowledged property rights have limited the "tragedy of the commons." Establishing certain trading regulations has prevented markets from spontaneously imploding. Such institutional constraints help channel self-organizing behavior and knowledge production in productive rather than destructive directions. This ability may be one of humanity's greatest assets.

It is easy to cite the undeniable power of spontaneous organization as a way to damn formal organization. However, it makes no more sense to demonize institutions than it does to demonize self-organizing systems. Rather, each must be deployed to restrain the other's worst excesses. That challenge is profoundly difficult, facing as it must the complex, reflexive feedback loops that social institutions create. These make human organization quite different from that of other species (and consequently make social sciences different from natural sciences).

### *Institutions and Technology*

If institutions are endemic to human society, then it seems a mistake to set them in opposition to technologies or economies as some of the cybergurus do. Indeed, a glance back to the last great period of technological innovation suggests the importance of institutions. The end of the nineteenth century gave us the telegraph, the train, the car, the

telephone, the airplane, the cinema, and much more. Yet it has been argued that the incredible creative energies of the nineteenth century are evident less in industry, engineering, or the arts than in the new kinds of social institutions that developed (among which are the limited liability corporation, the research university, and the union).<sup>8</sup> Moreover, Nobel economist Douglass North suggests that it was the absence of suitable institutions that caused the century-long lag between the dawn of industrial revolution and the late-nineteenth century's dramatic technological

and economic expansion. Similarly, business historian Alfred Chandler claims that half of this expansion resulted from organizational, not technological innovation.<sup>9</sup>

So, while the changing economy may indeed be suffering from the drag of "second wave" institutions, as Alvin Toffler suggests, it doesn't necessarily follow (as Toffler's wired disciples often seem to think) that therefore the third wave will not need institutions at all. One clue to today's "productivity paradox" (which notes that the increasing investment in new technology is not yet showing up in increased national productivity) may well be that society is still struggling to develop third-wave institutions adequate for a new economy.<sup>10</sup>

If nothing else, these examples suggest a complex relationship between organizations and technologies which crude juxtaposition of new technologies and old institutions oversimplifies. It is often pointed out that the arrival of printing technology in the West profoundly destabilized the Catholic church, the dominant institution of its day. But even here, the direction was not simply against institutions. Printing allowed other institutions, the university in particular (and, in some arguments, the modern state) to flourish. And today, while communications technologies have dispersed power and control in some sectors, leading to disaggregation and empowerment, in others they have clearly led to centralization and concentration. Francis Fukuyama points, for instance, to the extraordinary success of firms like Wal-Mart and Benetton, both of which have used technology to centralize decision making and disempower their peripheries. In other sectors (communication in particular) the trend has also been toward concentration.

More generally, the relationship between improving technologies and shrinking organizations has not been linear. The telegraph, typewriter, and telephone—which launched the communications revolution—allowed the growth and spread of the giant firms of industrial capitalism as well as the proliferation of small businesses. Similarly,

*However, it makes no more sense to demonize institutions than it does to demonize self-organizing systems. Rather, each must be deployed to restrain the other's worst excesses.*

today the emergence of small, adaptable firms may not point in any simple way to market disaggregation. Research into small firms and start-ups highlights the concept of the “embedded firm.”<sup>11</sup> These arguments indicate that many important relations between firms, let alone within firms, are not ultimately self-organizing, market relations. Increasingly, they reflect complex interorganizational networks. Even where interfirm relations are extremely competitive, cross-sector cooperation and agreements are often highly significant. In the cutthroat world of silicon chip manufacture, for example, firms continuously cross-license one another’s patents and even engage in joint research through SEMATECH, a supraorganizational body. The classic antithesis between hierarchy (the firm) and market—even when hedged with the notion of “hybrids”—seems inadequate to describe what is going on. To understand them, we need better insight into what organizations do, and how knowledge plays an important part.

### *Organizational Advantage*

The firm has a future because it provides an important means of knowledge generation. In particular, it gives rise to types of knowledge not supported in a marketplace of individuals linked only by market relations. It also plays an important role in the development and circulation of complex knowledge in society—circulation that is too readily assumed to be friction free.

### *Know-How and the Community of Practice*

Knowledge is usually thought of as the possession of individuals. Something people carry around in their heads and pass between each other. Know-what is to a significant degree like this. Know-how is different.

Know-how embraces the ability to put know-what into practice. It is a disposition, brought out in practice. Thus, know-how is critical in making knowledge actionable and operational. A valuable manager, for example, is not simply one who knows in the abstract how to act in certain circumstances, but who in practice can recognize the circumstances and acts appropriately when they come along. That disposition only reveals itself when those circumstances occur.

Such dispositional knowledge is not only revealed in practice. It is also created out of practice. That is, know-how is to a great extent the product of experience and the tacit insights experience provides. A friend and lawyer once told us that law school—with its research, writing, and moot courts—prepared her for almost everything she encountered in her work. It did not, however, prepare her for what she did most: answer the phone. That ability—the ability to deal in real time with critical situations, demanding clients, and irrevocable commitments, putting the knowledge she had acquired in school to effective use in practice—she was only able to acquire in practice itself. Her own and her colleagues’ ongoing practice has created an invaluable reservoir of dispositional knowledge, which she calls on (and improves) all the time.

Experience at work creates its own knowledge. And as most work is a collective, cooperative venture, so most dispositional knowledge is intriguingly collective—less held by individuals than shared by work groups. This view of knowledge as a social property stands at odds with the pervasive ideas of knowledge as individual. Yet synergistic potential of certain people working in unison—a Gilbert and Sullivan, a Merchant and Ivory, a Young and Rice, or a Pippin and Jordan—is widely acknowledged. In less-exalted work places, too, the ability of certain groups to outstrip their individual potential when working together is a common feature.

Shared know-how can turn up quite unexpectedly. Julian Orr, a colleague at Xerox, studied the firm’s “Tech Reps,” the technicians who service machines on site. These technicians work most of the time in relative isolation, alone at a customer’s office. And they carry with them extensive documentation about the machines they work with. They would seem to be the last people to have collective dispositional knowledge. Yet Orr revealed that despite the individualist character of their work and the large geographical areas they often have to cover, Tech Reps take great pains to spend time with one another at lunch or over coffee. Here they continuously swap “war stories” about malfunctioning machines

that outstripped the documentation. In the process of telling and analyzing such stories, the reps both feed into and draw on the group's collective knowledge.<sup>12</sup>

Orr describes an extraordinary scene in which one technician brought in another to help tackle a machine that had defied all standard diagnostic procedures. Like two jazz players involved in an extended, improvisational riff, they spent an afternoon picking up each other's half-finished sentences and partial insights while taking turns to run the machine and watch it crash until finally and indivisibly they reached a coherent account of why the machine didn't work. They tested the theory. It proved right. And the machine was fixed.

This case and Orr's study as a whole suggest that, even for apparently individual workers armed with extensive know-what, collective know-how can be highly significant. More generally it supports the notion that collective practice leads to forms of collective knowledge, shared sensemaking, and distributed understanding that doesn't reduce to the content of individual heads.

A group across which such know-how and sensemaking are shared—the group which needs to work together for its dispositional know-how to be put into practice—has been called a “community of practice.” In the course of their ongoing practice, the members of such a group will develop into a *de facto* community. (Often, the community, like the knowledge, is implicit. Communities of practice do not necessarily think of themselves as a community in the conventional sense. Equally, conventional communities are not necessarily communities of practice.) Through practice, a community of practice develops a shared understanding of what it does, of how to do it, and how it relates to other communities and their practices—in all, a “world view.” This changing understanding comprises the community's collective knowledge base. The processes of developing the knowledge and the community are significantly interdependent: the practice develops the understanding, which can reciprocally change the practice and extend the community. In this context, knowledge and practice are intricately involved. (For a related argument, see Nonaka's celebrated “Knowledge Creation Spiral.”)<sup>13</sup>

This picture of knowledge embedded in practice and communities does not dismiss the idea of personal, private knowledge. What people have by virtue of membership in a community of practice, however, is not so much personal, modular knowledge as shared, partial knowledge.<sup>14</sup> Individual and collective knowledge in this context bear on one another much like the parts of individual performers to a complete musical score, the lines of each actor to a movie script, or the roles of team members to the overall performance of a team and a game. Each player may know his or her part. But on its own, that part doesn't make much sense. Alone it is significantly incomplete: it requires the ensemble to make sense of it.<sup>15</sup>

### *Communities of Practice and Organizations*

If in many situations, work and knowledge do not readily decompose into the possession of individuals but remain stubbornly group properties, then markets themselves do not readily reduce to *homo economicus*, the idealized individual. Nonmarket organization (the community of practice) may be a salient factor of market activity.

Does this suggest that, if nonmarket organization is needed at all, it is only at the level of community of practice? that everything else can be done in the market? On the contrary, most formal organizations are not single communities of practice, but, rather, hybrid groups of overlapping and interdependent communities. Such hybrid collectives represent another level in the complex process of knowledge creation. Intercommunal relationships allow the organization to develop collective, coherent, synergistic organizational knowledge out of the potentially separate, independent contributions of the individual communities. The outcome is what we think of as organizational knowledge, embracing not just organizational know-what but also organizational know-how.

Cross-community organization is important because it helps to overcome some of the problems communities of practice create for themselves. For instance, as Dorothy Leonard-Barton points out, isolated communities can get stuck in ruts, turning core competencies into core rigidities. When they do, they need external stimuli to propel them forward.<sup>16</sup>

Communities of practice, while powerful sources of knowledge, can easily be blinkered by the limitations of their own world view. In a study of technological innova-

tion, for example, Raghu Garud and Michael A. Rappa show how even the most sophisticated of knowledge workers can fail to recognize quite damning evidence.<sup>17</sup> New knowledge often requires new forms of evaluation, and when the two are produced together, knowledge, belief, and evaluation may only reinforce one another, while evaluation independent of that belief appears irrelevant.

Garud and Rappa's study explores this self-deluding/self-reinforcing social behavior in highly technological communities, where counterevidence is usually assumed to be easily capable of overwhelming belief. Obviously, such problematic interdependence between belief and evaluation is even more likely in areas where what counts as evidence is less clear-cut and where beliefs, hunches, predictions, and intimations are all there is to go on—which, of course, is the case in most areas of human behavior.

Markets offer one very powerful way to punish self-deluding/self-reinforcing behavior or core rigidities once these have set in.<sup>18</sup> Such punishment tends, however, to be severe, drastic, and reserved for organizations as a whole. Organizations present an alternative antidote, which works more readily at the community level and is both more incremental and less destructive. By yoking diverse communities—with different belief systems and distinct evaluative practices—together into cohesive hybrids, organizations as a whole challenge the limits of each community's belief. This process generates knowledge through what Hirshhorn calls the "productive tension" or Leonard-Barton "creative abrasion," forcing particular communities beyond their own limits and their own evaluative criteria.

Thus while markets punish those who produce bad ideas (or fail to produce at all), organizations work to produce beneficial knowledge out of social (rather than market) relations. The productive side of organizational tension, drawing on the experience of people throughout an organization, produces knowledge that requires systemic, not individual explanation. It adds value to the organization as a whole (and redeems those otherwise intractable battles between designers and engineers, sales and marketing, or accounting and almost any other division).

As most people know from experience, cross-divisional synthesis is itself an achievement. But organizations must reach beyond synthesis to synergy. In so doing, they both draw on and continuously create their unique organizational know-how—their ability to do what their competitors cannot. For this they must produce true, coherent organizational knowledge (which is quite distinct from an organization's knowledge—the scattered, uncoordinated insights of each individual in its community of practice). Organizations that fail to achieve this particular synthesis are most likely to fall prey to market alternatives.

## Divisions of Labor and Divisions of Knowledge

### *Search and Retrieval*

In many ways the relationship between communities of practice and organizations presents a parallel to that between individuals and communities of practice. Yet there are important differences in the way knowledge moves in each relationship.

Organizing knowledge across hybrid communities is the essential activity of organizational management. It is also difficult, though why is not often appreciated. Certainly, most managers will acknowledge that getting knowledge to move around organizations can be difficult. In general, however, such problems are reduced to issues of information flow. If, as the saying goes, organizations don't always know what they know, the solution is seen to lie primarily in better techniques for search and retrieval. Given the opportunity, information appears to flow readily. Hence the belief that technology, which can shift information efficiently, can render organizations, which shift it inefficiently, obsolete. A great deal of hope (and money) is thus being placed on the value of Intranets.



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Intranets are indeed valuable, but social knowledge suggests that there is more to consider both with regards to search and retrieval.

The distribution of knowledge in an organization, or in society as a whole, reflects the social division of labor. As Adam Smith insightfully explained, the division of labor is a great source of dynamism and efficiency. Specialized groups are capable of producing highly specialized knowledge. The tasks undertaken by communities of practice develop particular, local, and highly specialized knowledge within the community.

From the organizational standpoint, however, this knowledge is as divided as the labor that produced it. Moreover, what separates divided knowledge is not only its explicit content but the implicit shared practices and know-how that help produce it. In particular, as Garud and Rappa's example suggests, communities develop their own distinct criteria for what counts as evidence and what provides "warrants"—the endorsements for knowledge that encourage people to rely on it and hence make it actionable. (Warrants are particularly important in situations in which people confront increasing amounts of information, ideas, and beliefs; warrants show people what to attend to and what to avoid.) The locally embedded nature of these practices and warrants can make knowledge extremely "sticky," to use Eric von Hippel's apt term.<sup>19</sup>

If the division of labor produces the division of knowledge, then it would seem reasonable to conclude that the market, used to coordinate the division of labor, would serve to coordinate the division of knowledge. But markets work best with commodities, and this "sticky" knowledge isn't easily commodified. Within communities, producing, warranting, and propagating knowledge are almost indivisible. Between communities, as these get teased apart, division becomes prominent and problematic. Hence, the knowledge produced doesn't readily turn into something with exchange value or use value elsewhere. It takes organizational work to develop local knowledge for broader use. Development of knowledge in the organization is a process somewhat analogous to the way a film production company takes a story idea and, stage by stage, develops it into a movie.

Thus, ideas of "retrieving" locally developed knowledge for use elsewhere doesn't address the whole issue. Furthermore, organizations, while they may help get beyond "retrieval," present problems with the antecedent problem of search.

### *Organizational Blindness*

Organizations, as economists have long realized, offer an alternative to markets. Instead of synchronizing goods and labor through markets, they do it through hierarchy. This allows them to overcome some of the stickiness arising from the indivisibility of know-how and practice. Nonetheless, in the organization of knowledge, hierarchical relations unfortunately introduce their own weaknesses. Hierarchical divisions of labor often distinguish thinkers from doers, mental from manual labor, strategy (the knowledge required at the top of a hierarchy) from tactics (the knowledge used at the bottom). Above all, a mental-manual division predisposes organizations to ignore a central asset, the value of the know-how created throughout all its parts.

For example, the Xerox service technicians develop highly insightful knowledge about the situated use (and misuse) of the complex machines they service. As such machines encounter a wide range of locations (some hot, some cold, some dry, some humid) and an inexhaustible range of uses (and abuses), the possible combinations make it impossible to calculate and anticipate all behaviors and problems that might arise. Knowledge about these only emerges in practice. Yet mental-manual divisions tend to make this knowledge invisible to the organization as a whole.

In an analysis of the importance (and anomalous position) of technologists in the modern work place, Stephen Barley has argued forcefully that the knowledge potential in the practice of such front-line employees must eventually force organizations to reconsider the division of labor and the possible loci of knowledge production. As Henry Chesebrough and David Teece point out, "some competencies may be on the factory floor, some in the R&D labs, some in the executive suits." The key to organizational knowledge is to weave it all together. Successful organizational synthesis of knowledge requires discovering knowledge as it emerges in practice. That can't be done if when and where to look are predetermined *ex ante*.<sup>20</sup>

## Beyond Search and Retrieval

### *Within and Between*

Bringing this knowledge into view is only a first step, however. Restricted search paths alone are not the problem, significant though these may be. Organizations that set out to identify useful knowledge often underestimate the challenge of making that knowledge useful elsewhere. Robert Cole's study of Hewlett-Packard's approach to quality, for example, shows how the firm successfully pursued "best practices" throughout the corporation. The search, however, assumed that, once these practices were identified, the knowledge (and practice) would spread to where it was needed. In the end, HP was quite successful in identifying the practices. It was not, however, so successful in moving them.<sup>21</sup>

Some knowledge moves quite easily. People assume that it is explicit knowledge that moves easily and tacit knowledge that moves with difficulty.<sup>22</sup> It is, rather, socially embedded knowledge that "sticks," because it is deeply rooted in practice. Within communities, practice helps to generate knowledge and evince collective know-how. The warranting mechanisms—the standards of judgment whereby people distinguish what is worthwhile and valid from what is not—inhere in the knowledge. Consequently, trying to move the knowledge without the practice involves moving the know-what without the know-how.

Due to its social origins, knowledge moves differently *within* communities than it does *between* them. Within communities, knowledge is continuously embedded in practice and thus circulates easily. Members of a community implicitly share a sense of what practice is and what the standards for judgment are, and this supports the spread of knowledge. Without this sharing, the community disintegrates.

Between communities, however, where by definition practice is no longer shared, the know-how, know-what, and warrants embedded in practice must separate out for knowledge to circulate. These divisions become prominent and problematic. Different communities of practice have different standards, different ideas of what is significant, different priorities, and different evaluating criteria. What looks like a best practice in California may not turn out to be the best practice in Singapore (as HP found out).

The divisions between communities tend to encourage local innovation, as Adam Smith recognized, but they also encourage isolation. Anyone who has spent some time on a university campus knows how knowledge-based boundaries can isolate highly productive communities from one another. That it is very hard to get sociologists and mathematicians to learn from one another is obvious. What is sometimes less clear is that biochemists can't always share insights with chemists, economic historians with historians, economists with the business school, and so forth. Different precepts and different attitudes, shaped by practice, make interchange between quite similar subjects remarkably difficult, and thus they invisibly pressure disciplines to work among themselves rather than to engage in cross-disciplinary research. Over time, disciplines increasingly divide rather than combine.

On the campus, however, work across different communities has been relatively unimportant. In the past, few have expected a campus as a whole to produce synthesized, collective insight. Physicists work on physics problems; historians on history problems; and except when they come to blows over the history of physics the two, like most other departments, lead predominantly independent lives.

Firms, by contrast, cannot afford to work this way. When they get to the point they are so loosely connected that there is no synthesis or synergy of what is produced in their various communities—when, as Teece and colleagues argue, there is no "coherence"—then a firm has indeed lost its edge over the market. The firm then needs either to work towards synergy or divest until it achieves coherence.<sup>23</sup> Indeed, firms are valuable exactly to the extent that, unlike universities, they make communities of practice that expand their vision and achieve collective coherence. Consequently, the problematic *between* relationship is a critical organizational feature—and one that demands significant organizational investment.

It is a mistake to equate knowledge and information and to assume that difficulties can be overcome with information technologies. New knowledge is continuously being produced and developed in the different communities of practice throughout an organization. The challenge occurs in evaluating it and moving it. New knowledge is not capable of the sorts of friction-free movement usually attributed to information. Moreover,

because moving knowledge between communities and synthesizing it takes a great deal of work, deciding what to invest time and effort in as well as determining what to act upon is a critical task for management.

### Stickiness and Leakiness

The “leakiness” of knowledge out of—and into—organizations, however, presents an interesting contrast to its internal stickiness.<sup>24</sup> Knowledge often travels more easily between organizations than it does within them. For while the division of labor erects boundaries within firms, it also produces extended communities that lie across the external boundaries of firms. Moving knowledge among groups with similar practices and overlapping memberships can thus sometimes be relatively easy compared to the difficulty of moving it among heterogeneous groups within a firm. Similar practice in a common field can allow ideas to flow. Indeed, it’s often harder to stop ideas spreading than to spread them.

A study of interorganizational work by Kristen Kreiner and Majken Schultz suggests that the tendency of knowledge to spread easily reflects not suitable technology, but suitable social contexts. They show how many of the disciplinary links between business and academia are informal. They argue that the informal relations between firms and universities are more extensive and probably more significant than the formal ones. Informal relations dominate simply because they are easier, building on established social links. Formal inter-firm relations, by contrast, can require tricky intrafirm negotiations between quite diverse communities (senior management, lawyers, and so forth).

Studies of biotechnology support this view. A study by Walter Powell reveals biotechnologists working extensively across the boundaries of organizations. Some articles in this field have more than one hundred authors from different (and different types of) institutions.<sup>25</sup> Their extensive collaboration undoubtedly relies on communications technologies. But these are available to researchers in other fields where such collaboration does not occur. Biotechnology is distinct in that being a relatively young, emerging field, its researchers are significantly linked through personal connections. The field is not as tight as a local community of practice, but nonetheless relations are dense enough and practices sufficiently similar to help knowledge spread. While a field is small and relatively unfragmented, practitioners have a lot in common: their training, their institutional backgrounds, their interests, and in particular the warrants with which they evaluate what is important from what is not.<sup>26</sup>

People connected this way can rely on complex networks of overlapping communities, common backgrounds, and personal relationships to help evaluate and propagate knowledge. In such conditions, practices are fairly similar and consequently the barriers *between* different groups are relatively low.<sup>27</sup> In such knowledge ecologies, knowledge that is sticky within organizations can become remarkably fluid outside of them, causing great difficulties for the intellectual-property side of knowledge management. The challenge of plugging these leaks is significant. But cutting off the outflow can also cut off the inflow of knowledge. Living in a knowledge ecology is a reciprocal process, with organizations feeding into each other.

### Towards an Architecture for Organizational Knowledge

The way ecologies spread knowledge helps point to some of the ways that organizations can help to propagate knowledge internally and develop an enabling architecture for organizational knowledge. Social strategies for promoting the spread of knowledge between communities can be described in terms of “translation,” “brokering,” and “boundary objects”—terms developed by the sociologists Susan Leigh Star and James Griesemer.<sup>28</sup>

#### *Translators*

Organizational translators are individuals who can frame the interests of one community in terms of another community’s perspective. The role of translator can be quite complex and the translator must be sufficiently knowledgeable about the work of both communities to be able to translate. The powerful position of translator requires trust, since translation is rarely

entirely innocent (translators may favor the interests of one group over another deliberately or inadvertently). Yet, participants must be able to rely on translators to carry negotiations in both directions, making them mutually intelligible to the communities involved. The difficulty of doing this makes translators extremely valuable and extremely difficult to find. External mediators and consultants are often called in to provide such translation.

### *Knowledge Brokers*

The role of in-firm brokers, in contrast to that of translators, involves participation rather than mediation. They are a feature of overlapping communities, whereas translators work among mutually exclusive ones. In an analysis of the diffusion of knowledge across networks, sociologist Mark Granovetter noted that overlaps are hard to develop in communities with very strong internal ties. These tend to preclude external links. Thus Granovetter argued for the “strength of weak ties,” suggesting that it was often people loosely linked to several communities who facilitated the flow of knowledge among them.<sup>29</sup>

As almost all communities within an organization overlap, those who participate in the practices of several communities may in theory broker knowledge between them. Trust is less of a tenuous issue than with translation. Brokers who truly participate in both worlds, unlike translators, are subject to the consequences of messages they carry, whatever the direction.

### *Boundary Objects*

Boundary objects are another way to forge coordinating links among communities, bringing them, intentionally or unintentionally, into negotiation. Boundary objects are objects of interest to each community involved but viewed or used differently by each of them. These can be physical objects, technologies, or techniques shared by the communities. Through them, a community can come to understand what is common and what is distinct about another community, its practices, and its world view. Boundary objects not only help to clarify the attitudes of other communities, they can also make a community’s own pre-suppositions apparent to itself, encouraging reflection and “second-loop” learning.<sup>30</sup>

Contracts are a classic example of boundary objects. They develop as different groups converge, through negotiation, on an agreed meaning that has significance for both. Documents more generally play a similar role, and forms and lists that pass between and coordinate different communities make significant boundary objects. Plans and blueprints are another form of boundary object. Architectural plans, for instance, define a common boundary among architects, contractors, engineers, city planners, cost estimators, suppliers and clients. Severally and collectively these groups negotiate their different interests, priorities, and practices around the compelling need to share an interpretation of these important documents.

To help produce intercommunal negotiation, organizations can seed the border between communities with boundary objects. The idea-fomenting metaphors that Nonaka describes draw some of their power by being boundary objects.<sup>31</sup> They work within groups to spark ideas. Once a group has found one metaphor particularly powerful, that metaphor may also serve to foster understanding between groups.

### *Business Processes as Boundary Objects: Enabling and Coercive*

Business processes can play a similar role. Ideally, processes should allow groups, through negotiation, to align themselves with one another and with the organization as a whole. Business processes can enable productive cross-boundary relations as different groups within an organization negotiate and propagate a shared interpretation. In the right circumstances, the interlocking practices that result from such negotiations should cohere both with one another and with the overall strategy of the company. The processes provide some structure, the negotiations provide room for improvisation and accommodation, and the two together can result in coordinated, loosely coupled, but systemic behavior.<sup>32</sup>

Many business processes, however, attempt not to support negotiation but to preempt it, trying to impose compliance and conformity through what Geoffrey Bowker and

Susan Leigh Star call “frozen negotiation.” Here Paul Adler and Bryan Borys’s discussion of “enabling” and “coercive” bureaucracies suggests the importance of enabling and coercive business processes. The first produces fruitful intercommunal relations and, in the best case, widespread strategic alignment; the second is more likely to produce rigid organizations with strong central control but little adaptability.<sup>33</sup>

## Technology Issues

As noted earlier, the ease or difficulty of moving knowledge is a reflection of its social context. Technologies inevitably have an enormous role to play, but they play it only to the extent that they respond to the social context. The desire to disaggregate, disintermediate, and demassify, however, is more likely to produce socially unresponsive behavior.

A good deal of new technology attends primarily to individuals and the explicit information that passes between them. To support the flow of knowledge, within or between communities and organizations, this focus must expand to encompass communities and the full richness of communication. Successful devices such as the telephone and the fax, like the book and newspaper before them, spread rapidly not simply because they carried information to individuals, but because they were easily embedded in communities.

### *Supporting the Informal*

One important issue for technology involves the way the local informality found within communities differs from levels of explicitness and formality often demanded between communities—much as the slang and informal language people use among immediate colleagues differ from the formal language of presentations or contracts. The demands for formality demanded by technologies can disrupt more productive informal relations. For instance, in many situations, asking for explicit permission changes social dynamics quite dramatically—and receiving a direct rejection can change them even further. Consequently, people negotiate many permissions tacitly. A great deal of trust grows up around the ability to work with this sort of implicit negotiation. Direct requests and insistence of rights and duties do not work well.

Technologies thus have to include different degrees of formality and trust.<sup>34</sup> The range will become apparent as different types of “trusted systems” begin to emerge. At one end are systems that more or less eliminate the need for social trust. They simply prevent people from behaving in ways other than those explicitly negotiated ahead of time and constrained by the technology. Everything must be agreed (and paid for, usually) *ex ante*. For high-security demands, such technologies will be increasingly important. People are glad they can trust bank machines and Internet software servers. But if new technologies ask people to negotiate all their social interrelations like banking relations, they will leave little room for the informal, the tacit, and the socially embedded—which is where know-how lies and important work gets done.

This choice between formality and informality will have repercussions in the design of complex technologies. But it also has repercussions in the implementation of such things as corporate Intranets and mail systems. Increasingly, workplaces seek to control the sorts of interactions and exchanges these are used for. Yet these systems in many ways replace the coffee pot and the water cooler as the site of informal but highly important knowledge diffusion. Limiting their informality is likely to limit their importance.

### *Reach and Reciprocity*

As continual chatter about the global information network reminds us, information technology has extensive reach. Markets supported by this technological reach spread further and further daily. However, it is a mistake to conclude that knowledge networks, which require a social context, will spread in the same fashion. Technology to support the spread of new knowledge needs to be able to deal not with the reach involved in delivery so much as with the reciprocity inherent in shared practice. The ability to support complex, multi-directional, implicit negotiation will become increasingly important.

The Internet provides an interesting example of the way people retrofit information technology to enhance its social capacities. It was designed primarily so that computers could exchange electronic information and computer users could exchange files. Early in its development, though, some insightful programmers at Bolt Beranek and Newman piggy-backed e-mail on the protocol for transferring files. This highly social medium superimposed on the fetch-and-deliver infrastructure planted the seed that would transform this scientific network into the social network that has flourished so dramatically in the last few years. E-mail still accounts for the bulk of Internet traffic. Similarly, the World Wide Web has been the most recent and dramatic example that further accelerated the social use of the technology. Its designer, Tim Berners-Lee, a programmer at the CERN laboratories in Switzerland, saw that the Internet was much more interesting if used not simply for exchanging information between individuals, but to support “collaborators . . . in a common project.” That social imperative, quite as much as the technology, has driven the Web’s extraordinary evolution.<sup>35</sup>

### *Interactivity, Participation, Learning*

One of the Net’s greatest assets is that it is interactive and thus has the potential reciprocity to foster knowledge and learning. On campuses, conventional classes now regularly increase not so much reach as reciprocity by using Web pages and listserves (communal mailing lists) to do this. Similarly, well-designed corporate intranets, which supplement more conventional communication, do the same. In particular, these help present and circulate boundary objects. New forms of multicasting, such as the “M-Bone” or Multi-Cast Backbone, offer yet denser prospects for such interaction.<sup>36</sup>

When simply combined with reach, interactivity is often merely burdensome. To cultivate true reciprocity (rather than babble), people often find it necessary to introduce limits on the reach. Listserves now increasingly restrict participation, Web sites demand passwords, and intranets erect firewalls. Imposing limits, however, can prove disadvantageous.

Reciprocity is a feature of what Jean Lave and Etienne Wenger (who developed the notion of “communities of practice”) refer to as “legitimate peripheral participation.”<sup>37</sup> People learn by taking up a position on the periphery of skilled practice and being allowed (hence the importance of legitimacy) to move slowly from the periphery into the community and the practice involved. New communications technologies provide intriguing forms of peripherality. They allow newcomers to “lurk” on the side of interactions in which they are not taking part and of communities of which they are not members. Students, for example, lurk on the sides of exchanges among graduate students and faculty. Novices oversee the Net traffic among experts. Lave and Wenger also showed, however, how vibrant training programs die once newcomers are cut off from such experienced practice. Closing lists to lurkers can have the same results. Consequently, the negotiation of access, of reach, and of reciprocity in such circumstances needs to remain a complex socio-technological challenge and not simply a technological one.

The rewards of reciprocity are high. Technologies that can recognize and to some extent parse how relations *within* communities (where reciprocity is inevitable) differ from those *between* communities (where reciprocity must be cultivated) may actually help to extend reach between communities without disrupting reciprocity within. Understanding the challenges of the *between* relation should be a significant issue for new design—of both technologies and organizations.

Technology that supports not merely the diffusion of know-what, but the development of know-how and that allows for knowledge to be shared rather than marketed. Curiously, this highlights a pervasive trajectory in the development of communications software, where explicit design strategies for exchanging information are repeatedly subverted by users who press for a social network.

*Technology to support the spread of new knowledge needs to be able to deal not with the reach involved in delivery so much as with the reciprocity inherent in shared practice.*

## Conclusion: Dialectical Thinking

The propagandists of cyberspace have a tendency to speak in terms of discontinuity. The new, they always insist, will simply sweep away the old, so they confidently predict that hypertext will replace the book. (Here they might do well to pay attention to *The New York Times's* confident prediction in the 1930s that the typewriter would replace the pencil. The pencil seems to have won that particular struggle.) Or, as in the issue at stake here, the prediction is that communications technology will sweep away the firm.

Undoubtedly, the present technological revolution will sweep many familiar aspects of life away. Nonetheless, sometimes it is useful to think in terms of “both/and” rather than simply “either/or.” This seems particularly true when considering the effect of heterogeneous categories on one another, such as the effects of technologies on institutions.

Instead of thinking of individuals vs. institutions, or markets vs. firms, or start-ups vs. large corporations, it may be more instructive to think of how the two are interlaced. From this perspective, it does not seem as though disintermediation, demassification, and disaggregation are the only watchwords of the future. Community, practice, organization, network, and above all organizational knowledge and distributed know-how are equally important.

## Notes

1. For “communities of practice” see Jean Lave and Etienne Wenger, *Situated Learning: Legitimate Peripheral Participation* (New York, NY: Cambridge University Press, 1993); John Seely Brown and Paul Duguid, “Organizational Learning and Communities of Practice: Towards a Unified View of Working, Learning, and Innovation,” *Organization Science*, 2 (1991): 40–57.
2. See, for example, Leonard-Barton’s portrayal of the “learning organization” and her example of Chaparral Steel. Leonard-Barton, op. cit.
3. The distinction between know-what and know-how and the notion of “dispositional knowledge” comes from Gilbert Ryle, *The Concept of Mind* (London: Hutchinson, 1954). Know-how may appear to be little more than so-called “physical” skills, such as catching a ball or riding a bicycle. It is much more, however. For any student to “know” Newton’s second law in any meaningful way requires having the skill to deploy the law in an analysis of colliding objects. This sort of knowledge, a disposition as well as a possession, emerges when called upon. It is evident, for instance, in such complex skills as talking, writing, and thinking or in negotiating with clients, overseeing employees, controlling production processes, developing strategy, conducting scientific experiments, fixing complex machines, cooking a meal, or writing computer programs. For the importance of dispositional knowledge, see S. Noam Cook and John Seely Brown, “Bridging Epistemologies: The Generative Dance between Organizational Knowledge and Organizational Knowing,” *Organization Science* (forthcoming).
4. As the CEO of Chaparral Steel told Leonard-Barton, “He can tour competitors through the plant, show them almost ‘everything and we will be giving away nothing because they can’t take it home with them.’” Leonard-Barton, op. cit, p. 7.
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Wanda J. Orlikowski

## Commentary by Wanda J. Orlikowski

Brown and Duguid, in their consideration of organizing knowledge, provide an important complement to contemporary discussions of “knowledge management.” By emphasizing practice, community, embeddedness, and interaction, Brown and Duguid remind us that knowledge is situated and social and, as such, its management within and among organizations is no simple matter. Indeed, their essay calls into question the very notion of “managing” knowledge. Instead, translating, brokering, and negotiating knowledge are the relevant watchwords along with such notions as communities of practice, knowledge ecologies, and reciprocity. This distinctive vocabulary is an important contribution to our thinking about knowledge in organizations. Not only does it offer different images and metaphors of knowledge that effectively challenge our taken-for-granted assumptions, it offers rich models for knowledge that provide alternative conceptions with which we may proceed to work with knowledge—whether as practitioners, consultants, or researchers.

In my comments here, I will continue the spirit of exploring different conceptions of knowledge and examine one of Brown and Duguid’s notions in more detail. In particular, I want to consider their view of the relationship between know-how and practice as one characterized by embeddedness and to suggest an alternative reading. Such an alternative reading offers different implications for what it will take to “share” knowledge within and across organizations.

Brown and Duguid adopt Gilbert Ryle’s distinction between “know-what” and “know-how,” arguing that the latter, as “the particular ability to put know-what into practice,” is “embedded in work practice.” Because of its embeddedness in a set of practices, such knowledge is easily moved among groups with similar practices but is “sticky” or difficult to move across communities of practice. The notion of know-how “stuck” in or to a set of practices is a vivid image of embeddedness. However, it got me thinking about its appropriateness, because while it suggests a deep dependence between know-how and practice, it nevertheless implies that the two are distinct and that if the former could be made to be more fluid, whether through brokerage, translation, or negotiation, it may be released from, and “propagated” without, the latter. My alternative reading questions whether know-how and practice can be separated at all.

In his discussion, Ryle (1949) argues that knowledge is essentially a “knowing how,” a capacity to perform or act in particular circumstances. Using an example of a boy playing chess, he suggests that the boy can be said “to know how” to play chess if his action displays the rules of chess even if he cannot recite them. Polanyi (1966) similarly argues that tacit knowledge is evident in our ability to recognize faces in a crowd or ride bicycles even as we cannot articulate precisely how it is that we do these. Thus, we recognize the know-how (the capacity to play chess or ride a bicycle) by observing the practice (of chess-playing or bicycle-riding). As Donald Schön (1983, p. 50) has noted, the “know-how is *in* the action.”

However, the practice (of chess-playing, bicycle-riding, etc.) has no meaning apart from the know-how that defines it. Remove the know-how of playing chess from the practice and you no longer have anything recognizable as chess-playing practice. While we identify the know-how by recognizing the practice, we similarly identify the practice by recognizing the know-how. The two are not discrete and separable but mutually constitutive.

The image of knowledge embeddedness suggests that know-how may be placed within some existing practice, where it then gets so thoroughly enmeshed with that practice that extraction and mobility are constrained. But if the know-how defines the practice (just as the practice recursively

defines the know-how), the notion of an a priori practice into which know-how gets embedded is not sustainable. An alternative reading of the relationship between know-how and practice posits know-how as constituted in practice, rather than embedded within it. In this view, any distinction made between know-how and practice is an analytic convenience only.

Shifting from a view of know-how as embedded in practice to seeing it as constituted in practice allows us to understand Ryle's "capacity to perform" definition of knowledge as a description of *practice*. Social theorist Anthony Giddens (1984, p.4) similarly defines much of human knowledgeability as "inherent within the ability to 'go on' within the routines of social life." By "going on," we continually produce and reproduce know-how through the practices that we engage in. Such knowledge is inseparable from human agency.

There are at least two implications of shifting our focus from embeddedness to constitution in practice. One is that the notion of knowledge stickiness, at least as it applies to know-how, may need revision. Knowledge that is constituted in practice is not most effectively understood as "stuck" in or to that practice. That would be like saying that the words of this sentence are "stuck" to it, when in fact they constitute it. Karl Weick's (1979) notion of *enactment* may be a more apt notion here. Knowledge constituted in practice can be seen to be enacted by that practice. Enactment replaces the impression of adhesion with one of activity. Sharing knowledge is now seen not as a process of disembedding "sticky" knowledge from one community of practice and embedding it in another; it is seen as enabling people in other communities to learn the activity that enacts the knowledge. It is a process of developing the ability to perform.

Another implication is that knowledge constituted in practice is not a static or given capability but an ongoing social accomplishment. Such knowledge does not exist "out there" (incorporated in external forms) or "in here" (inscribed in our brains) but is continually enacted through our everyday individual and collective action. As a result, it may be reinforced or changed through such action. Recurrent practices indicate repeated enactment of similar know-how; hence the reinforcement of this knowledge over time. However, as Schön (1983) effectively showed, knowledgeable action often involves reflection and experimentation in action and, through such in-the-moment reconstruction of action and thought, practices may be altered that change the know-how being enacted. The result is learning, an augmentation of the capacity to perform. Barrett (1998) and Weick (1993, 1996) similarly argue that improvisation in practice is a powerful means of increasing organizational innovation, learning, and resilience. From such a perspective, people change their knowledge when they have the means, motivation, and opportunity to reflect on, experiment with, and improvise their practices.

In closing, let me note that I strongly support Brown and Duguid's view of the importance of a vocabulary around knowledge that includes notions of "community, practice, organization, network, and above all organizational knowledge and distributed know-how." In my comments here, I have tried to stress the equal importance of such notions as mutual constitution, enactment, reflection-in-action, learning, improvisation, and above all, human agency.

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## Commentary by Etienne Wenger

Brown and Duguid's eulogy of organizing is so carefully argued that it is difficult to add much to the argument itself. So, I will merely highlight some implications of their analysis.

They set the stage with Chandler's thesis that progress in transitional times like the Industrial Revolution depends as much on social and institutional as on technological developments. Their use of Chandler's thesis insinuates that we are again in such a transitional time. Yet, in their



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vigorous—and convincing—defense of organization as a principle of social development, they end up understating the need to invent radically new organizational forms as we enter into a knowledge economy. Indeed, in speaking against the suggestion that “hierarchical firms will dissolve into markets of self-organizing individuals,” they almost appear to present the hierarchical firm as the organizational alternative to pure market mechanisms. I am certain that they do not intend such a simplistic contrast, but I think it is important to emphasize explicitly the amount of imagination that is now going to be required to invent the knowledge-based organization they are calling for.

For instance, the focus on communities of practice essential to organizing knowledge often runs counter to established management practices in traditional organizational structures. The currency of these communities is collegiality, reciprocity, expertise, contributions to the practice, and negotiating a learning agenda, not assigned authority or commitment to a predefined deliverable. Few managers are in a position to appreciate (in both senses of the term) the subtle ways in which these communities can own the knowledge they steward, can enable learning across institutional divisions, and can create value by ensuring long-term capability-development. Embracing the contributions of these communities means not just organizing knowledge in an abstract way but opening the organizational space to their sense of ownership and identity.

Similarly, boundary processes are often at odds with current organizational designs. In terms of belonging, the work of brokering is very delicate. It requires an ability to be both in and out at the same time: enough of an insider to be listened to and understand the context in which knowledge is useful and outside enough to bring something truly new. The work of brokers is often difficult to recognize because it does not contribute directly to the core of any practice as defined by the existing communities. The occupational hazards of brokering are uprootedness and marginality. In traditional organizations, brokers run the risk of falling through the cracks or, worse, of falling prey to the knife of efficiency-driven restructuring. Recognizing the work of weaving constellations of communities requires a new set of values for most organizations.

Finally, not all boundary objects create bridges across boundaries that actually connect practices in deep ways. It is useful to distinguish between different boundary characteristics for analyzing the boundary effects of these objects in practice:

- *Coordination*: Can an artifact be interpreted in two different practices in a way that enables coordinated action? For instance, an elegant design may delight designers but say little to those concerned with manufacturability.
- *Transparency*: How much access does the use of an artifact across boundaries provide into the practices involved? For instance, forms such as tax returns enable coordination across boundaries (you know how to fill them out) but often afford no windows into the logic they are meant to enforce.
- *Negotiability*: Are the coordination and the transparency one-way or two-ways? For instance, a reengineering plan may be very detailed about implementation and explicit about its intentions but may reflect or allow little negotiation between the perspectives involved.

To the degree that an organization relies on boundary objects for organizing constellations of practices in generative ways, it will have to create artifacts that combine all three characteristics.

The innovative potential of an organization lies largely in the texture of practices and boundaries that shape its constellations of communities of practice (Wenger, 1998). But to realize this potential, organizations must be premised on the essential relation between knowing and belonging that communities of practice embody. The kind of organization that is called for is closer to Charles Handy’s notion of federation than to the kind of organization we are familiar with (Handy, 1989).

What would an organization look like if it took as fundamental building blocks the communities of practice that steward the competencies critical to its purpose? How could it adopt multimembership as a productive design principle? What new relations of employment would be consistent with such premises? What kind of strategic discourse would have to pervade the organization for these communities to participate meaningfully in the development of their organizational environment? What forms of governance would foster this kind of participation? In a period of transition, realizing the importance of organizing mostly implies a call to activate our organizational imagination.

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# Collaborative Learning: A Core Capability for Organizations in the New Economy

*Dori Digenti*

This paper concerns the practice of collaborative learning—a practice that comprises a vital organizational capability for the twenty-first century. By *collaborative learning* we mean the interaction of two or more people engaged in value-creating activities based on improving, practicing, and transferring learning skills both within the group and to the organization or group of organizations to which a group belongs.

The intended audience for this paper includes managers and change agents working with organizations engaged in global markets and businesses. Today's accelerated business environment forces managers to engage in on-line learning (i.e., collaborative learning is a business practice with development that is outpacing the creation of supporting theories). Collaborative learning employs experimentation, methods, and approaches that emerge from the present and evolve as they are practiced.

Why should change agents and their client organizations be concerned with collaborative learning as a practice, when alliances, partnerships, and mergers and acquisitions are well-known and practiced collaborative forms? First, because collaborative learning competence enables organizations to deal with both the pace and direction of change as they come; second, because collaborative learning builds boundary-spanning skills; and third, because collaborative learning needs a practice field, a group in which learning experiments focused on building and enhancing interdependence through personal learning networks can take place. The collaborative learning cycle described next deals with these areas.

## Collaborative Learning as a Core Competency

In their groundbreaking *Harvard Business Review* article, Prahalad and Hamel (1990) described the core competence of an organization as the collective learning in the organization, especially the capacity to coordinate diverse production skills and integrate streams of technologies. The steps they described were to identify the core competencies, defined as those that (1) provide potential access to a wide variety of markets, (2) contribute to the customer benefits of the product, and (3) are difficult for competitors to imitate.

Many firms have made this process their guiding strategic imperative. One dramatic example of a product-based core competency strategy is the recent history of Texas Instruments (TI). After the death of CEO Junkins in 1996, TI embarked on a rapid divestment of its non-core product lines. In 1998, this divestiture culminated in the sale of its DRAM business to Micron, the final move in TI's efforts to define its core competence as digital signal-processing technologies. TI has made bold and concerted moves to define its core competence and redesign the firm in alignment with that strategy.



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The final stage of the Prahalad and Hamel process for defining core competence—that companies must reorganize to learn from alliances and must focus on internal development—is one that many leading firms have not fully considered in forming their core competence strategy. Yet, learning from alliances and internal development is critical for viability in the technological changes that organizations face. How does one define a strategy that is based on learning from alliances, both internal and external, and focus on internal development, without losing touch with market forces? This is where collaborative learning competence becomes a strategic advantage for companies that have shifted to what has been termed *the new economy*.

## Impacts of Technology and the New Economy on Organizations

We have reached the limits of the continuous improvement processes that have helped U.S. organizations to enhance productivity, quality, and worker satisfaction over the last roughly 20 years. Continuous improvement assumed that excellent products and services, supported by rational organizational structures and procedures, would yield ongoing profitability to sustain the organization. These beliefs were tied to an economy wherein forces were linear, planned, and predictable.

*Wired* magazine's editor Kevin Kelly (1997) has proposed a radical view of the new economy—one in which companies will succeed only through counter-intuitive strategies that support and are supported by collaborative learning. In Kelly's "New Rules of the New Economy," the following principles support a networked world:

- Shared knowledge and product capability increase profits for all.
- Beneath-the-radar trends explode as the focus of geometrical profits.
- Laws of product lifecycle are skewed.
- Prices for the best technology constantly decrease.
- Individual companies rise and fall, but the network remains intact.
- The best products are given away free.
- Continuous disequilibrium must be sought rather than cured.

Building on Kelly's premises, let's focus on technological change and the creation of the new economy. In the early 1990s, the World Wide Web and the Internet were not key business tools. Now, at the end of the 1990s, it is difficult to think of a single area of business that does not feel the impact daily of the Internet. To put a figure on the pace of technological change on the Internet: Web-based commerce has grown from close to \$0 in 1993 to an estimated \$22 billion in 1998. Marketing, sales, financial planning, project management, global operations—all have been changed by Internet technology.

Just as the Web was essentially unknown a few years ago, so the next technological direction is unknown. In Massachusetts Institute of Technology's Media Lab haptic computing is transforming the sense of touch to digital form. Just as we have become accustomed to receiving sound and images in digital form on the desktop, in the near future we will be able to transmit sensation and texture from one desktop to another. What impact will this have on three-dimensional modeling, medical practice, materials science, and communication? Technology is once again far ahead of our ability to apply it meaningfully to the business at hand.

It is not only possible but likely that within a few years, average technology workers will spend most of their day in virtual environments, where haptics and other digitized sensory inputs take them out of normal reality for hours at a time. Already in Japan, commercial applications of virtual reality (VR) are springing up in virtual ski and golf practice environments, VR interior design, and laboratories (Kahaner, 1994). Further commercialization and applications will follow.

The impact of this ever-changing technological landscape on corporate strategy is profound. Even the most bullet-proof product strategies and organizational structures may become obsolete in a short time. Most organizations have a hard time shifting to this new reality. Much of the work of managers and change agents going forward will be to help firms to shift their energies from structure and planning to creation of the types of flexible learning structures that will support corporate survival in the twenty-first century.

This new reality requires a different mindset. Managers need to question every assumption; invest in intangible assets of knowledge, people, and networks; and be ready to diversify and reconfigure rapidly. To create this new mindset, managers will need to operate with certain givens:

- Acknowledge that they do not know where the next set of changes will take them
- Understand that today's core technological or product competencies may be useless in a few years
- Be convinced that the differentiating factor between success and failure in the face of discontinuous change will be the ability to learn and collaborate (Nadler et al., 1995).

## Collaborative Learning Prerequisites

For change agents to assist firms in embedding collaborative learning as a core competence, three prerequisites must be in place: collaborative capability assessment, collaborative organizational climate, and collaborative spaces.

### *Collaborative Capability Assessment*

To build capability, change agents must understand collaborative learning as it currently exists in the organization. Many firms are involved in multiple internal and external collaborations before they consider the possibilities of assessing capability and building competency in the organization around those collaborations. Though most companies engage in cultural compatibility analyses or at least consider reasonable fit before they engage in partnerships, few have a clear sense of how collaboration works in their organization—of where the pockets of expertise lie or what models of collaborative activities are being used internally.

Collaborative capability assessment allows an analysis of the organization's attitude toward collaboration and the existing systems, support, and persons involved in collaboration in the firm. The assessment is a tool for uncovering tacit knowledge about collaboration and for highlighting where in the firm there is lack of alignment around collaborative goals. The collaborative capability assessment process involves certain factors:

- Organizational culture analysis (Schein, 1992)
- Interviews with those involved in collaboration across levels, functions, and divisions in the organization
- Collection and study of internal publications, memos, and executive speeches that focus on collaboration
- Review of existing collaborative relationships
- Collection and study of training and development efforts that support collaboration
- Data about current rewards or recognition programs that focus on collaboration.

After the materials, information, and interviews have been gathered, they are analyzed to determine the strengths and weaknesses of the organization's collaborative capability. This information provides the basis for building, enhancing, or transferring the collaborative learning competency. It also produces data that can be used in building stakeholder support for the collaborative learning competency.

### *Collaborative Organizational Climate*

Once the manager or change agent understands the current state of collaborative learning in the organization, this information can be compared to guidelines concerning the creation of an organizational climate that supports collaborative learning. According to Edward Marshall (1995), a collaborative climate has four components:

1. Collaborative culture: a set of core values shaping business behavior, including respect for people; honor and integrity; ownership and alignment; consensus; trust-based relationships; full responsibility and accountability; and recognition and growth

2. Collaborative team processes: team formation process, team management process, self-sufficiency and renewal process, and team closing process
3. Collaborative structure: realigned human resources support and information systems
4. Collaborative leadership: ability to recognize many leaders, not just one; leadership that fulfills a number of functions—facilitator, coach, healer, member, manager, change agent

The change agent compares the collaborative capability assessment findings to these climate indicators and determines interventions that will address the gaps between current conditions and the new supportive climate.

British Petroleum (BP) is one example of an organizational climate that supports collaborative learning. The company found that it was spending extensive corporate resources to send technical troubleshooters to far-flung operations to solve problems but that technical knowledge transfer during these sessions was inadequate. To address this situation, BP drew on new technologies in combination with human interaction skills training to resolve many technical issues from a distance; it also created a catalog of technical resources accessible worldwide. The company invested \$12 million in a pilot project called the *virtual teamworking* (VT) program, which included desktop videoconferencing; collaborative software (multimedia E-mail, shared applications, scanners, and electronic whiteboards); and behavioral coaching. Virtual teamworking coaches were sent out to implement the installation of the equipment, but 80% of the program's time was spent on aligning the VT approach with the unit's business goals, teaching facilitation skills, and mentoring the group once the system was installed to maximize the benefits of the investment. BP estimates that its VT approach saved it \$30 million in the first year in which it was implemented, through reduced travel expenses, quicker problem resolution, and less downtime on critical equipment. The learning transfer that has taken place as a result of this investment undoubtedly has provided further, less easily measured benefits.

### *Collaborative Spaces*

BP's VT program illustrates a company's investment in building collaborative spaces. As the pace of business interactions picks up, companies are challenged to find new ways to deal with complexity without falling into the trap of reductionism and fragmentation (i.e., without dividing up problems and accountabilities in ways that work against seeing the entire picture). Cultural, technological, and stakeholder factors need to be dealt with in collaborative relationships in a new way—in the creation and use of collaborative space. Michael Schrage (1990) describes a collaborative space as a "shared space that is the place or the medium where people put up and play with the representations and models of their ideas." Risk-taking and experimentation are encouraged, cultural assumptions are openly acknowledged, and all parties are willing to experience some level of discomfort in working together.

Collaborative spaces involve not physical spaces but the collaborative process of creating models, of experimenting, and of improving them while engaging in ongoing discussion and exchange of ideas. The process or model creates the focus and interest for the collaborative team to build on. In this way, a collaborative space is the jumping-off point for networks and collaborative relationships. The value creation comes from the relationships, which can carry through to subsequent collaborations.

The creation of a collaborative space can be likened to a temporary learning system (Seashore & Seashore, 1998), wherein a group has been brought together around specific learning goals for a defined period. Explicit in the concept of the temporary learning system is the blending of completion of task and reflection on process, which occur in parallel. The group creates a collaborative space in which learning through process—voicing insights, shedding assumptions, and noting direction, energy, and involvement of the group—is as important as the task. The premise of the temporary learning system is that the collaborative space must allow members to "get out of the box," to combine linear and random insights, and to access the untapped energy for learning in the system, including conflict, and to use that as a springboard for new discoveries.

The collaborative space is the container in this case for exploring learning technologies and methods that can move the organization toward its desired future.

## The Collaborative Learning Cycle

To build, enhance, or transfer collaborative learning competence, the following cycle is proposed as a road map. The model, as an ongoing learning practice, is presented as cyclical because each learning cycle leads to a reassessment of collaborative learning capability, at an increasingly fine-grained level of inquiry. The figure shows the phases of the collaborative learning cycle (Figure 1).

### Phase One: Collaborative Capability Assessment

As mentioned, collaborative capability assessment provides data both for strengthening collaborative capability in the organization and to be shared with other learning groups for input, advice, and feedback.

### Phase Two: Creation of Boundary-Spanning Skills

The skill set that supports collaborative learning has been termed *boundary-spanning skills* (Digenti, 1998a). These skills allow the members of the collaborative learning group to develop a shared vocabulary and to build skills in boundary crossing while they are engaged in collaborative learning projects. The competencies for boundary work can be seeded through workshops and group study. At the same time, the competencies that have the most relevance for a given firm will be determined over time through the practice of the boundary work itself. The boundary-spanning competencies should also form the basis for mentoring new collaborators and for mentoring across organizational boundaries. Within the collaborative learning group, a “flying-geese” pattern emerges, where members with more experience in working with learning approaches create “uplift” for members newly entering. This creates opportunities for mentoring and peer teaching. (See sidebar on page 50 for further discussion of the boundary-spanning skills and their development at the 3M Corporation.)

### Phase Three: Practicing Collaborative Learning

Collaborative learning is a practice, and therefore every opportunity for collaboration that creates value should be sought out. Naturally, certain types of work do not lend themselves to collaborative activities but, even in that case, individual contributors can benefit from collaborative learning around methods and approaches. A number of collaborative learning technologies can be engaged in building capability.

### Parallel Learning Groups

Parallel learning groups are created to open new channels of communication outside and parallel to the normal, hierarchical structure of each organization (Bushe & Shani, 1991; Zand, 1974). The groups cut across organizational lines horizontally and vertically, define their own boundaries and strategies, and bring new thinking and creative energy to problems that have challenged normal decision-making processes. New behaviors and organizational forms are practiced within the parallel group, with the hope of later transferring those new behaviors to the organization as a whole. Through its own processes, the group learns about boundary-spanning capabilities, collaboration, goal setting, and group development.

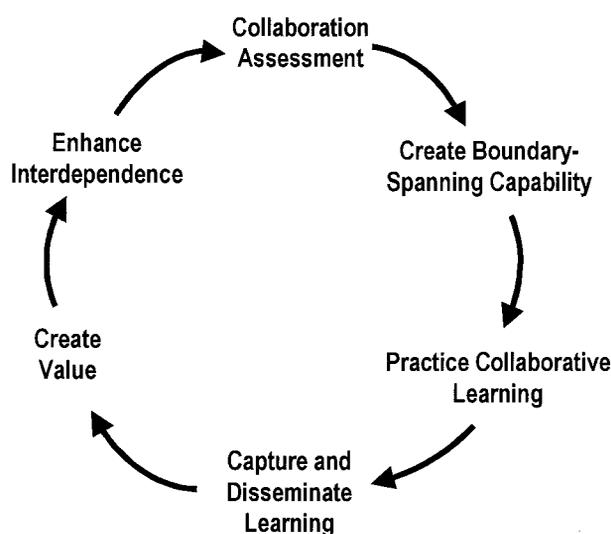


Figure 1. The collaborative learning cycle.

The parallel learning group should be composed of a diverse group of individuals, from different divisions and functions, generations, and cultural and national backgrounds within the organization. This is critical if the group wants to avoid replicating the traditional patterns and bureaucratic behaviors of the organization; in other words, if its goal is real change. By “mixing it up” through diverse membership, the parallel group ensures that unheard voices, lack of hierarchy, and broad consensus become norms of the group process. Over time, the parallel learning group becomes a source of peer teaching and mentoring on the process to the organization.

An example of the parallel learning group activity is the change agent program at Siemens Nixdorf (SNI) (McGuire & Mohammed, 1996). This program consists of the annual formation of a parallel system of 20 to 25 professionals from the company; they engage in a major change project and a 13-week change agent’s course. The group’s goal is to replace SNI’s rigid corporate hierarchy with a more responsive and flexible organization. The program is intentionally fast-paced to force the participants to make quick decisions. Each change agent in the program has an executive sponsor and a senior manager mentor during the course of the program. Some program outcomes include institutionalization and expansion of job rotation programs, enhanced communications strategy, and the creation of “one-company” vision that superseded divisional interests.

## Boundary-Spanning Skills

Managers and change agents now work in multiple boundary-spanning situations. Internally, managers must address functional, national culture, and subculture boundaries within a single project team. In addition, customers and suppliers are increasingly party to product and market decisions, so managers must be able to bring external perspectives to their own organizations and be sure that internal barriers to fulfilling customer needs are addressed. In the past, the management of functional boundaries (project managers), national cultural boundaries (international managers), and subcultures (the “people” persons of the company) were separate; now all these functions are handled by a single management. This creates the need for cross-disciplinary boundary-spanning skills.

Boundary-spanning skills combine organizational learning, intercultural, and negotiation-mediation approaches to provide managers and change agents with the tools they need to address multiple boundary situations and to create and manage the knowledge gained through those interactions. These boundary-spanning skills are double-loop learning, mediation-negotiation, systems thinking, peer learning-teaching, and intercultural relations.

3M Corporation, a world leader in innovation based on successful leveraging of internal and external relations and unparalleled technical expertise, began to build boundary-spanning capabilities as an outgrowth of its Tech Forum activities. The Tech Forum, a 7,000-member global association of 3M technical employees, has developed a number of internal boundary-spanning mechanisms and programs, including chapters based on technical areas of expertise. In late 1997, Peter Fritz, former Tech Forum chair and technical manager in the abrasives division, began to see a need for building “conduits” for technical managers to advance linkages with counterpart technical managers in customer firms. He saw not only that there was a need for enhanced information flows at all levels of the company but that the information flow must be transformed to sharing knowledge and learning strategies that increase customer regard and build strong intercompany relationships. The way to achieve these goals was through delineation and dissemination of boundary-spanning skills. As Fritz notes:

Boundary-spanning skills addressed our needs to build direct, tech-to-tech communications across company boundaries, and to improve our capacity for collaborative learning from outside the company. We clearly saw that systems that worked internally would need to be enhanced in order to deal with our non-U.S. customers, and with the connections and new ways of working we were required to create to access our customers’ “hidden needs.”

In 1998, Fritz formed the corporate outreach committee to explore and begin promoting the need for external perspectives at the technical worker level. “Our work with the boundary-spanning skills has been revolutionary in terms of the type of interactions we are having with external companies now,” he said.

Beyond “data exchange,” we are beginning to build the networks that shed light on our own knowledge-generating activities. These learning relationships highlight areas we should focus on, and provide us with access to tools and ideas—innovative uses of the Internet and conferencing software, for example—that are accelerating our transformation to a networked organization.

A case from the author's consulting practice showed that creation of a parallel learning group needs to be based first on a firm grasp of organizational learning principles (Senge, 1990; Argyris & Schön, 1978). These principles are best learned through workshops that include exercises that allow the group to grapple with the principles and create its own internal case examples. The parallel group, in attempting to establish new norms, can experience "slipping" between new norms and old cultural habits. Part of this slippage is due to the need to navigate the organizational system to accomplish tasks, which necessarily pulls the members back to old forms of behavior. Direct access to senior management and the ability to pass over typical chain-of-command requirements support the parallel group in creating a successful practice field.

An example of this type of direct senior management access is seen in Sharp's emergency technical research and development (R&D) teams—cross-functional teams that can respond rapidly to perceived technological "threats" and report directly to the president. Direct access to senior management allows the parallel group to practice and experiment successfully with the new desired behaviors.

### Study Groups

The home of the study group method is the Japanese firm. According to a recent survey, 83% of large companies in Japan use study groups, and 59% of managers report satisfaction with study group results. The number and variety of study groups, more generally known as *small-group activities* (*sho shudan katsudo*), within the Japanese firm is compelling. Small-group activities include no-error movements, level-up movements, big-brother and big-sister groups, zero defect (ZD) movements, mini-think tanks, suggestion groups, safety groups, workshop involvement movements, productivity committees, management-by-objectives groups, and workshop talk groups. All these may be discussed under the general term *study group*.

Typical formats for study group process include members and teams studying the same topic and sharing findings; each member and team studying a different topic and exchanging findings (similar to the "jigsaw" method described later); members and teams meeting to discuss their firm's processes and exchanging practices; and members and teams meeting with an external organization to study their process and discussing applications to their own firms.

The study group has two purposes: to learn about the topic chosen for study and to develop the members' abilities to work and learn collaboratively. The company in Japan offers and supports the training programs for study group participation and usually coordinates them through a central study group secretariat. Study groups typically feature rotating facilitation by a member. Though management may be involved, typically it is in the role of advisor. The groups meet regularly, often several times a month.

Much of the learning and information gathering in study groups takes place informally. In other words, study groups—for process improvement, new knowledge, or knowledge exchange—are so well accepted that it is commonplace for these groups to form, function, and disband according to need at all levels of the organization. An example of an interorganizational study group that the author is familiar with is the informal association of human resource managers of major Japanese firms. This group meets periodically with academics and government experts to discuss learning opportunities. One such group heard from one of its academic advisors about General Electric's (GE's) Change Acceleration Process and asked GE Japan for a seminar about the subject. These are the types of informal activities in which Japanese interorganizational study groups engage.

### Leader's Circles

Leader's circles focus on personal development through peer learning, mentoring, and counseling involving problem-solving activities. The leader's circle meets monthly, and each member has 20 to 30 minutes to present a problem or issue. Presenters then hear focused feedback, questioning, support, and relevant materials—whatever members agree is helpful. All circle members decide the goal on which they will work. Each one commits to implement the advice given in the circle before the next meeting and to report on changes that resulted. To ensure that the group's goals remain focused, each meeting closes with a process review. The method requires little external facilitation and can adapt to crowded schedules.

### **Reciprocal Teaching Groups**

Reciprocal teaching is a method of group learning based on the principle of distributed expertise and peer learning and teaching. The method involves the formation of small research groups, each responsible for a subset of knowledge of a larger field of inquiry. The small groups complete their investigations and compilation of research, and then the entire group convenes to “jigsaw” into new small groups, where each group is composed of one member from each research team. The new, jigsawed teams then report their findings to representatives from the other research teams. Jigsawing continues until every member of the entire group has learned from every research team. Each member’s learning process is enhanced through teaching and through answering questions, summarizing, clarifying, and predicting the answers to further questions. Participants with particular interests are encouraged to concentrate on one aspect of the subject of inquiry and become a community resource to others. Reciprocal teaching, through verbal exchange and multiple team formation, the primary mode of instruction, presents members with challenges in problem solving, differing communication styles, and support and channeling of weaker and stronger learners.

### **Wisdom Councils**

A wisdom council is 12 to 24 people randomly selected to come together as a temporary learning system. The purpose of the council is to determine the pulse of the organization and to act as a subset of the whole to determine key issues or obstacles—needed changes—in the organization. The participants can come from any level or job function in the organization. Like a jury, they seek a unanimous view. Unlike a jury, they use an open-space approach to determine their own agenda. Generally, through the assistance of a facilitator, the council engages in dialogue to uncover collaborative breakthroughs. The goal of the council is to create and announce a unanimous, nonbinding statement that articulates the informed wisdom of the people. The council then disbands, and new participants create the council the following year.

The wisdom council represents a structured, time-limited period of reflection for the organization. Through inquiry and probing, it begins to uncover the underlying issues that represent common concerns in the organization. For example, in a county public works department, the wisdom council determined that the critical issue was workload, which it proposed to resolve by hiring additional workers or creating more free time during the day. Finally, however, the council realized that the underlying issue was that the workers did not feel that they were respected in their jobs. This brought forth some creative solutions and was empowering for the council members and the organization as a whole.

Because wisdom councils’ statements are unanimous, they are powerful. Though they do not suggest specific change projects, they can shift the direction of the organization to examine issues more closely.

### *Phase Four: Capturing and Disseminating Learning*

Capturing and disseminating learning is the most challenging aspect of collaborative learning. How should learning be generalized and made most useful to the organization? Typical approaches include after-action reviews and postmortems using internal publications to publish successful collaboration stories and creation of Internet or database resources. All are useful approaches. Change agents should also consider unorthodox approaches, such as the creation of a group statement or manifesto concerning collaborative learning needs and results. Humor and drama are also powerful communicators of the collaborative learning imperative. Humor combined with graphics makes an especially powerful impact. Possible approaches include a company comic strip or single-frame political cartoon (as evidenced by the popular newspaper comic strip character, Dilbert). Graphical humor is a compelling way to communicate ideas.

### *Phase Five: Creating Value*

If the activity of collaborative learning is not disseminated to the organization, systemic change and improved collaboration will not result. Change agents must facilitate closed-loop processes,<sup>1</sup> where they actively seek feedback and engage the learning that they have

received through collaborative activities. Without “working” the learning in the system, it remains the property of a few and cannot benefit the whole system.

An example of a closed-loop process in collaborative learning would be to complete a phase of learning and to disseminate that learning through mentoring and peer teaching forums. Feedback from those activities then helps the organization define the next learning focus for collaborative activities. In short, the outcome of the implementation phase—“We focused on this, this is what we learned, we have disseminated that learning through various channels, and we have received their feedback”—creates new input to the next collaborative learning effort.

### *Phase Six: Enhancing Inter dependence*

This stage of the collaborative learning cycle is the most challenging for U.S. organizations because of American cultural inhibitions around mixing business and personal relationships. For collaborative learning to continue, however, members must develop a sixth sense, or awareness, of how to create strong networks among current and former collaborators. Change agents will need to foster and encourage that awareness.

As technology and change gain momentum, no professionals can claim enough mental bandwidth to maintain learning in all the necessary endeavors they are engaged in. An organization can sustain its collaborative learning only by building interdependence among members. This is where the personal learning network (PLN), born of series of learning collaborations, can be a valuable tool for enhancing and building interdependence (Digenti, 1998a).

The PLN consists of relationships between individuals where the goal is enhancement of mutual learning. The currency of the PLN is learning in the form of feedback, insights, documentation, new contacts, or new business opportunities. It is based on reciprocity and a level of trust that each party is actively seeking value-added information for the other.

How do you build a PLN? First, it is important to overcome the hesitation around “using” people. If you are building a PLN, you will always be in a reciprocating relationship with the others in the network. Ideally, you should feel that your main job in the network is to provide value-added information to those who can, in turn, increase your learning. There is no “tit-for-tat” formula for this exchange (see further about the learning contract, if a more formal arrangement seems appropriate), so any fears of using or being used should be allayed.

Follow these steps to build your PLN:

- Develop a mind map of your learning objectives (Buzan, 1996). For example, if you are an expert in group process and have a network of colleagues who support your learning in that area, that part of your map is “filled out.” Perhaps you are weak in Internet technology, however, and would like to develop learning partners who could not only bring you up to speed but commit to keeping you informed about late-breaking technology and act as a resource for you in that area. Here, you have a learning area but no contacts: It needs to be filled out. Determine who is currently in your network of contacts and how they fit into your PLN.
- Develop a plan for building up the areas in which you would like to learn. This can be done by building on existing contacts, through professional societies, through members of your firm, or through networking meetings. Engage in regular, value-added communications with the members of your PLN while you are expanding new contacts. You must be continually aware of new learning or data that will be valuable to members of your PLN. This is the key to enhancing interdependence.

To have a truly valuable PLN, investments in time and resources are essential. This requires an extension of the typical transactional business mind-set. If, as a business manager or change agent, we “do the deal” and fail to consider building our PLN, we have lost much of the value of our interactions. This is particularly true in the activities of collaborative learning, where each project we engage in should enhance and broaden the PLN of each member.

Formalizing the PLN is possible through the use of learning contracts (Knowles, 1991). The learning contract includes outlining learning objectives, learning activities, learning

resources, and evaluation. It may also help to outline the roles of each party in the contract and to set the duration of the project. Each party should then sign the contract to symbolize his or her commitment. This type of simple agreement is helpful for building the PLN when trust, time usage, or need to document the learning accomplishment are issues.

If the organization has adopted a collaborative learning imperative and the members of the organization are building their PLNs within and outside the organization, the key sticking point of transfer and dissemination of value-added learning is largely eliminated. To sustain the effort, interdependence and deepening of collaborative relationships lead to new levels of assessment: How can the collaborative learning process be made faster, better, more inclusive, more targeted to emerging needs? This begins anew the collaborative learning cycle.

## Summary

Far from being a sole source of organizational revitalization and strength, collaborative learning is one aspect for managers and change agents to consider in helping organizations build sustainability. Collaborative learning can change the way employees address their jobs, their company, customers, and even their competition but by itself cannot “save” the organization. However, given the challenges in global economies and technological change, those organizations that can learn effectively in collaboration will be well positioned to survive and prosper.

## Note

1. The term *closed-loop process* is borrowed from engineering and recycling usages, where closed-loop refers to the fact that the inputs to the system loop are dependent on the outputs of that same system. For example, a plastic milk jug (output) is built of recycled plastic material from used milk jugs (input). This is in contrast to an open-loop system, where inputs and outputs are independent of each other. In the case of value creation of a collaborative learning effort, the feedback from those to whom the learning was disseminated must be an integral part of the input for the next cycle of collaborative learning. The other origin for the term *closed-loop process* is from the Japanese *yarinuki*, which is the process of complete follow-through in a process or cycle.

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## Commentary by Silvia Gherardi

The donkey is—or was until a few decades ago—an animal common to all Mediterranean countries. In folklore, the donkey symbolizes stubbornness, hence the Italian saying: "You can lead a donkey to water but you can't make it drink."

The relationship between management, organizations, and "collaborative learning" is similar to the relationship between the peasant, the donkey, and water. There is absolutely no doubt—or at least there is general agreement—that learning constitutes, and will constitute, a strategic core competence for organizations, just as the donkey needs water.

Digenti precisely defines the "water" for business organizations in the "new economy." It is, she writes, "learning from alliances, [which] is critical for viability in the technological changes we are facing." The strategic problem is how to learn from alliances (internal and external) without losing contact with the market in the "networked world" that characterizes the new economy. Digenti depicts a networked world in which various factors are at work:

- Shared knowledge and product capability increase profits for all.
- Beneath-the-radar trends explode as the focus of geometric profits.
- Laws of product lifecycle are skewed.
- Prices for the best technology constantly decrease.
- Individual companies rise and fall but the network remains intact.
- The best products are given away free.
- Continuous disequilibrium must be sought rather than cured.

Digenti argues that in this scenario, a strategic advantage is collaborative learning competence. By this she means "a business practice whose development is outpacing the creation of supporting theories." What makes her argument particularly interesting is the idea that collaborative learning is already a business practice. The challenge—as intellectual as it is practical—is to develop a body of knowledge that can translate this idea into practice. Digenti proposes a "collaborative learning cycle."

Without going into details of the phases involved in the creation and re-creation of collaborative learning, I will emphasize only the first phase, "collaboration assessment," because this phase makes explicit a premise on which Digenti bases her interpretative model.

As the Greek philosophers have taught us, to have knowledge we should know what we do not know. With regard to organizations, before attempting to introduce a work practice based on collaborative learning, it is important to understand an organization's attitude toward collaboration and understand existing systems of collaboration within that organization. Digenti calls this phase "a tool for uncovering tacit knowledge about collaboration." Once again, when authors examine the process of knowledge building and learning, they encounter the iceberg of tacit knowledge. If the incognito of tacit knowledge (and of what constitutes skill or competence) were only a cognitive problem, it could be solved by the techniques and technologies of rational thought: One would merely make what is tacit explicit, on the assumption that nothing is lost in the procedure. But how much do we organizational scholars know about collaboration and its forms, so that we can be sure that explicating the premises of this interpersonal (more than organizational) relationship does not kill the collaboration, thereby proving to be counterproductive? I raise this doubt to undermine the omnipotence of the idea that we scholars or agents of change (or both) hold of organizations. The imperative for managerial knowledge is to control design and rational knowledge, but organizational life is shrouded by mystery and secrecy.



Silvia Gherardi

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Digenti seems to be aware of these gray areas, because she argues that managers who want to translate collaborative learning into practice must change their mindset:

- They must acknowledge that they do not know where the next set of changes will take them.
- They must understand that today's core technological and product competencies may be obsolete in a few years.
- They must be convinced that the differentiating factor between success and failure in the face of discontinuous change will be the ability to learn and collaborate.

In other words, it is subjectively important for management that the people in their own organizations and others in the network collaborate and produce knowledge that is useful (value-creating) for the organization and the network. Here, I believe, the recalcitrance of organizations and the resistance of human beings enter the scene. And not only these, since the limited ability of organizational knowledge to handle themes, such as learning, knowledge, collaboration, and trust, is also important.

I see two main obstacles to translating collaborative learning into practice. First, collaboration and learning are relational concepts: They take place within social relations and emotional relationships. When the relationship is asymmetrical—as work relationships are, by definition—the reciprocity of the collaboration is annulled. Is an explicit contract enough to make the exchange fair? Or do the terms *learning* and *collaboration* reflect the paradoxical injunction (as in, "be spontaneous") discussed by Watzlawick? The problem, more ethical than organizational, is understanding how and to what extent a work contract can induce individuals and groups to accept learning and continuous change. A management that seeks to control its workforce's cognitive capacities challenges the boundaries between public and private. The transparency of industrial relations is at stake and with it the question of power relations.

Second, knowledge and power are a single phenomenon; there is never one without the other. Knowledge is the basis of power, and power restricts monopolies of knowledge. The act of defining what constitutes value-creating learning, and for whom this value is created, is itself the expression of a power structure. Moreover, power relations operate through cultural relations, which may value differently the distance of power or the egalitarian social relation, both in society and in organizations. When knowledge is produced and travels through cultures, the hierarchy destroys it, thus devaluing the knowledge of the powerless (defined by class, gender, or race).

I believe that the main difficulties that learning raises for the community of organizational scholars reside in the resistance of social relations to being managed. But this should not dissuade us from developing and experimenting with techniques that bring our metaphorical donkey to the water, accepting that it may or may not drink. Neither should we think that replacing the donkey with technology will solve the problem.

## Commentary by Russell L. Ackoff

There are only two sources of learning: others and experience. The others from whom one can learn have either learned what they know from others, or they have learned from experience. But all learning originally derives from experience. Despite this, the bulk of the literature on learning organizations is about learning from others. Dori Digenti's article falls into this category.

There is relatively little literature about learning from experience and making it available to others in and out of an organization. This worries me, because no amount of sharing of ignorance can produce knowledge. What assurance is there that the alleged knowledge shared in collaborative relationships is valid? Saying so does not make it so. In other words, generally speaking, the evaluative aspect of learning is not treated adequately in treatment of transmission and sharing of learning from and with others.

It is for this reason, for example, that we suffer much more from an overabundance of irrelevant information than from a shortage of the relevant. Technology is currently contributing much more to the generation of irrelevant information than relevant. Though capable of filtering irrelevant information and selecting what is relevant, little effort goes into it. The technologists involved are much more interested in doing the wrong thing more efficiently than in doing the right thing.

Peter Drucker once differentiated between doing things right and doing the right thing. Doing things right has to do with efficiency, hence knowledge. Doing the right thing has to do with effectiveness, hence wisdom. Much of the knowledge I see being transmitted and shared is about efficiency, not effectiveness. The *righter* we do the wrong thing, the *wronger* we become. Correcting an error when



Russell L. Ackoff

doing the wrong thing makes us *wronger*. Therefore, it is much better to do the right thing wrong—because error correction in this context makes things *righter*—than to do the wrong thing *righter*.

For example: the so-called health-care system is not a health-care system but a sickness-and-disability care system. Regardless of the intentions of the servers within that system, those servers must preserve or create enough illness and disabilities to enable the system to survive. *The worst thing that could happen to this system is that everyone becomes healthy*. Improving the current system makes it worse! A good deal of research-produced evidence supports this, for example, the large amount of unnecessary surgery and testing, maltreatment, and excess treatment that produce or exacerbate illness; hospital-transmitted infections; and harmful effects deriving from interactions of prescribed drugs. Collaborative sharing of knowledge about improving the current system is more often than not counterproductive.

How can collaborative learning be made to focus on the rightness of what is being done rather than the rightness of the way it is being done? And what can be done to encourage the literature to turn in this direction?

## Author's Response

I see learning from experience and learning from people as two sides of the same coin.

An individual's knowledge derives partially from experience and partially from received knowledge. We are still making the transition from acknowledging only academic learning—where I learn a set of facts from an acknowledged expert (whose knowledge is assumed to be valid), become an expert, and in turn teach that knowledge—to acknowledging experiential and peer-based learning as well, where I engage in mutual exploration (learning from experience) with a group of individuals (learning from people). It is difficult for academics to trust this type of learning activity, where no institution or credential states that our knowledge is valid.

But unless we engage in collaborative learning, there is no process for revealing and using tacit knowledge. The knowledge resident in one individual's head can, unbeknownst to that individual, hold the key to a new approach or innovation for another individual or group. Only through group interaction does this tacit knowledge become useable. As change accelerates, it is this current of ideas embodied in networks of people that can create positive affects in the organization.

Yet, I wholeheartedly agree with the belief that learning from others could take us further into the "hall of mirrors" that Ackoff describes through the example of the health care system. How can organizations avoid reinforcing the wrong types of learning, and then spreading them around through collaborative learning?

First, there are issues of trust to deal with in a peer learning effort, as mentioned above. It seems clear that collaborative learning groups must develop awareness of organizational blind spots so that learning leads to positive change. To do so, they must seek inputs from outside their own system, as Edgar Schein has stated. But here also, a group of organizations can get caught—trapped—in "data exchange" only. That is, organizations can meet together to build networks and exchange information, perhaps resulting in more efficient practices, but never go deep enough to effect transformational change. It requires a real interest in understanding the cultural blind spots (as one manager described it, "put windows in the tunnel"), and commitment and individual skill training in boundary spanning. It is also a velvet revolution, in that the process is slow, incremental, peer-based, and subtle. It flies in the face of our expert-based "zap" approaches that offer change in systems, not mindsets.

A group of organizations that share the same industrial focus (as in the healthcare system example) will be challenged to break out of their industrial mindset. They may tend to reinforce the status quo, rather than develop a commitment to transformational change. This is where the societal level of learning could be useful. That is, industry groups as a collective must also actively seek external feedback and input on basic assumptions, and then have the requisite systems skills to be able to process those inputs.

In summary, for collaborative learning to be effective, it must incorporate learning strategies at the individual, group, organizational, interorganization, and societal levels. Structured properly, these levels of systems can act as checks on the validity of what we are learning. And a learning strategy must include ways for the learning taking place to be accessible to each of those levels in an iterative process. We need to develop the organizational and societal mechanisms for this sort of dense learning to take place.

# The Biology of Business: Love Expands Intelligence

*Humberto Maturana and Pille Bunnell*



Humberto Maturana

*This paper is part of a series based on a presentation made by Humberto Maturana at the Society for Organizational Learning Member's Meeting, Amherst, MA, in June, 1998. Some material has been added in the desire of making this installment more readable outside the context of the SoL presentation (available on the Web Site of the Society for Organizational Learning at <http://www.sol-ne.org/res/wp/maturana/>).*

In the second essay, I will talk about something that is usually considered inappropriate in a business context: I will talk about emotions. You will see that emotions are fundamental to what happens in all our doings, including our businesses.

There is something peculiar about human beings: We are loving animals. I know that we kill each other and do all those horrible things, but if you look at any story of corporate transformation where everything begins to go well, innovations appear, and people are happy to be there, you will see that it is a story of love. Most problems in companies are not solved through competition, not through fighting, not through authority. They are solved through the only emotion that expands intelligent behavior. They are solved through the only emotion that expands creativity, as in this emotion there is freedom for creativity. This emotion is love. Love expands intelligence and enables creativity. Love returns autonomy and, as it returns autonomy, it returns responsibility and the experience of freedom.

## We Are Loving Animals

Once in a lecture, I said that we are loving animals, and a question arose: "Are we animals?" I answered, "Yes, we are animals, but we are loving animals." Most animals are loving animals to some extent. What is peculiar about us human animals is that we have expanded this emotion in our manner of living.

All mammals live in a loving relationship with their mothers during their infancy. Our distant ancestors began to orient their manner of living around extending this mammalian mother-child relationship. In enjoying and conserving the pleasure of this intimacy, our ancestors found themselves living in small close groups that were centered around the mother-child bond. By conserving the pleasure of intimacy with each other, they extended the domains and the duration in which consensual behavior took place. Occasionally, our ancestors would use sounds and gestures as a part of this consensuality and, sometimes, the sounds and gestures became the ground for further coordinations, and a minimal operation in the form of language would arise. When such operations began to be conserved from generation to generation through the learning of the children, the foundations for languaging as a way of living were laid.



Pille Bunnell

Language evolved in us humans because we began to live in the pleasure of intimacy in a way that conserved this way of living. We developed language because we became the loving animals. Humans are those animals that have expanded living in love. We have become dependent on love in the sense that we become ill of body and soul if love is interfered with. Sometimes conditions arise in our culture so that some bad ideas persist in spite of their badness. I think competition is one of those bad ideas that is destructive, and yet it persists.

## Love Is Ordinary

Now, I am going to tell you what love is, not as a definition, but as an abstraction of the coherences of our living—and I pretend that this is all that one needs to know. Love is the domain of those relational behaviors through which another (a person, being, or thing) arises as a legitimate other in coexistence with oneself.

The dynamics I have abstracted is how we act, whether or not we reflect on it. Suppose that you are walking in the countryside, and you encounter a spider. What if you exclaim “A spider!” and immediately stomp on it, making sure it is thoroughly squashed? What would your companion comment? Something like “You don’t love spiders” or “You don’t love animals” or “You hate spiders, don’t you!” And all those expressions belong to the negation of love; the spider does not arise as a legitimate other in coexistence with you.

Aggression is that domain of relational behaviors in which another is negated as a legitimate other in coexistence with oneself. But if you say in wonder, “A spider! Look at it! Let’s be careful not to step on this beautiful spider,” your companion might comment “You sure love animals! Even spiders!” You don’t have to take it into bed with you to love it. Taking the spider to bed would not be loving it. The fact that you let the spider be a spider where spiders live shows that you love it: You let the other arise as a legitimate other through your behavior. It is your behavior that makes it so that you move around the spider so it can coexist with you.

We talk about love as if it were special and rare, something difficult to achieve, but it is a really ordinary thing. But it is special in a different way: When the emotion of love is there, vision expands. Many, many, many years ago, I was walking with one of my sons, Alejandro, who was about seven then. We were going through a field of thistles, and I was opening a space with my stick by batting the thistles aside. Suddenly, my son asked, “Father, why don’t you love thistles?” And there I was, stopped, suddenly seeing what I was doing. And when I stopped being aggressive toward the thistles, I saw them: beautiful violet flowers! I could see a path between them without destroying them. But the point is that at seven, Alejandro knew exactly the nature of love as a relational behavior. So, we learn this as children—we don’t need philosophy or science or anything.

## Emotions Characterize Action

If you think about what happens in your daily life (remember, this is biology, not philosophy), you will notice that we normally use the word *emotion* to conote a domain of relational behavior. Emotions specify kinds of relational behaviors. If you say somebody is angry, you know immediately what kinds of relational behaviors this person can participate in and what kinds he or she is incapable of while angry. If you say someone is ambitious, you know immediately what kinds of relational behaviors he or she can and cannot participate in. We all know this; we are experts in detecting emotions, whether or not we are consciously aware of this.

When you distinguish a particular behavior, you distinguish the emotion. If you want to know the emotion, you look at the behavior. If you want to know what kind of behavior it is, you look at the emotion. Behavior and emotion are both ways of pointing at relational dynamics; they entail different

looks, different ways of grasping these dynamics. As we speak of this dynamic, we do what language enables us to do (that is, we make an object of either the emotion or the behavior and, having done so, we can look at it). But you do not have to think about this, you already practice it in daily life: You know when your friends are angry, when they are joyful, sad, or indifferent. And you know immediately, either by looking at the behavior or by looking at the person. We are expert at seeing emotions. It is because it comes so easily to us that we do not see that this is the case; there is usually nothing that triggers us to reflect on the relational dynamics of emoting.

When we talk about emotions, we usually refer to the way we feel under different emotions, rather than what we do. Our bodies do have different configurations in different emotions. We can “touch” ourselves and refer to how we find ourselves under the different emotions as different feelings. Thus, we easily characterize emotions by the feelings that accompany the particular body dynamics that specify what we can do and what we cannot do. This does not mean that the emotions are body dynamics or that they take place in the body. Emotions take place in the domain in which they occur, and where they occur is in the relation.

### Emotions Determine Intelligence

Different emotions take us along different paths; we live different histories according to our emotions. There is a book called *Emotional Intelligence* that speaks of emotions as a particular kind of intelligence and, in a way, emotions are related to intelligence. I think intelligence is something very basic, a particular kind of phenomenon that has to do with the plasticity for participation in changing behavior and changing relations. Rigid behavior, behavior that does not flow with evolving circumstances, does not appear intelligent. It is the plasticity of consensual flow that we refer to when we speak about an intelligent being. For example, when we say that an animal is intelligent, we are saying that it has entered into a flow of consensuality, a flow of plastic behavior, with us. When we say a person is intelligent, we refer to the plastic flow of whatever relationship the person is participating in, including relationships in various conceptual domains. Of course intelligence requires a central nervous system to take place, but it does not take place in the brain, it takes place in behavior. Intelligence is a basic phenomenon that has to do with the plasticity for participation in changing relations.

How emotions relate to intelligence is that emotions change the possible expanse of intelligent behavior. Fear restricts intelligence to a very narrow view; it concentrates attention in a particular way and constrains the relationship to a particular orientation. Similarly, ambition and competition restrict attention, vision, and intelligence. Forgive me for saying so, but if you think about it, you will see that this is indeed so.

### We Are Equally Intelligent

I claim that from a biological point of view we humans are all equally intelligent, and this is the case because we live in language. The fundamental neuronal plasticity needed for living in language is so gigantic that we are fundamentally equally intelligent. This plasticity is not at all the same sort of thing that computers have; the computers we use are computing machines, not intelligent machines. They do not have the plasticity for participation in changing behavior and changing relations that comprises intelligence. Our languaging brain is enormously plastic, able to generate



endless recursions in language, creating endlessly new domains of living. Sure, there are individual variations in realizing this fundamental plasticity according to whether we have had some malnutrition in our development or brain damage or disease or whether we have lived a life that has put us in situations of constraint, despair, or rejection.

Our cultural belief that intelligence is something that some people have and others lack limits what we can do together. Sometimes, a parent, a teacher, a manager, or a CEO will realize this. If a manager acts in the premise that “people are competent,” he or she immediately initiates a change. If you want to achieve something that involves other people, you have to accept that we are all equally intelligent or you will not trust that the others will act competently. If you want autonomous and coherent behavior, you need only open a space of love, and intelligence appears there. You don’t have to do anything but accepting that the other is equally intelligent as you, even as he or she has a different experience, lives in a different way, or has different preferences.

## Love Is Visionary

How is it that love expands intelligence? It has to do with vision—not eyesight but that which we mean when we exclaim, “I see!” Let me give you an example from daily life. You may have heard something like this enacted in a play, or you may have lived it yourself. A man comes home from work and, after a little while, his wife complains, “You don’t love me anymore! You didn’t notice that I’ve done my hair!” What is her complaint? Her complaint doesn’t have to do with her hair or her beauty; it has to do with not being seen, not arising in the legitimacy of her existence with the other.

By the way, this business of the legitimacy of the existence of the other does not mean you have to like, or want to be near, the person, being, or circumstance to love it: It means that you have to let it be, to see it.

There is an interesting television series called “McGyver;” you may have seen it. McGyver is the hero in this series; he knows many things, like all of us do. He knows some physics, chemistry, anthropology, architecture...all sorts of things. And, in several episodes, he finds himself trapped somewhere with a companion. They may be in a cave or in a barn that is about to be burned down, something like that; the point is, they are trapped. His companion may have the same kind of knowledge about physics, chemistry, etc., but is frightened and despair: “My goodness, we are trapped, we’re going to run out of air!” or “The bandits are going to come and kill us!” But McGyver? No, McGyver is not frightened, he fully accepts his situation as legitimate. He loves his situation, and thus he can see and, as he can see, he can see this little wire here, and this little thing there, and all his knowledge is at hand to make something that opens an escape. If you are fearful, you cannot see; your knowledge is not available, and your intelligent behavior is diminished.

I could have said, “McGyver respects his situation,” and you could think of it that way. But you might see that with respect, McGyver might remain a little more aloof and would not as easily engage with all the little details that become the tools for his escape. To respect something means that there is a particular relational domain that you accept as legitimate, but you are not necessarily open to the legitimacy of all the relational domains which that person or being or circumstance entails.

What I have just said you can check in your own daily life. We continuously live change in the availability of our knowledge, change in our possibilities of plasticity in our relations as modulated through our emotions. I do not think there are different kinds of intelligence. I think emotions modulate the domains of intelligent behavior in which we can operate, and hence our intelligence is expanded or diminished according to our emotions. The only emotion that broadens vision and expands intelligent behavior is love.



Manuel Manga

### Commentary by Manuel Manga

I am impressed by the writings of other consultants who want to contribute to making organizational life more humane and more productive, and to bring dignity, meaning, learning, and community into the workplace. As a consultant, often I am frustrated by the fear, mistrust, and insecurity that exist in organizational life. So, when I read the invitation to comment on Maturana’s “Love Expands Intelligence,” I was excited, but I was also cautious about whether or not my colleagues and clients would hear me. Will this be another fad, like the quality movement? Or a sixth discipline?

Maturana provides us with a new epistemology and a new ontology of human beings as emotional and languaging beings, and the impact of these two theories on human relations. This is a new foundation from which to understand human beings and organizational life. This gives us a new perspective from which we consultants can observe and facilitate the design of more humane and learning organizations. Rather than seeing emotions as barriers to human relations, which is the commonsense interpretation of emotions, Maturana claims that emotions constitute how we coordinate our actions and our relationships. In a sense, Maturana is taking us into our biological roots (living systems) of human understanding and human relations.

As a consultant, I claim that we should pay attention to this topic of “love” because Maturana’s definition of love speaks to a fundamental human characteristic, not a fad or ideal. His “biology of cognition” can provide us with an epistemological and ethical foundation on which to build humane, learning, productive, and sustainable organizations. Building on that foundation, we can discover other key dimensions of organizational learning. Many other writers of organizational life have suggested ways to improve and make organizational life more humane. Writers such as Deming, Covey, and Senge have presented new values, new principles, and new disciplines in their efforts to transform organizations. Maturana offers to use our understanding of ourselves as living

systems, and as emotional (loving) and languaging beings as a new foundation on which to apply those disciplines and principles and to build organizational learning.

As a consultant, I am curious about how one operationalizes love. I invite you, the reader, and other consultants, to generate a conversation about how to operationalize love. I can see myself changing my professional title from Organization Design Consultant to Love Consultant. Why not? At least it would get a conversation going. It will take courage to speak about love, and to transform the current climate of fear in a lot of our organizations, especially after all the downsizing and other change fads.

I suggest the following steps in looking at how to operationalize love:

- Change the mental model by introducing the "biology of cognition,"
- Introduce emotions as a legitimate concept, as Daniel Goleman does in his book, *Emotional Intelligence*.
- Introduce love as a key principle of leadership, just as Covey speaks about other principles of leadership such as integrity and trust.
- See love as an equalizer in human relations.
- Explain love the way Maturana does, "as the only emotion that expands human intelligence and learning." That's good enough for me.

I think we are breaking new ground here on which to generate loving and learning organizations. I would like to join Pille Bunnell and Humberto Maturana in conserving our humanness, and being part of a cultural change in which love shows up in spontaneous ways in organizations and in life.

## Interfering with Vision

McGyver could see his situation as he let it be whatever it was. To see, one must let it be. But this is not always easy as we live in a particular human culture. A culture is both a rich domain of human living in the present and a historic domain of human living in which some things have been hidden as others have arisen. The problem with culture is inherent in another peculiar human thing: language. As language began to be lived, we began to live in language by constituting objects, and categories of objects (a new object), and relationships (another kind of object) between objects. With all this, we could begin to reflect (as we made of our circumstances an object) and we could invent purposes and intentions (yet another kind of object). This doesn't take place as just a mental exercise, it happens as a lived world: We live this world of objects and relationships among objects as our human world, our culture. As long as we live the purposes and intentions we have created as a plastic participation in various relationships in a way that does not distort what we do, it does not matter. If we make these rigid and demand that everything we do fit the rigid structure we have devised, or if we focus our attention on the purpose too closely, we distort our ability to live that which we desired when we distinguished what we wanted as a purpose.

This is, again, a biological discussion, not a philosophical one. This matter of attention resulting in distortion is based in the operation of the nervous system. The nervous system is a network of neuronal elements, which operates on excitations and inhibitions. Every movement we make entails excitations and inhibitions. In the most simple way, if I contract a muscle, other muscles (the antagonists) are inhibited. Further, there is inhibition within the process of contraction of any given muscle. The point is that this play between excitation and inhibition happens in every movement: Every movement is being inhibited as it occurs. This is why, if you are learning karate and you want to break a brick, you have to aim below the brick. If you aim at the brick, the force of the blow will be diminished because inhibition takes place before the intended movement is completed.

The coordination of excitation and inhibition is involved in all neuronal activities, including what we call *thinking*. It is in our neurobiology that attention on what we do inhibits what we do. This is why learning a task involves relaxation—not in terms of becoming limp or falling asleep but in terms of relaxing your attention, your intent of controlling what you are doing. As you relax your attention on the doing but proceed in an understanding of what you do, you allow the actual doing to take place in a manner that uses the circumstances as a reference that guides what you are doing. As you become more relaxed, your doing becomes more fluid, and as it becomes more fluid it becomes more pristine and, as it becomes more pristine, it becomes more beautiful, more comfortable, and more perfect.

As notions such as purpose, intention, or aim arise, they become part of what we do. As they become part of what we do and we begin to attend to them as if they had a concrete existence, this dynamics of interfering with our doing through our attention to what we do takes place, to a greater or smaller degree. Envy, fear, ambition, and competition narrow our attention and our vision and thus restrict intelligent behavior.

As I said above, sometimes conditions arise in our culture so that some bad ideas persist in spite of their badness. I think competition is one of those bad ideas that is destructive, and yet it persists. Humans are those animals that have expanded living in love. We have become dependent on love in the sense that we become ill of body and soul if love is interfered with. The only emotion that broadens vision and expands intelligent behavior is love.



## Reflections on Maturana

*Maturana's talk at the SoL annual meeting last year and the appearance of the first essay in the series "Biology of Business" by Maturana and Bunnell is generating important and interesting conversations of "co-inspiration." What follows are two contributions to this conversation.*

### Commentary by Rafael Echeverria

I would like to comment on Humberto Maturana and Pille Bunnell's article, "Biology of Business?" (Reflections, vol. 1, issue 1), and on what Maturana is telling us.

I regard Maturana as an outstanding thinker, someone who, I am convinced, will profoundly change the way we will understand living systems and knowledge in the future—and make groundbreaking contributions to systems thinking. His influence on my own theoretical approach, the ontology of language, has been decisive, and I have drawn extensively on his notion of the observer. My presentation last November at the Assembly of the World Academy of Art and Science was precisely on the importance of Maturana's notion of the observer as a fundamental concept for developing more effective ways of living together peacefully in a global world.

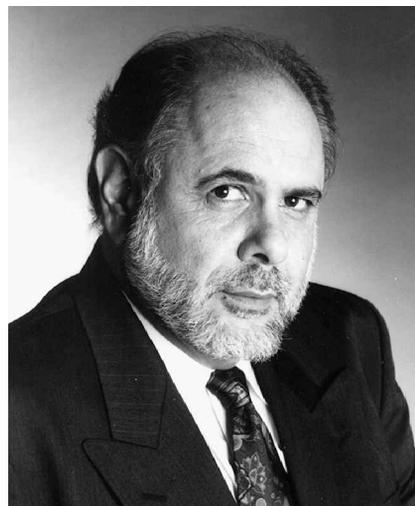
Reading and understanding Maturana, however, is not always easy; at least, this has been my experience. When reading his writings, it is important to distinguish his explanations from his way of explaining. His explanations refer to his answers; his way of explaining refers to the process that generates those answers. One of Maturana's outstanding contributions has to do with the fact that not only are his answers highly original but so is his way of getting to them. Maturana has not only a systemic theory, he also has a systemic way of thinking that is present in the way he develops his arguments. I call this *systemic phenomenology*.

Therefore, when we read Maturana's works, we are dealing simultaneously with two different but intertwined domains: what Maturana is "saying," and what he is "doing" while he is saying what he says. Both domains offer learning opportunities, but the reading can be hard, sometimes even quite difficult. I know from experience that his writings often demand a long digestion process to grasp their full meaning. Sometimes, after I have listened to him or read him for the first time, I am disoriented. I have a sense that something important was said, but I do not clearly understand what that may be. I can grasp some of his claims but not others. I have as many doubts as insights. I also reflect for quite a while.

My experience has been that, after a while, many of Maturana's points that initially created confusion start making sense, and many of my doubts dissipate. Often, after I raise an objection, I find that Maturana has shown me a much wider picture than what I saw initially, a picture that resolves most of the concerns I had brought to his attention. So, I have learned to distrust my initial reactions and to grant him the privilege of the doubt. I have also learned that the best way for me to dissipate my initial criticisms has been precisely to raise them.

To my understanding, Maturana claims that we human beings try to make sense of the present we live in by generating explanations. To explain something means to establish some coherences regarding our observations of what goes on in the present. Different kinds of coherences generate different kinds of explanations. These include both historical coherences, and coherences that result from interactions that are taking place.

Whenever we resort to explanations based on historical coherences, we propose a particular kind of story that we call *history*. We choose an origin, and we link that origin, through a process of transformation, to our observations of the present. Usually, when we do this, we concentrate our attention on what changes throughout that process, but then we miss a fundamental aspect of the historical process. History, according to Maturana, "is a process of transformation through conservation." By concentrating on change, we often miss conservation. Conservation is what makes a transformation process a historical process. A historical process is a process undergone by an entity that has been able to conserve, amid the changes it has undergone, whatever we may consider to be its identity.



Rafael Echeverria

Maturana claims that whenever we resort to historical explanations, we must keep in mind the systemic relationship between conservation and change. This relationship, he says, rests on a few systemic conditions, all "valid in any part of the cosmos . . . including this earth and humans." These systemic conditions, therefore, are granted universal validity, and they should apply to any historical process, any entity. Let's examine the two systemic conditions that are mentioned in *Reflections*, volume 1, issue 1.

#### First Systemic Condition

"When, in a collection of elements, some configuration begins to be conserved, a space is opened for everything to change around what is conserved." We can interpret this first systemic condition in different ways. One possible interpretation simply restates what was just said: "Something begins in the moment a configuration of relations begins to be conserved, and ends in the moment that the configuration that defines it stops being conserved." Or, "all systems exist only as long as that which defines them is conserved." This seems to be common sense.

Another possible interpretation displaces attention to the issue of identity, or to "that which defines" a given entity. Maturana seems to be saying that what grants identity to an entity is a given configuration of its elements. As long as this configuration is conserved, the entity will exist, and the changes that the entity undergoes will generate its history. What is important, therefore, is to be able to specify the entity's basic configuration in every historical explanation. If that configuration changes, the entity will disintegrate or be transformed into an entirely different entity. This seems a more interesting interpretation.

Another possible interpretation of this basic principle seems more problematic. When Maturana says, "When, in a collection of elements, a configuration begins to be conserved, a space is opened for everything to change around what is conserved," we cannot infer that the configuration that "has just begun to be conserved" cannot itself change and, therefore, cannot stop being conserved, and that everything around what has begun to be conserved will change. From the moment that "some configuration begins to be conserved," anything can happen: Anything can change, and anything can be conserved. If this is the case, this systemic condition is not establishing anything. There are other possible interpretations of this principle, and we may even have missed the intended and most important one.

Let's move to the second systemic condition. Surprisingly, we are now told that in spite of what was just stated, in the sense that all these systemic conditions have universal validity and would apply "in any part of the cosmos," this second condition actually does not comply with that. We are warned that "the second systemic condition pertains to all living systems" and that it will be worded as if "it pertains to humans in particular."

#### Second Systemic Condition

"Human history does not follow the path of resources or opportunities. Rather, it follows the path of desires or, in more general terms, the path of emotions." I have some trouble with this principle. I am well aware that I could be blind to something important regarding what Maturana is saying. The only way to find it out is by being honest about my own confusion.

When discussing this principle, I realize that Maturana has not yet told us what he understands by "desires." I take this to mean that he doesn't think it is necessary to provide such understanding because he is using the term in its ordinary meaning (the meaning granted by ordinary language). I assume that if he had thought that the term *desire* should be given a different meaning, he would have provided it to us. However, we can help ourselves with Maturana's use of the term in different contexts within the same text to get a better understanding of what he means by desire. When explaining this second principle, Maturana asserts, "What happens is constructed moment by moment by the character of one's living, always going in the path of well being, a choice of comfort, desire or preference." Later, he states that "in the history of living every moment, every change, whether it resulted in survival or extinction, has arisen along a path of preferences." He uses *desires* and *preferences* as interchangeable terms.

I have difficulty accepting this principle, even if I restrict its application to living systems. What does it mean, for instance, to say that the history of a tree follows the path

of desires? What kind of desires would a tree have? What does it mean to say that a tree "prefers" to grow in one direction and not in another? A tree will grow toward the source of light, but can we say that the tree "desires" light? This sounds anthropocentric to me.

It may make sense to say that the history of human beings may follow the path of desires—however, can we really claim it always does?—but to claim this is the path followed by the history of all living systems is difficult to accept. Unless, of course, we follow into the tautology of assuming that every action taken, every movement performed, reveals an underlying desire to act or move the way one does. In this case, by definition we are tightening desires together with actions and movements but, if we do, we cannot use desires to explain action and movement without falling into a tautology.

Desires, preferences, and choices are reflective phenomena that only linguistic beings, beings with the reflective capacity provided by language, can experience. When we move into living systems with no capacity for reflection, those terms do not make sense. But even reflective living systems, as happens with human beings, act in nonreflective ways, as the result of repeating socially learned behaviors. If we accept the existence of nonreflective actions, can we then say that they follow the path of desires?

Maturana seems to acknowledge what I have just said. Further on in his article, he says that

To choose, we need to live in language. Animals that do not live in language cannot choose. To choose means to treat the circumstances as something you can look at from the domain of your desires, and act according to what you want, wish, or prefer.

*Are we missing something here?* If we look again at this second systemic condition, we see that Maturana equates "the path of desires" with "the path of emotions," but the way he himself deals with emotions doesn't allow him to make this equation. Emotions, according to Maturana, refer to an observer of relational behaviors. They are what allow an observer to distinguish a particular domain of behavior. Therefore, emotions do not belong to the entity that finds itself acting, unless this entity is reflecting on its own actions. Maturana separates emotions from feelings: Emotions are not what we feel. That is why he is able to assert that "behavior and emotion are both ways at pointing at relational dynamics; they entail *different* looks, *different* ways of grasping these dynamics" (italics are mine). How can we then say that "history follows the path of emotions?"

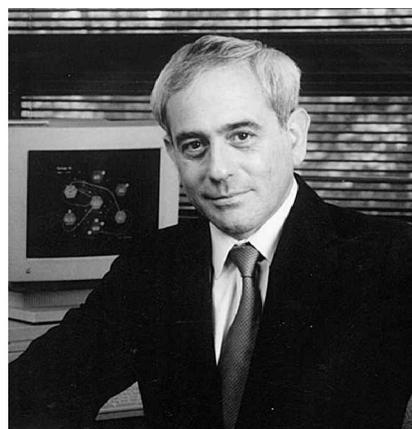
Is this what Maturana is pointing to? We don't know. Only a broad discussion of his article can help us better understand what he is speaking about. In doing so, we will not only learn from him; we may also learn from ourselves. This commentary has been intended as an invitation for an open discussion about what Maturana is telling us and about its relevance for deepening our understanding of the way living and social systems operate.

### *Commentary by Marcial F. Losada*

Humberto Maturana often reminds us that he is speaking as a biologist, not as a philosopher. Nonetheless, his reflections on who we are from a biological perspective have a depth and scope that far transcend the biological realm. They remind us not only of who we are, but also of who we can be and how we can learn together.

Maturana distinguishes three periods in history—biosphere, homosphere, and robosphere—according to what is conserved. What is conserved defines what is stable, and specifies what can change. In the biosphere, what is conserved is living. The homosphere is the period we are living now, where what is conserved is human beings. As we became humans, two characteristics appeared that differentiated us from other living beings and made the homosphere possible: language and the capacity to love. The robosphere has the potential to reduce our degrees of freedom. Robots and circumstances act in complementary ways. We create robots, but our circumstances evolve along with ourselves.

As we exist in language, we can reflect. Reflection consists of regarding the circumstances in which we are as objects, and looking at them. Language gives us the ability to do that. We can regard our present as an object and look at it. Living in language, we



Marcial F. Losada

can always choose where we want to go and what we want to be. But to go where we want to go, we need a space. If there is no space, we find ourselves in prisons. Thus, if we want to create humans as robots in the sense that we not only specify the behaviors that we expect from them but also specify the circumstances in which they will live, we generate unhappiness, suffering, and resentment. As we release these restrictions—let humans be humans—then creativity, cooperation, and “co-inspiration” appear. If we also realize that we don’t need control, we have freedom and responsibility.

Emotions modulate the domain of intelligent behavior in which we operate. Hence, our intelligence is expanded or diminished according to our emotions. Different emotions constitute different domains of relational behavior. The emotion of love implies that we really see the other; the other has presence for us. There are no demands, no expectations. As we let the other be, the other begins to see us also as persons, and can listen to us. If we truly listen, then the other person can become a co-creator with us, and we can learn together.

For Humberto Maturana, learning is a transformation in living together, on how we can live with others. A few years ago, a book that he wrote, *El Sentido de lo Humano* (Dolmen Ediciones, Santiago de Chile, 1994), had a great impact on my understanding of learning and teaching. It includes a poem titled “Plegaria del Estudiante” (“Prayer of the Student”) that I have clumsily translated and abbreviated (for which I ask for Humberto’s forgiveness). I offer it in this commentary as a reflection on how we can live and learn together:

Don’t impose on me what you know.  
I want to explore the unknown  
And be the source of my own discoveries.  
Let the known be my liberation, not my slavery.

The world of your truth can be my limitation;  
Your wisdom, my negation.  
Don’t instruct me; let’s learn together.  
Let my richness begin where yours ends.

Show me so that I can stand  
On your shoulders.  
Reveal yourself so that I can be  
Something different.

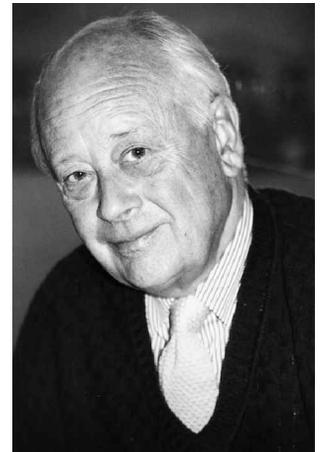
You believe that every human being  
Can love and create.  
I understand, then, your fear  
When I ask you to live according to your wisdom.

You will not know who I am  
By listening to yourself.  
Don’t instruct me; let me be.  
Your failure is that I be identical to you.

# Conversation with Charles Handy

C. Otto Scharmer

*Charles Handy is one of the world's best known authors and lecturers on management, change, capitalism, and society. He has been an oil executive, a business economist, a Professor at the London Business School, and Chairman of the Royal Society of Arts. Hyped as a "management guru," Charles Handy, a Fellow of the London Business School, can be more aptly regarded as a philosopher for our modern age. His books have sold millions of copies world-wide. In his most recent book, *The Hungry Spirit* (published by Broadway Books), Handy explores more of the issues covered in this interview. Other books include *The Age of Unreason* and *The Age of Paradox*, both published by Harvard Business School Press. He and his wife, Elizabeth, a portrait photographer, live in London, Norfolk, and Tuscany. Elizabeth Handy, Charles Handy's wife, joined the conversation and commented from time to time. Conducted in 1996, the conversation was part of a worldwide interview project with 25 eminent thinkers in leadership and management, sponsored and co-developed by McKinsey & Company. The conversation took place at the MIT Center for Organizational Learning, Cambridge, MA.*



Charles Handy

**C. Otto Scharmer:** Professor Charles Handy, what underlying questions does your work address?

**Charles Handy:** Well, I think I am trying to help people understand how the world around them is changing. I am not a futurologist, I am not trying to predict. I really am looking at the way I think things are evolving in the world, which is a bigger question than just organizations. It has to do with societies, it has to do with values, and it has to do with individuals as well. But a key part of that is what is happening to organizations and how they are going to have to adapt or respond to a very different world that I see coming up.

One of the big questions that interests me at the moment is: Why do organizations exist? What are they for? Who are they for? What does success mean? When you say, "It is a great organization," what does that mean? I am interested in trying to see the relationship between individuals and the organization. Is an individual in some sense owned by the organization or is the organization just a collection of independent individuals? What rights do the individuals have against the organization, and what rights does the organization have? If you say, "An organization has to respond," what does that mean? Does it mean that the individuals in the organization have to change or does it mean that they are just a structure and the organization has to change and the direction of the organization has to change? So, these are the sorts of questions.

I really believe that if we are going to make sense of the future and make the future work better for us in all respects, we have to understand what is going on around us. So, my books are not research-based: They are suggestions. And I know that suggestions are useful only if people say, "Aha! I recognize what you are talking about. I see that now in what is around me." So, I am trying to conceptualize, I suppose, people's half-understood feelings. And in order to do my work, I have to meet with organizations. I have to talk to people, and then I have to read—not always books about organizations, but biographies, histories, and things like that. I am looking for ways to interpret the world as it is going on and as I think it is.



C. Otto Scharmer

**COS:** On the one hand, you just said, “We have to understand what is going on,” and on the other hand, in your more recent writings, you point out that it is not possible to understand what is going on. So, how do these relate to each other?

**Charles Handy:** Well, I think you can somehow make sense of much that is going on, but then you have to make up your own mind, and each organization has to make up its own mind. The good thing about this rather more chaotic world that we are entering into is that it allows a lot of freedom, both for individuals and for organizations to take control of their own destiny. And that means that they have the responsibility to work out the future they want. So, what I mean by understanding is understanding the chaotic nature of the world. It is not fixed, it is not programmed, it is not laid down that it will evolve in a particular way. We can shape it; we can change it. It is that kind of understanding, the understanding of why it is like that. The piece of paper is blank, you can write on it what you want.

I suppose I try to suggest some of the things that people might write on the paper, some of the aims they might have in life, but I can’t tell them which is right and which is wrong. I have argued, for instance, that in general I think organizations should strive to last forever—that it should be their attempt to be immortal. They will probably not succeed, but one of the interesting things that is given to institutions but not to human beings is that they can last forever—at least for hundreds of years. The college I went to at Oxford is 670 years old. That is close to immortality.

**COS:** But isn’t that a little bit of the Western way of religious conceptualization, so that you strive for eternal life rather than the more cyclical approach, which could mean to have a rebirth or to have several lives within one institution?

**Charles Handy:** You could interpret this in different ways. I would argue that in order to be immortal you have to re-create yourself all the time. So, you can say that is a form of reincarnation.

**COS:** I see.

**Charles Handy:** The same soul goes on, only in different bodies. This is a dangerous way of thinking, because it would say that you must allow yourself to die, whereas I think that if you want an organization to thrive, the aim should be to stay alive. But in the *process* you will have to change dramatically every so often. I mean, my college at Oxford is in no way the same. Some of the buildings are the same, but what goes on there is quite different.

**COS:** So, you think just the other way around: that the institutional body remains the same but that the soul is changing or transforming.

**Charles Handy:** Mitsui has lasted 600 years. It has changed its nature dramatically, but its name remains the same. They say that the essence has stayed the same. At any one time, it is the will to preserve the essence of the organization that people are striving for. What they do with that essence—the actual outward form, the products they sell, the processes they use, people—those can change. I am not sure if I can distinguish which is the soul and which is the body. But, what I am sure of is that if you don’t strive to keep something alive, then it is too easy to give up. It is too easy to treat it as a temporary phenomenon, a piece of property that you want to develop and sell.

The organizations that I admire are the ones that have managed to change radically and managed to stay alive...a paradox. In order for us to do that—to change, to survive, to last beyond the grave—you have to be profitable, you have to generate money, and you have to keep your financiers happy. You have to keep your customers happy. You have to generate new products. You probably have to change the structure quite often to make new alliances, to grow, or to shrink. All these things have to happen. So, to stay the same, you have to change. This is the interesting dilemma and a very important one. Think about it: If you keep mending your sock until none of the original sock is still there, is it still the same sock? Most people would say yes, because it has been such a continuous process.

Certainly the reason that you mend the sock is that you want the sock to survive. And the reason you change the organization is that you want the organization to live on.

**Elizabeth Handy:** And it is really for the people that the organization continues?

**Charles Handy:** Well, that is a very good question. I mean, in the American ideology of capitalism, it is not for the people in the organization; it is for their financiers. That will not be enough to sustain the organization, because the easy way to satisfy the financiers is to sell the organization. So, it is rather like my sock: You mend the sock to keep the sock going. Even at the end, when you changed it so often that it is not the same sock, still in a way, it is the same sock. But, you wouldn't bother to mend the sock unless you wanted to go on using that sock—you would just throw it away. So, the whole motivation for change, it seems to me, and therefore for learning, development, and growth, is that we want to continue as long as possible.

**COS:** With regard to the big question you mentioned—why do organizations exist? what are they for? who are they for?—what are your key findings?

**Charles Handy:** Well, findings is not the kind of word that you can really use to describe what I do. Suggestions is as far as I would actually go.

**COS:** Okay.

**Charles Handy:** The suggestion that business organizations are essentially the property of the shareholders and that the shareholders are the people who have paid the money for them is the kind of understanding that underpins Anglo-American capitalism. I do not think that that is a sustainable concept of the organization, and I have suggested that it is nowadays much more sensible to regard organizations as living communities of people, because the principal assets of a modern business organization are literally its people. This was not so a long time ago. The principal assets were bricks and mortar or machines or boat or materials of some sort, and you hired people to make them work for you. But now, the physical assets are perhaps one-tenth of the value of the company.

So, if organizations are communities, then it is wrong to regard communities of living people as being owned by anybody. Let's talk the right sort of language: People don't own other people in a modern democratic society. If this suggestion is taken seriously, it again raises big questions about the relationship between the stockholders and the employees.

**COS:** And other stakeholders.

**Charles Handy:** And other stakeholders, but those are the principal ones that are affected. The employees have to be given more rights, and the stockholders have to have less power, because the stockholders are not particularly interested in this community living forever. They are only interested, really, in making money out of it or at least getting their money back. Some of the research says that the stockholders do actually take a longer term view than people think, but I still don't think they are particularly concerned with the existence of the organization beyond 5 or 10 years, maybe. Even the employees of a community don't really look much beyond the grave. They really, really want the company to exist as long as their lifetime in that community. I think that it has to be a much longer term view than that, actually, to give the company the drive that I think you need for learning, adaptation, and long-term investment.

**COS:** So, what would such a constitutional foundation actually look like?

**Charles Handy:** It would be a constitution based on a set of rights. I am arguing that the financiers have certain rights. They would be rights equivalent to people who hold a

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mortgage on your house. They are entitled to a rate of return, and if you do not pay them that rate of return or if the value of the house sinks below or gets close to the value of the money they gave you, then they are entitled to move in and sell the house. But, just because the house is getting more expensive, worth more money, they cannot step in and sell the house and take the property.

**COS:** Okay.

**Charles Handy:** Similarly, the members of the community have certain rights. They, as individuals, as assets, cannot be sold to someone else without their consent. So, mergers by agreement are possible, takeovers by agreement are possible—but no forced takeovers. Members' rights do not extend to having a lifetime of work with the organization; that has to be by contract. But, the contracts would probably be for 10 or 15 years or something like that. Within those contracts, they have other rights. I think they have a right to share in the rewards of working for the organization, the profits of the organization—again, to be negotiated. In return, they have responsibilities, which essentially are to keep the organization well positioned for eternal life. They have the responsibility not to get rid of all its assets: not to squander its money, not to squander the resources of its people. They have to keep bringing new people in, keep developing the talents of the organization so that they can hand on the bat, the trusteeship of the organization, to the next generation. They have that responsibility. So, these things can be defined constitutionally, or should be.

**COS:** Who would be the owner of such a—

**Charles Handy:** There would be no owner.

**COS:** There would be no owner?

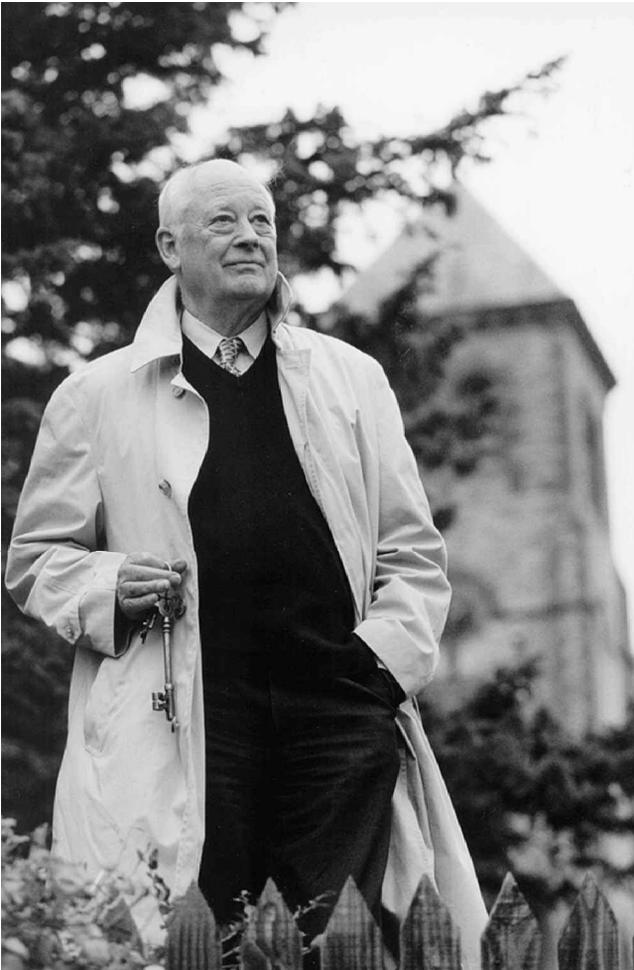
**Charles Handy:** The word does not apply. No one owns a country. No one owns a town.

**COS:** So, it would be a community asset.

**Charles Handy:** It is a different mind-set. I am not looking at the organization as a piece of property. Clearly, the assets are owned by the organization, like the buildings, but the research and the intellectual properties are owned by the organization and not owned by any set of individuals. It doesn't need to be. So, rather than thinking of the stockholders as owning it, they have provided money and they have rights in return. It is a different way of talking about it. It is a different conceptualization. Actually, this is the only real motivation there is for continual change, development, growth, and learning. Otherwise, it will always be expedient, something that is profitable for me and useful for the organization in the short-term. The thrust has to be because it is long-term, and I think that the organization should believe this.

**COS:** If a company is not something you buy and sell, what implications does this have for the concept of having employees whom you pay? Doesn't that mean that the concept of employee is to be rethought in terms of becoming more an entrepreneur and sharing the outcomes?

**Charles Handy:** Yes, more like a partner. They get a salary, as if it were, an advance on their share of the added value of the organization, and if the advance is not enough, they



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will get a little more at the end—a bonus. Yes, they are partners. I call them *members*. I don't like the word *employee*; that implies that they are employed by someone.

**COS:** And you are saying they're not employed by anyone.

**Charles Handy:** Yes, they have entered into a voluntary agreement to work and to increase the added value of this organization. They receive a monthly payment in advance of that. If you want to get into more of the implications for practical things, I am not saying that this membership or partnership status is given to everyone. You have to have been around for a bit to have shown your worth to the organization, to be valued by them, to be committed to it, and then you become a member. So, the numbers in the core of the organization who are effectively members or partners is really relatively small, and much of the organization's work is then delivered to it by smaller organizations, who also have partners, plus outside individuals who are called in and part-time workers who do not have the status of members.

And that is what you begin to see happening. They don't call it that yet, but they are giving more and more people a share of the bonuses. They are giving more and more people stock option schemes. They are effectively creating membership mechanisms. And what I am doing is conceptualizing what they are aiming for, though they don't know it. And I am saying that the stock exchange is becoming more and more of a betting ring in which you don't really own when you buy a share—you are not really buying a share of the ownership. You are really taking a bet that this organization is going to do well, and your bet will be worth more money in 10 years' time.

**COS:** Do you see any structural changes in regard to the company-customer and the company-community relationships?

**Charles Handy:** The customers: I don't see much need for change, because it is self-correcting. If you don't take proper account of your customers, they will leave you. So, customers have rights built into the market contract. They don't need to be represented in any formal sense inside the company. Their views should always be dominant, because without customers there is no point in going on if we're talking about a business or, indeed, a hospital or school for that matter. I think the same applies to suppliers. If you are sensible, you will make sure that their interests are aligned with your interests.

The surrounding community is a more debatable point. I would argue that if an organization sees itself as lasting for 100 years and it really believes that or wants to last for 100 years, it will take an interest in its surrounding community. I mean, longevity—the lure, the desire to be immortal—makes you take it seriously. If you are only going to live in a house for 3 years, you won't really care about the local schools. If you are going to make your life there and you want your children to live there, you will take it more seriously. So again, if we adapt this view that we last forever, these things self-correct.

**COS:** In rethinking what organizations are all about, new structures or new realities emerge in regard to relationships between organizations. So, how can different types of organizations, like family firms, small or medium-sized companies, survive along with giants?

**Charles Handy:** Well, I think the interesting thing is that these days small things can do very well, provided they are linked into big things. The richest country in Europe is Liechtenstein; the second richest is Luxembourg.

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**COS:** Yes, good point.

**Charles Handy:** They have survived because they have a cohesion, but in a bigger context. Quebec, if it had separated from the Canadian federation, would actually have done very well in my view, because they would have negotiated a looser relationship with the Canadian federation, and the cohesiveness of being a Quebecois would have given them a new energy, and so on.

So, what is happening, it seems to me, is that organizations are looking for the kind

of cohesiveness and energy and excitement that you get from being small, but also wanting the great benefits of being large. And really, it is this that drives my concept of federalism as being the appropriate business model and societal model. I do actually think that federalism is a way of allowing small things to ride on the back of big things so that everybody benefits. Federalism is a negotiated arrangement that is centralized, in some respects, decentralized in other respects. It is both-and. In what respects it should be centralized and in what respect it is decentralized has to be negotiated.

**COS:** So you see federalism not only as a concept for organizing within corporations but also as a concept for organizing between corporations.

**Charles Handy:** Oh, absolutely. Federalism basically arises because separate organizations wish to organize together. In order to get back to where they were or should have been, organizations have to dismantle themselves into federalism. And that proves very difficult to do, because it is moving from monarchy or centralized rule to a much more dispersed system of power. And no monarch willingly gives away power.

**COS:** Unless they are named Gorbachev.

**Charles Handy:** Unless they are named Gorbachev, facing disintegration; or unless they are, as Gorbachev would claim, visionary; or unless they are effectively about to fall apart anyway and clinging onto something. But the normal way the federations arise is that small states come together and say, “We need each other.” And so, I really see federalism as the appropriate mechanism for small organizations to actually organize, as you say, between organizations.

**COS:** Couldn’t that be a confederation, rather than a federation?

**Charles Handy:** A confederation is not enough in my view. A confederation is a voluntary association with no center, so it has its uses, but it falls apart under any kind of attack. Federation is a system in which the individual states have actually granted certain powers to the center.

In a business situation, the ultimate power resides in these small organizations only if they have yielded power into the center. They don’t want to break away, because then they lose the advantages of bigness, but if the center is too overpowering, it pulls things too much. But yes, you’re absolutely right. The difference between a confederation and a federation is crucial, and I am not saying that confederations are much use; it is the federations.

**COS:** The concept of federalism has two main structural components. One is the vertical dimension, where the concept of subsidiarity is applied, and the other one is in that more horizontal dimension, where you are arguing for a differentiation between different functions, like the legislative, the executive, and the judicial function. I would be particularly interested in the latter dimension, because it seems to me the most crucial one and it is not really conceptualized in our current institutions.

**Charles Handy:** Well, it is very important. Federalism is about a balance of power, always, between the center and the parts. And it is all about the parts giving authority to the center to do things. Therefore, it is very important that you separate out these functions. For instance, the legislature—let’s call it, for businesses, the policy-making body—has to be done by a body that is representative of the parts. Of course, the actual policies are drafted and put up, posed as possibilities by an executive, but in the end the decisions on policy have to be taken by a representative body. Now, that body is representative of the member states, it is not representative of the shareholders. So, I am not talking about the board; the board is something else again.

**COS:** That would essentially be a completely new institution.

**Charles Handy:** Well, in some cases, it’s already there in a management team, if the man-

agement team is made up of the heads of the main operating units. In some cases, it would be new but, in many cases, it exists as an informal arrangement. Businesses call together a strategic conference once a year, they bring together the top 300 people in the organization, and they outline their strategy ideas. This is an informal sounding arrangement. I would like to formalize it, because the important thing is that states own the policies, psychologically own them, because they contributed to the decision. Only then can the executive carry these things out, only then can the executive really operate efficiently. If it is an imposed strategy by the executive on the constituent bodies, as it is often at the moment, there is endless trouble, really.

And then there is the judicial function: This is what you might call the inspectorate. Think of the people who actually see that things are done as they should be done. That if we say that we are an ethical corporation, we are. If we say that we maintain these kinds of qualities, we do. If we say that we pay people in a sort of way, we do. It is a small body, but it should again be independent.

In a monarchy, to get power you concentrate all these three functions in one person. So, you make the policy, you carry it out, and you check the stuff. That is too much concentration of power. In the federal system, the individual organizations will not give that much power to the center. The center doesn't like giving these things away, but if they exist, they have to. And you may have a board of outside people representing the shareholders, to make sure that their interests are looked after.

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**COS:** Which of the functions you described would that be?

**Charles Handy:** It would be different. The board is not necessary, in my view, because the market should automatically take care of that. The share price goes down, etc. At the moment, it seems to me that the structures of capitalism are inefficient. The board is supposed to take the long-term policies, but the board is supposed to represent the shareholders, and the shareholders are interested in their medium-term earnings per share. So, I don't think they are the right body to take the decisions for the whole community. And the executive at the moment is supposed to be the servant of the board (i.e., the servant of the shareholder), and that doesn't seem to be the right relationship.

**COS:** And the right relationship would be servants to—

**Charles Handy:** To the policy-making body, which is the representative body of all the states.

**COS:** And then the executives would be elected by that body?

**Charles Handy:** Appointed.

**COS:** Do you see, then, each individual performing only one of the three roles you described? Or do you see this as three parallel action spaces, and each individual could play in one, two, or even in all three of these arenas?

**Charles Handy:** Well, to some extent, it is parallel action spaces. For instance, one member of one of the states could be a member of the inspectorate, as I call it, or the judicial review body. But, if somebody is a member of all three, that makes him too powerful. The thing is to spread power around, but concentrating the actual execution of that power in small, compact teams in the center and then in the individual states. Unless the individual business units get involved in the general policy making, they will in the end drift away or find other federations to go to if they don't have some power.

**COS:** This is a crucial point, isn't it? Does it affect whether or not there is a rule for exiting the federation?

**Charles Handy:** Well, you can have rules, but if you can't enforce them, they are not

much use. There are five elements to federalism and we have talked about two: subsidiarity (responsibility at the lowest point) and the separation of functions at the center. But there are three more, of which perhaps the most important is interdependence. The way you hold parts, the individual states, into the whole is not just through a contractual constitution but because they would not survive very easily outside. Several of the functions that they need in order to perform effectively are done by other members of the federation. We can't actually take Massachusetts out of the United States, because the state needs the corn grown in Kansas or financial operations on Wall Street or whatever. There is an interdependence, and it is very important to structure that in. There is a coordinating device which insures that no one particular business unit could do it all by itself. Of course, there are also inefficiencies in coordinating, but it does mean that it is more difficult to break away, unless there's another federation that also has those same coordinating devices. But not only does that stop breakaways; it also means that you feel that you have to invest in the total federation, because you get something from it as well as giving something to it. This is this other idea of twin citizenship. You have this emotional commitment to your individual unit, but you also have an emotional commitment to the whole federation.

**COS:** The last issue that I would like to address involves both the concept of paradox and how to deal with paradoxes and the concepts of the multiple cultures, as you argued for in *Gods of Management*. You described four different modes of doing things or four different modes of cultures, and it is very intriguing to me, seeing how they emerge and re-emerge in different relationships and different realities. What is the underlying concept that makes the integration of these diverse concepts possible?

**Charles Handy:** While I think they are related, I think there are two different issues. I don't think I have dealt with the question of paradox as well as I would like. What I am trying to say is that there is almost a necessity of contradictions in life. In order to have black, you have to have white. Otherwise, it doesn't seem like black.

**COS:** And otherwise you don't get color.

**Charles Handy:** You don't get color. Leisure has no meaning unless there is also work or effort. Valleys don't exist unless there are hills. There is a logical necessity for opposites or contradictions in life. And that applies throughout. We are used to it in the examples I have just given. We have learned to live with black and white, even if we don't like black. But we don't seem to have learned to live with that in the rest of the world. I'm trying to say that in organizations, it is both-and, not either-or.

We have created an ideal form or organization whereby we say we can have, for instance, total control in the center, and you can be an individual. People say, "Well, that's not possible. If you control, obviously you don't trust me." I'm saying, obviously you can, but you have got to live with the seesaw. You have got to live with the fact that one time you need control and sacrifice your freedom, and another time you need the freedom and sacrifice some control. Life is always like that. I think we have got to train people to live with what looks like confusion but is actually the necessity to alternate between valleys and hills all the time. You really can't have both at the same time, but you can have both in the same field.

**COS:** I see.

**Charles Handy:** I don't think I explained it very well in the book, but it seems to be very important: that you can have a very strong leader and very strong individuals. You probably have the two, not at the same time, but in the same place or the same field. But at the same time, they fight against each other. So, sometimes the leadership has to actually let the individuals be strong. To some extent, that applies in the same way to the *Gods of Management*, which I think is one of my most neglected books in America. I am very fond of that book. It has the seeds of all of my other books in it, really. I am fond of it because I think it helps people to understand the confusions of organizations quite

well. What I'm saying is that there are four very distinct cultures or styles, management, or organization that you can find pure examples of anywhere, really. And the reality is that they are all there at the same time. To be more accurate—in the same organization in the same field.

**COS:** Talking about your experience—the most crucial challenge probably is to make these different cultures talk with each other and understand each other and to make them have a dialog within companies.

**Charles Handy:** There are two. The first challenge is to make sure you have the right mix of cultures in the first place. The second is that they have to talk to each other and live with each other. I guess the whole underlying theme of my work is that if you understand differences, you can behave more appropriately. If you understand, you feel less confusion; if you understand, you feel less stress; if you understand, you can moderate your own behavior. If I know what dress is expected of me in a situation, I can dress. A lot of great problems with our children, for instance, who wanted to express their individuality in their clothes when they were young teenagers, was getting them to understand that in certain occasions, it was more appropriate to dress like adults, even if they didn't like it. As they grew older, they began to understand that that wasn't actually denying their individuality, it was just that it would be easier for other people to accept them and for them to merge into the thing if they actually dressed in the right uniform. Understanding helped them change and adapt their behavior. This is what that book is all about: understanding and understanding differences. The paradox about understanding is the necessity of contradictions.

And I don't think understanding is enough. You have to do, and you have to reflect. We haven't talked about learning. Learning to me is experiment, it is curiosity, a question full of life. Learning is experiment followed by reflection. And in that process, you need ideas, you need concepts to explain, to experiment. And in my view, most organizations are about experiments but without the questions, without the reflection, without the ideas.

Somebody said that learning is experience understood in tranquility. So, you have to have the experience, and then you have to understand it. In order to understand it, you have to have the urge to understand it. You have to have the questions in your mind, the curiosity, and you have to have the ideas, the concepts that will explain it. And you have to have the time, the reflection, to do it.

The discovery is the whole process. Learning is discovery, isn't it? Discovery is curiosity, the stepping into the unknown, the experiment as well as the concepts and the time to understand that experiment. It is the whole process of putting the pieces together which is what I think is lacking in most organizations. The concepts are in a classroom somewhere or in a book; the experience is out there. The time for reflection is after retirement, and the curiosity perhaps never exists, because—

**Elizabeth Handy:** There is no time.

**Charles Handy:** What I am trying to do, I suppose, is to provide the ideas and, to some extent, the curiosity. If I can make my books interesting enough to read, people start to think. Now, there are concepts—and they use some but not others—which relate to their experience. What I can't provide them with, of course, is a sort of enclosed space for all these things to happen at once.



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**COS:** Let me ask you one more question, which is: How does federalism relate to learning?

**Charles Handy:** Well, let me take a step back. I think a federal organization is an ideal starting place for a learning organization, because it is not uniform. So, you can have a lot of different ways of doing things in the same organization; people are allowed to be different in many respects in a federal organization. They are coordinated in some respects, they have the same systems in many respects, but it is basically a coordinated set of experiments with all the different bits doing their different things. Now, you have to have curiosity to turn that from experiments into learning. People have to want to know what they are doing. You have to have concepts, and you have to have space for reflection, to think about it. Most federal organizations that I know don't provide any of these. Instead of curiosity, there is jealousy; instead of concepts, there are just presentations: "How we did it." But it is harder to create a healthy curiosity rather than envy and jealousy in a nonfederal organization. In a bureaucratic organization, experiments are not allowed because they disrupt the system; it is untidy. They reject it. So, if you have designed a federal organization in which you have created curiosity, a range of experiments, and a set of concepts which people can apply to explain the differences, that is learning.

**COS:** What are the most important questions for future research? What is relevant but unanswered?

**Charles Handy:** The big question for me now—and I think perhaps it has to do with my age as much as anything—is *why?* *Why do we work so hard? Why do we have these organizations at all? Why are you so interested in improving them? Why do you want to make them learning? Why am I living? Why am I working?*

You know, these are old questions, but it seems to me that if I am demanding of the people in organizations that they work hard, that they learn, that they plan to make the organization so good that it is worth handing onto the next generation, you have to know *why?* What is so important about this organization? And the answer that it is making money for the shareholders does not seem to justify people consuming their lives for their organization. There has to be a very good reason for people giving up their lives to organizations. There has to be a very good reason, and I am not sure what it is. And I think that until organizations find the answer to that, they will not have people learning as much as they should. And until societies can articulate what it is that is important about America, they will not hold the country together. People will get selfish.

Most of the organizations that I consider wonderful are not in business—and I can see why. And actually, the organizations that are wonderful will continue even if they are inefficient, even if they don't learn very well. I am sure The Red Cross will be here in 100 years time, or MIT. I think overriding all their learning and everything is that they have a reason, they have a mission, they know why they are here, and it is not just to earn salaries.

I used to send my students into all these different organizations, and they would go to banks and they would go to Ford, but they would also go to schools and to hospitals and to prisons and to all sorts of places. And they always came back, these business men, totally surprised and excited by places like hospitals, primary schools, kindergartens, because they found organizations that had a reason to exist, and people believed in that reason. And these organizations might be terribly inefficient, but people wanted to be there. And they would come away from businesses saying, "Well, it was very efficient, but there was no soul. People were there because they wanted to make money or because it satisfied their partners." Trying to explore *why* is what I am doing. It is research, it is thinking, it is suggestions. But I think in a way that it is more important than learning, if you want to have a great organization.

**COS:** Thank you very much.

**Charles Handy:** Thank you. It's been great for me.

# Reconceiving Balance

Betsy Jacobson

In 1992, my colleague and dear friend, Dr. Beverly Kaye, and I were asked to work with a Big Eight accounting firm on the problem it had retaining women. The firm wanted more women to qualify for partner positions, but studies showed that somewhere in their fifth year of employment, women dropped out in large numbers. The firm sensed that the problem was career development.

Very quickly into our diagnosis, however, we discovered that the problem of retaining women was really a metaphor for a more organic problem of all employees hungry for “a life.” In effect, working for the company meant being married to it. People worked more than seventy hours a week and traveled continually. The customer was “king.”

For some employees, particularly the high achievers, this intensive work schedule was rewarding. For others, however, and women in particular, it left no room for a “me” (not to mention a family). Many of these were leaving the firm for jobs with corporate clients where work demands seemed less onerous, and things other than professional activities had priority. Because the firm’s culture included a serious work ethic, the retention problem was not simple. Untangling it led us to explore the dilemmas of balancing work and life.

Balancing work and family has been on organizational agendas for years. It is on most leadership competency lists, and many organizations have rewritten their value statements to include it. Some companies address it by building gyms open to all employees at all hours. Some provide child care, and a few, even elder care, on site or nearby. Some maternity-leave employment policies are for six months. There are virtual offices and flextime, and voicemail and e-mail links that enable employees to be almost anywhere and still be in touch with the office. People who participate in programs such as these are enthusiastic about them. But the programs do not offer a more balanced life. They do not help “me” “get a life.”

The situation that these programs address is improperly framed. Balancing work and family is miscast as a time-management issue. As employees, we look to our organizations for permission to be a whole person. We assume that we can solve work-and-family issues on a day-to-day basis. How can I pick up the kids and finish this meeting? How can I have a “fast track” career and also be a loving and concerned partner, wife/husband, father/mother, devoted son/daughter? Employees want policies that let them manage their competing priorities, and organizations are responding to the problem as best they know how. But I do not believe that they are addressing the fundamental issue of balance.

Each of us needs more self-esteem, a greater sense of personal accountability, more resilience toward life and trust. These are mindsets, not policies. They are deeply rooted in our own sensibilities, and cannot be resolved by having more time available for more activities, on the job or off it. At the same time, I do not want to regard life balance as an either/or issue. I am not suggesting that our organizations employ whole people with full lives who still need opportunities for continuous improvement and need to be treated with sensitivity. However, in the spirit of learning, some of our assumptions may be flawed.

## The Ability to Reflect

Reflection tends to run counter to our culture, which supports action. It means pausing, slowing down, looking at recurring patterns in our own behavior. It is not necessarily time-out, but it is a consciousness, an in-the-moment of asking why we are doing what we are doing, and if it is what we have always



Betsy Jacobson

done. If it is what we have always done, we are likely to hang on to it. And if that way results in a nagging sense of disjointedness, fragmentation, and incompleteness, then maybe we need to look inward for solutions, rather than look for them outside.

Balance means “to bring into harmony or proportion, equalize, to bring into equilibrium.” Our equilibrium is deeply rooted in our patterns of behavior and belief. Reflection is an opportunity to self-correct our course in terms of our thinking, feeling, and actions. It requires answering some hard questions.

Only when discontent creeps in—boredom, or too much change, or an unsettling event such as job loss, divorce, or illness—do we step back and reflect. And often, this isn’t reflection at all, but problem solving, in which we act to alter the situation or our feelings. Reflection combines introspection and “mindfulness,” by which I mean being fully aware of what is happening in the moment. Mindfulness does double duty. For example, you give a performance review and at the same time learn something about yourself. As parents, we warn our child of something and simultaneously hear our own parents saying the same thing to us when we were the child. This kind of reflection requires slowing down, and noticing patterns by observing yourself in the moment.

## The Ability to Feel Appreciation

A corollary to the ability to reflect is the ability to feel and express appreciation. What about those kudos? When we get them and take them in, we are energized. Do we appreciate in words our partners’ support during a hectic stretch? Do we talk about how sacrifices are part of shared goals? Can we talk about what we feel grateful for in terms of progress we are making in our respective and collective lives? Conversations like these bolster us during difficult times.

At the end of a long stressful meeting where differences have been intense and crucial decisions have been made, does the team take the few minutes to rebalance itself by expressing appreciation for collective sacrifices, personal risks, and the value each person has brought? These are not thank yous. They are expressions of a side of human feeling that rarely surfaces at work. We desperately need appreciation for our self-esteem and ability to continue giving. Many of my clients suffer from what I call “recognition deprivation”

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(which is not found in a rewards-and-recognition program). Recognition needs to come in the moment from the people who can best give it. Feeling appreciation requires willingness to see that coworkers, bosses, and direct reports are making good faith efforts. It means acknowledging all ideas, because the good and bad ones together make for the ones that are breakthroughs.

Appreciation comes in many forms. Think about the last operations review meeting you attended. Remember the questions you prepared for, and how questions were asked. Some meetings I observe remind me of inquisitions. The way people ask questions presumes the worst. In client groups where we teach inquiry skills, participants often say that asking questions is a sign of weakness unless the questions are worded to uncover weakness. But good inquiry does not undo; it enhances both parties' quality of thinking. The way we ask questions demonstrates our feelings of appreciation for what is known, and what more can be known by thinking together. When questions seek to trip up and confound rather than to appreciate, the experience leaves one gasping for ... balance. Tapping feelings of appreciation and gratitude acknowledges progress made, and provides people with feelings of personal power. Personal power is an important source of feeling that one is in balance.

## The Ability to Set Boundaries

Setting boundaries and saying no is critical for a sense of balance. Part of boundary setting is making and keeping commitments, and then letting others know what those boundaries are. Boundaries are important both at work and at home.

Successful people think they are efficient and productive. They are proud of their ability to multi-task—take vacation with the family and get a few hours of work in the early morning; handle business calls at the pool watching the kids; conduct business over a meal, or a few rounds of golf; take a walk together and at the same time develop a meeting agenda or talk through a problem. Some of this multi-tasking is truly the social side of business, but most of it is a lack of understanding the importance of setting boundaries for one's well-being. Without boundaries, the ability to enjoy the kids, good food, or exercise is diminished. Everyone loses. Call it quality time, but it is not quality if it is not mindful, aware, and in the moment.

Setting boundaries for quiet time is essential. This is not reading a newspaper or a good book or watching TV. It is time to reflect, time to feel and notice what and whom you appreciate. It is time that brings you back into balance, into harmony. It can be a few moments on a commuter train with your eyes closed, or a quiet moment when you get up in the morning or go to bed at night. It is time for the "me" that is otherwise missing.

Balancing work and family is a juggling act only if we look at it that way. Balance is an experience and a feeling sustained by our ability to reflect, feel appreciation, and set boundaries. It requires us to be more accountable, but we may be able to live better that way.

## What is of Value?

*Chris Unger*

As I ponder the life of organizations, and how we all approach and attend to life, every day ...I wrote this reflection last night and finished it this morning.

My partner, Robin Pringle, and I have been musing quite a bit on the influence of money to shape the way we see and relate to one another, ourselves, our work, and the development of our communities.

When I ask myself what I truly care for, and value, it is not money. But money, as you know, has seeped into our ways of valuing and action. Perhaps this does far more harm than good in the outcomes of our interactions and what we create within and from our communities.

The question that has caused me to stand back a bit and question some of what I do, and what we are doing in communities, and with each other, is: "If money were NOT a factor in anything you do—you don't need it, you don't use it, it's not a part of how we relate and interact with one another—what would you do? And why?"

This growing awareness within myself, at least, of how so much of our interactions and concerns and awareness and design hover around the influence of money has started me thinking if there were other ways to relate to money, and subsequently with one another, and eventually what we create—socially, relationally, in products, services, etc.

What is the bottom line? How much does our attention to the need to "make" money overshadow the question of "what sustains us?" in larger, more emotional, relational, and community terms? Robin and I are asking, and thinking, about this question.

As I continue to develop our work around learning in organizations, personally I continue to uncover that my real work is how to help others live their lives in joy, with joy, and with personal meaning, in communities of care. Robin and I have been working with school communities on their dreams, concerns, and the actions that can help them to paint their dreams into action.

So it comes to pass that I wonder about the nature and form of our schools...and what they are giving our children, and how they are shaping the view of themselves and their possibilities of experience in life.

Furthermore, and perhaps even more to the point, I think about how we all shape the experience of our lives through the structures and forms of our everyday society. And I continue to bend my mind around the question of why things are as they are.

What, in our biology, in our state as living organisms, has us do as we do—the rush of "buying," the procedure of commerce and economics, that pits one against the other and allows for the disequilibrium of states of being, of self-worth, of



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value, of place, and of access to the provisions that can enhance or eat away at the experience of ourselves and our being?

I see so much attention and effort, in the name of one's work, given to the invention, design, and development of goods and acts that really, for the most part, have nothing to do with the things I think we are losing most of: a sense of contentment, and peace, and love within each of us, and with each other. The beauty of being, not just doing.

There is more time and human energy spent designing and developing and making the next best big black box, and computer, and car, and marketable dessert product, and fashion, than on looking at the light and how it changes across the sky and landscape and hits the new leaves on spring trees, and how the kids are interacting with each other in ways that create meaning and connections and joy for each other, with the kinds of reflection and development of experience which, in my mind, truly matters in the long run. What, in my own mind, matters most, so that when I come to die, I can say that I have fully, and happily, lived.

How could we redesign the way we go about attending to the experience of our lives, ourselves, and one another, by questioning the present forms and structures which, in my mind, may have, in the end, have done us far more harm than good? What are the dynamics at play? How do our biology, and sociology, shape us to act and think and respond and create in certain ways?

Are there mindsets, and ways of being and seeing, that

we can adopt that will call us to question how things are as they are, and wish them different? Are there new communities we could build, small—it seems the best way—that, through attention, awareness, and deliberate action and practices, would allow, moreover, cherish, ways of being that support the love and joy of life, and in that, each other?

Who was it that said, to make a difference people had to change not only their actions, but their way of being? That to make a difference, one could not simply talk a great talk, or say that one should act in certain ways, or do certain things...but one had to be in that way? Was it Ghandi? Was it the Dalai Lama? Was it Martin Luther King?

I do not know. But I do know that when we begin to act and be in certain ways different than the norm, with hearts more open, with more care to what is life giving, and more supportive and caring for one another, around who we are, and not just what we can become, or what we can produce, or how we can contribute to society in the way that it is now, through a commercial state rather than an economy of love and care...that things change in the presence of that person. And that others sometimes change too. And that conversation, those new possibilities, can do a lot. But being in a new way, somehow, can tell more.

When do we stop talking about how things should be, or could be, and start living with these feelings of resonance, and designing our lives around their fulfillment? Now, and not later. When the time is right. And the earth is still sweet.

## Book Reviews

### ***Natural Capitalism*, Paul Hawken, Amory Lovins, and Hunter Lovins, Little, Brown and Company, 1999**

Review by John Ehrenfeld

With such a stellar set of authors, *Natural Capitalism* looks like an undeniable hit. Hawken's earlier book, *The Ecology of Commerce*, provided impetus to the then-incipient transformation of the private sector to adopt new business practices rooted in ecology and sustainability. Lovins broke into print with a groundbreaking book, *Soft Energy Paths* in 1977 and challenged the energy industry to begin to think in a fundamentally different way. Much of what Lovins argued for has come to be in the form of deregulated and decentralized forms of energy production and consumption.

Natural capitalism is presented as a new paradigm that would replace the old ways in which we tend to think about the world today, especially the mind-sets of those who make investment decisions relating to the nature of economic output. The primary target of the message appears to be business leaders, although there is little mention of this until the very last chapter. The four principles of natural capitalism are:

- Radical resource productivity
- Ecological redesign
- Service and flow economy
- Investing in natural capital

The names are reasonably self-descriptive. Radical resource productivity is the most emphasized of the four. At least half the book contains helpful hints about radically decreasing the energy and materials used to produce different categories of products or services by factors of 20, 30, and even 100, far beyond the factor four promoted in Lovins' recent collaborations with von Weiszacker. And by the way, these opportunities are always profitable, with paybacks so quick that even hard-nosed capitalists would drool.

Ecological redesign suggests that product and service systems should follow nature's principles, including parsimony and closed loops. Several examples are combined with a new design process that would avoid the tunnel vision of current procedures that conceal the holism of nature from designers and product developers.

The third item, service and flow economy, argues for replacing the purchasing of products that provide satisfaction to customers with purchases of services that provide equivalent satisfaction. Products will still have to be made and marketed but now to intermediary service providers. People who want to go from one place to another will still need (short of teleportation) some sort of "vehicle." The authors argue, as many others have for some time, that if ownership of the artifacts is left with the seller of the services, the technologies that will be offered will be more robust and long-lasting and will create lower impacts on the environment per unit of satisfaction. This strategy is now only slowly finding its way into the market place. The comodification of what had been market of-

ferings with broad consumer choice is an idea that is prevalent today simply for economic reasons, but this approach to customer satisfaction is not without many problems. For example, "service providers" has become a pejorative in the world of health care, as many of the features that consumers historically sought are either not available or are priced out of reach.

Investing in natural capital means putting human and financial resources toward restoring and maintaining the natural systems on which economies and the flourishing of humans and other species depend. The authors point to the terrible shape of so much of the globe. They also recognize key underlying problems, such as free ridership or perverse taxes and subsidies, which lead to overusing these historically free or very cheap resources. Their solution is simply to change the tax and subsidy structure to one that works.

Much easier said than done. It is an overly optimistic or naïve belief that underlying assumptions are as easy to change as corporate or consumer practices. The glibness with which these and other "solutions" are offered up is one of the shortcomings with the book. Some of the deep-seated problems they point to are left unaddressed. Free ridership—the *Tragedy of the Commons* that Garrett Hardin wrote about so eloquently some three decades ago—rests on a mental model of the world as infinite. Those who would overuse a public resource are in a conversation with themselves that says there will be plenty left for everyone else even if I take a little bit more. Solutions here require either some sort of coercive intervention, as Hardin wrote, or the replacement of this world-view.

Likewise, each of the many proposals and solutions requires profound shifts in the everyday consciousness and norms of decision makers at every level in all institutions, not just in business. It takes more than instrumental innovations or altered economic ground rules to bring about the world pictured in *Natural Capitalism*. Of course, getting more value for the same investment is a norm so deeply entrenched that not even the authors would meddle with it. Let me add here that the picture of the future they paint is not so nearly well elaborated as that of the mess we are now creating and living in.

For the audience of this journal, there is a more important problem with the book. It is not about whether the ideas are good or not but rather about why they haven't already taken hold up in the mainstream. In spite of its early dismissal of utopianism, the book is deep down a utopian promise: Build it, and they will come. Here are some ideas so self-evident that everyone will pick them up and run with them but, unlike the economist's proverbial \$20 bill, few have done so although all the ideas in this text are familiar to some extent to those now in positions to make transformative business decisions. Yes, there are a few structural problems, like perverse taxes and subsidies and deeply entrenched ways of thinking about design, accounting and so forth but, to the authors, the solutions are obvious and can easily be put in place.

Why, then, are there so few of these triple-bottom-line practices—economy, ecology, employment, or some other human dimension—out there? Some of those that are emphasized in the book are not, in fact, doing as well as portrayed.

One of the stars, Interface Inc., has indeed created a novel way of selling the service of its carpets instead of the carpet itself. But, the book fails to mention that the company has completely failed to find a market for this idea. With only one or two such contracts in place after several years of trying, the company still relies overwhelmingly on standard sales of the carpet tiles they make. Lovins' favorite subject—hypercars—dominates much of the book. These replacements for the current environmentally and socially devastating (and completely unnecessary internal combustion-powered) vehicles “are quickly becoming a reality,” according to the authors. My reading of what is happening is not so sanguine. In spite of all the technological superiority claimed for the hypercar, there is little sign of it on the roads or even in the showrooms. The futuristic promise of concept cars, always a big splash at world's fairs and auto shows, takes decades to materialize, if ever realized at all.

*Natural Capitalism* is virtually entirely technological in content: new machines, new policy instruments, new marketing structures, and so on. The benefits of adopting the efficient solutions that are sprinkled throughout the text are measured in percentage reductions, but the impacts of human activities on the ecological and social systems are always consequences of absolute effects. The now better than 90% reduction (factor 20+) of tailpipe emissions from the dinosaur vehicles we all drive today has been overwhelmed by a larger-percent increase in vehicle miles driven, even in the already affluent United States.

Only rarely do the authors hint at what it would take to make such changes happen routinely at levels ranging from individuals and firms to whole societies, much less the whole world. All in the organizational learning world share some sense of the immense shifts in the structures that underlie action that would have to be involved. The book fails to address (or really even mention) the changes in thinking and in structure that must precede and follow a transition to the kind of world suggested by the authors. Who would invest in natural capital if they do not, first, appreciate the importance of the natural world and, second, give up the [false] security blanket of free ridership, leaving the job as always to someone else? How do we get organizations that have been doing design forever throw out their entire process and replace it with something completely foreign to them?

And we are also aware of the existing and problematic commitments that powerful interests have in maintaining the status quo. The present rules favor the firms that play today's game best. The win-win opportunities may not be so numerous or convincing that they would be grabbed even if some of the more obvious barriers were removed. Philips Electronics recently withdrew their ecologically designed compact TV for lack of market demand. In times past, utopian communities have sprung up full of worldly visions that broke through the then-limited faulty mental models and nonsystematic thinking—but all eventually fall away. Such ideas have moved from the border to the center only when the rules that govern societal action change.

As someone who has been laboring in the same fields for as long as or longer than even the authors have, I found it exceedingly difficult to write this review. I respect and admire the voice and passion they give to their beliefs here and in other venues, and I hope for nothing more than an event that provides a wake-up call to the world and adds a story that contains the seeds of transformation—but this book is

not it. Something happened on the way to the editor with this book. Whatever the authors intended to produce, the result is a poorly organized, run-on text with an apparent editorial view that if one piece of data is convincing, a thousand such pieces will make the reader run out and immediately invest in the brave new world that the authors' picture.

Sustainability is barely evoked in the text. And if it is, getting there is merely doing what we already know is “profitable” for humans and for nature. It is here that I think the authors have missed the boat. Natural capitalism is not a radical concept; it is a repackaging of some very good ideas that have been generated in the past by the authors and also by many others. The importance of taking the four elements as a package is stressed but only at few places in the text. In practice, I believe it would be exceedingly difficult to sell the whole package. Perhaps that is why the authors, perhaps unwittingly, have used a common marketing tool: creating a catchy slogan. Natural capitalism is always capitalized: I kept expecting to find a service mark or trademark sign next to it. Perhaps it would make more sense to sell the ideas one or no more than several at a time.

Sustainability is deep down a radical idea. It is not some utopian end-state and never can be. Although the ideas put forth in *Natural Capitalism* are very important in putting a stop to what most would agree are disastrous practices, they do not promise anything like a sustainable world. Sustainability is nothing more than a possibility that human and other life can flourish on the planet forever. We can never know we are there, only that we are not, and must always continue to create the future world day by day. Such is the utmost in learning. Our mental models must always be open to change as we reflect on the world at hand. We need tools for and practice in that reflective process. The norms that drive action need to shift from the ego-centered sources that have accompanied the evolution of the Enlightenment to a community and intersubjective foundation if the deeper, underlying causes of unsustainability (mostly unmentioned in the book) are to be addressed. Nothing much will change as long as the power structures remain as they are. Do any of you really think that equity will come about through trickle-down, alone? After all, that is what more profits mean to most.

Readers certainly should pay close attention to the solutions that are offered up in *Natural Capitalism*, but they should also be acutely conscious of what is missing. Many know how many times they have tried to lose weight by following the latest how-to book or employed the current hot consultant to help find the winning strategy, only to observe later that not much had changed. The members of SoL can make an immense contribution to a sustainable future by picking up the ideas of *Natural Capitalism* and adding the learning environment that is absolutely critical if any of the new practices are to become familiar in the everyday sense so essential to sustainability.

### ***Difficult Conversations, Douglas Stone, Bruce Patton, and Sheila Heen, Viking Press (1999)***

*Review by Joel Yanowitz*

Organizations have been described as complex networks of conversations. Conversations have been described as the lifeblood of organizational life. We are all too familiar with the difficulties of having truly productive, authentic interactions

within a high-paced, high-pressure work environment. Too many conversations produce little more than superficial understanding or agreement and at times lead to significant misunderstandings and breakdowns in key relationships or activities.

Illuminating the complex causes of these nonproductive interactions and providing a road map for handling the toughest conversational challenges is an ambitious undertaking. As an experienced manager, coach, and consultant, I was skeptical of any book's ability to deliver on such a grand promise. To complicate matters, the book's scope is not limited to the professional arena. As the book cover states, it includes "your boss, your kids, your spouse, your friends, and your clients." The authors of *Difficult Conversations* succeed in their task. They have written a clear and concise book that bridges theory, tools, and action; provides concrete examples; and leaves the reader with greater willingness and confidence to engage in new approaches and behaviors.

What precisely are "difficult conversations?" We are all faced with conversations we dread and find unpleasant. These may concern high-stakes issues with uncertain outcomes, where we care deeply about the people and issues involved, or they may appear to be about small, unimportant issues that nevertheless cause us to feel vulnerable or threatened. In those situations, the authors describe a core dilemma: Do we avoid the conversation and hope that somehow it will improve or go away, or do we engage in the conversation, knowing that doing so might make things even worse?

Like any dilemma, choosing either alternative is unsatisfactory. We must learn a way to get beyond the either-or trap of the dilemma. The authors suggest that the way out lies not only in learning new skills and techniques but in shifting one's orientation. In order to break new ground and produce fundamentally different results, the focus of one's conversation needs to shift from a "message delivery stance" to a "learning stance."

The second section of the book helps us understand what is involved in adopting the learning stance by first decoding what actually happens when difficult conversations go poorly. We learn about three different parallel conversations that can be distinguished in our communications. The "What happened" conversation focuses on what took place when, who did what to whom, and who's right and who's to blame. In parallel with the "What happened?" conversation, every conversation also has an emotional dimension. This "feelings conversation" is concerned with what I am feeling: Are those feelings valid and appropriate, do I acknowledge and share them, and how I deal with the other person's emotions? Finally, we are introduced to the "identity conversation." This is our internal conversation about the meaning of the conversation and the situation in which it takes place: Am I competent or incompetent, a good person or bad, worthy or unworthy? This internal identity conversation affects the degree to which we stay centered or become anxious and off-balance.

The authors walk us through each of these three conversations, providing examples and frameworks for understanding and assessing our own situations. Here is where the shift to a learning stance becomes more concrete.

In the "What happened?" conversation, the book explains why and how we get into problematic arguments, why we each see the world so differently, and how those different world-views can keep us stuck in nonproductive interactions. Shifting from delivering messages to learning provides an essential foundation for holding qualitatively different conversa-

tions. By genuinely seeking to understand how the other party views what happened, we begin to see the gaps in our own story and appreciate the validity of their different perspective.

In the "feelings conversation" section, the authors explore a fundamental bind present in many of these conversations: Expressing our feelings often seems inappropriate or counterproductive, yet not expressing feelings makes it difficult to listen to the other person. Our unexpressed feelings often unavoidably "leak" into the conversation in ways that create greater upset or misunderstanding. As with the "What happened?" conversation, the authors provide a framework for understanding how to deal with the "feelings conversation" from a learning stance and then provide concrete approaches that build on some of the stories and examples provided earlier.

The "identity conversation" illustrates how difficult conversations threaten our identity as competent, good, lovable people. An approach is described to enable us to become more grounded in our identity and maintain or regain our balance when our identity is threatened. While conceptually simple, their suggestions have great depth and need to be practiced over time to support the shift to a learning stance.

Finally, the authors integrate our understanding of these three conversations in a step-by-step process that leads us from understanding to action. Readers familiar with many of the theory, tools, and frameworks of organizational learning will recognize such concepts as the ladder of inference, the distinctions between advocacy and inquiry, and the challenge of integrating our internal unspoken conversation into actual conversation. The book focuses on practical understanding and action, based on the authors' thorough theoretical knowledge.

While at times it may spread itself a bit too thin by covering theory and action in a wide variety of settings, the comprehensiveness of the book is a welcome change from more simplistic or prescriptive approaches to addressing discrete communication problems. It is well-written, enjoyable to read, and immediately usable by anyone attempting to create fundamental organizational change.

***Communities of Practice: Learning, Meaning, and Identity*, Etienne Wenger, Cambridge University Press (1998)**

*Review by John D. Smith*

Even though the term is relatively recent, working with communities of practice has been central to the organizational learning community's work for many years. This note reviews Etienne Wenger's book, *Communities of Practice: Learning, Meaning, and Identity*, uses the organizational learning initiative recounted in the AutoCo Learning History to illustrate some of Wenger's ideas (appended at the end of the review under the heading, Artifacts that Define Communities), and poses some questions that Wenger's perspective raises for the different communities of practice that make up the larger organizational learning community.

*Communities of Practice* develops a framework for thinking about learning that is useful for researchers and practitioners who are concerned with the growth of competence in organizational settings. The topic is subtle and complex; at times, reading this book is arduous. Wenger proposes that it is in communities of practice that we learn, negotiate meaning, and develop identities. He argues that communities of practice can be described along three dimensions: mutual en-

agement, joint enterprise, and shared repertoire. The wonderful quips and quotidian examples that run through the book remind readers that the topic is both ordinary and important. It's tricky to talk about a secret that's in plain sight. I read *Communities of Practice* as a call to reflection that will lead to action. It is a philosophy book relevant to work and business.

The book begins with two extended narratives that describe personal experience and group interactions in a community of practice. These intimate vignettes ground the concepts and arguments developed throughout the book. The richness and complexity of the learning that insurance claims processors engage in every day may be surprising and is certainly inspiring.

*Communities of Practice* will be interesting in different ways to each of the different communities that constitute the larger organizational learning community. It should be useful to researchers in that it intersects with much of our thinking while it is still distinct enough to yield new questions and new insights. Its main contribution here is to identify and begin to map out a stratum of experience and competence that mediates between individual and social levels. For practitioners in organizations, the book points out that communities of practice are alive and making fundamental (but possibly secret) contributions to organizational performance. It provides a framework for thinking about which policies and practices might be more community-friendly. For consultants and change agents, the book offers a perspective on organizational learning (and resistance to learning) that avoids the dualism between subject and object that can corrupt our work. Supporting communities of practice in organizations is an important domain of participation in organizational learning: organizations do not change without changes to the communities of practice that constitute them.

The organizational learning community may be one of the few communities fully capable of appreciating the deeper challenges that are implicit in Wenger's book. When Wenger writes, "Learning is not a separate activity," he is proposing a very different stance from what is implied when we talk casually about "becoming a learning organization." *Communities of Practice* does not prescribe an intervention. Rather, it provides a perspective on how people and their communities and their organizations already do learn. We might legitimately argue that some organizations are not learning what they should, but that is very different from saying that they are not learning at all. Here are some challenges and questions for researchers, practitioners, and change agents that, from our several different perspectives, we might consider embracing:

**Researchers:** How can researchers play a leadership role in understanding how communities of practice produce learning, meaning, and identity? Were we to see communities of practice both as subject and as intended recipients of the research artifacts we produce, would we think differently about the research enterprise?

**Practitioners:** As communities of practice become a more central element of organizational learning and knowledge-management practice, there is a strong temptation to reify and reduce them, imagining that they can be "produced" or "leveraged," and that they should be accounted for or managed like other assets. How can we appreciate the audacity of this simple goal to become friendly to communities of practice?

**Change Agents:** If we adopt the framework that Wenger proposes, we face some subtle but important issues about how we enter an organizational system and the beliefs

### *Artifacts That Define Communities*

Learning histories are ideal vehicles for enlarging the peripheries of communities of practice, allowing successive generations to join in a community's conversations and inviting people with entirely different perspectives (such as researchers or change agents) to join in conversations about the politics of learning in a specific organizational situation. As devices for increasing the ability of the organizational learning community as a whole to be reflective, their proper role is to capture collective experience so that new ideas can be tested and exercised more fully.

The "harmony buck" was a full-sized prototype of an automobile that engineers could use to test how parts fit together early in the design process. "The Learning Initiative at the AutoCo Epsilon Program, 1991-1994," describes how several different communities of practice, including engineers, suppliers, and managers, worked to produce the harmony buck. The story tells how those communities used the harmony buck and were affected by the conversations that the new artifact triggered.

Engineer: "You could go down there anytime in the day and there'd be ten to fifteen people around this thing, all doing something different."

The idea of "practice" focuses us on how all those people are doing the same thing—becoming more compe-

tent. The harmony buck became the opportunity for negotiating meaning between individuals and communities. A white board and a computerized concern ("problem") tracking system were a means for communication between communities that saw themselves as quite separate.

Program Manager: "Whenever someone found a problem on the harmony buck, it was written on that board. And the rule was that you couldn't ever erase something from the board unless you had placed a concern number behind it."

Giving managers, suppliers and other communities full access to the harmony buck and the repertoire of reflective activity around it enabled their participation at a point where effective and economical learning and action could still take place. One of the most interesting aspects of the harmony buck story is that the innovation became standard practice. From the perspective that Wenger proposes, this success would be attributed to the community's full appropriation of a new reflective element into its repertoire. The negotiations around participation and the various artifacts enable learning. The learning history plays the same role—allowing us to negotiate the meaning of our experience—for the organizational learning community.

that we bring along. What does it mean for us to commute back and forth between the community of change agents (which defines our identity and competence) and the communities of practice in a target organization (where we gain meaningful experience of organizational change)? What does our community need to become, to support this to-and-fro?

As a final argument for giving *Communities of Practice* a careful reading, I would claim that Wenger's approach makes the following paradox a manageable one, where meaningful action becomes possible: "No community can fully design the learning of another. No community can fully design its own learning."

## Book Announcements

### The Learning History Library

Oxford University Press is proud to announce a new series, The Learning History Library, edited by Art Kleiner and George Roth, originators of the learning history concept. These extended "living" case studies use an innovative format based on "the jointly told tale" to help narrate the story of major intrafirm transitions. The learning history succeeds in balancing traditional research with pragmatic imperatives and powerful imagery and will ultimately prepare individuals for similar experiences in their own firms.

**Car Launch: The Human Side of Managing Change** (July 1999, 224 pp; cloth \$22.95) is the first book in The Learning History Library series. This book explores the turmoil occurring in the automobile industry and shows how one company was able to succeed dramatically even while facing the rigors of open opposition. Told in the words of the people who were there, with commentary by the authors and other observers, this document was first commissioned by the firm (AutoCo) to help production teams learn from each other across organizational boundaries. It also provides an "insider" look at relationships between subordinates and bosses. This story will be of interest to any individual who is, or will be, engaged in transformation work and who wants to improve development and manufacturing operations.

**Oil Change: Perspectives on Corporate Transformation** (1999, 224 pp; 10 illus., cloth, \$22.95) is the second book in The Learning History Library series. It is the story of major corporate change undertaken by Oil Co, a pseudonym for a major international oil company, just after a time of layoffs and cutbacks. Key people within the company tell this story, using a technique developed at Massachusetts Institute of Technology's Center for Organizational Learning. One hundred and fifty employees were interviewed at all levels of the company, from hourly workers to the executive council. They worked in all primary Oil Co businesses: exploration and production, refining and retail, chemical and oil consulting. During this time, all the firm's values came into question, including its business practices, corporate governance structure, team management, and leadership style.

### Organizational Learning and the Learning Organization: Developments in Theory and Practice

Edited by Mark Easterby-Smith, John Burgoyne, and Luis Araujo

Sage Publications, 1999, paperback, 256 pp., \$27.95

*Organizational Learning and the Learning Organization* provides an original overview of key debates within the field of organizational learning from the perspectives of practitioners and academics. The first part of the book concentrates on key theoretical debates on organizational learning, while the second focuses on implementations with organizational settings and their evaluations. The book aims to examine the interrelationship between ideas about *organizational learning* and the *learning organization*—to see what practice can learn from theory and vice versa.

Contributors include Mark Easterby-Smith and Luis Araujo; Christiane Prange; David Sims; Marleen Huysman; Bente Elkjaer; Hallie Preskill and Rosalie Torres; Nancy Dixon; Matthias Finger and Silvia Bürgin Brand; Amy Edmondson and Bertrand Moingeon; Karen Ayas; Frank Blackler, Norman Crump, and Seonaidh McDonald; Elena Antonacopoulou.

### Work-Based Learning: The New Frontier of Management Development

by Joseph Raelin

Prentice Hall Business Publishing, 1999, paperback, 297 pp., \$42.67

Previously offered by Addison-Wesley in the *Organizational Development* series, this book will be helpful to anyone who educates within the workplace or is interested in promoting and delivering an alternative to standard training within their organization. Loaded with examples from his twenty-five years as an educator and consultant, Raelin's book shows you how to learn while doing your own job. He demonstrates how to invoke and then document the collective learning process to make it accessible to everyone— and even contagious—within an organizational environment.

### The Corporate Culture Survival Guide

by Edgar H. Schein

Jossey-Bass Publishers, 1999, hardcover, 224 pp., \$24.00

*The Corporate Culture Survival Guide* offers practicing managers and consultants involved in culture change programs a practical guide on how to think about corporate culture, what culture is about, how culture issues vary with the stage of evolution of an organization, and, most important, what is involved in culture change and culture blending in mergers, acquisitions and joint ventures. It presents models for how to think about the change process, provides case illustrations, and has practical exercises in each chapter to help the manager think about culture issues.